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**PAN AMERICAN FOOT-AND-MOUTH DISEASE CENTER  
(PANAFTOSA)**

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## EXECUTIVE SUMMARY

The basic mission of Pan American Foot-and-Mouth Disease Center (PANAFTOSA) is to provide technical cooperation to the national programs for prevention, control, or eradication of foot-and-mouth disease, other vesicular diseases, and zoonoses.

The technical cooperation strategy is applied within the framework of the Hemispheric Program for the Eradication of Foot-and-Mouth Disease (PHEFA), with actions divided among six macroregions: the Southern Cone, the Andean Subregion, the Amazon Subregion and Brazil, Central America, North America, and the Caribbean.

At the close of 1998, the existing disease-free areas had been preserved, and there was no foot-and-mouth disease anywhere in the Southern Cone, a subregion that includes Argentina, Chile, Paraguay, Uruguay, and southern Brazil. With the absence of viral activity in the states of West Central Brazil, a total of 140 million cattle and 1.5 million herds in 6.5 million km<sup>2</sup> area of South America are free of foot-and-mouth disease.

The purpose of the technical cooperation and the budget required to sustain it, is:

- to protect and preserve existing disease-free areas
- to create new disease-free areas and reduce the incidence of disease in the areas still affected.

The productive municipios strategy has been developed by PANAFTOSA to promote greater equity in its attention to small producers and campesinos, characterizing their production systems and identifying their weaknesses in order to propose action by the community itself to modify the specific sanitary situation in each municipio.

The Center will maintain a line of research that will enable its projects to address the needs identified in the evaluation of the national and subregional programs. It will also continue with research on the use of molecular biology techniques to characterize viral strains, and on validation of the ELISA test with nonstructural proteins to differentiate vaccinated animals from infected stock.

The countries will receive support in the use of risk analysis methodologies associated with the importation of animals and animal products, and in harmonization of the sanitary standards governing international trade in livestock to respond to the demands of the market and of the World Trade Organization (WTO).

The program activities of PANAFTOSA are an integral part of the Program on Veterinary Public Health of the Pan American Health Organization (PAHO), under the Division of Disease Prevention and Control (HCP). Their implementation period is the biennium 2000-2001.

The Center receives its financial resources from PAHO budget allocations; from its own receipts via extrabudgetary agreements and projects; and from the mobilization of resources from interprogram and interagency links and coordination.

## **1. Introduction**

### **1.1 Pan American Foot-and-Mouth Disease Center**

The Pan American Foot-and-Mouth Disease Center (PANAFTOSA) is an integral part of the Program on Veterinary Public Health of the Pan American Health Organization (PAHO), under the Division of Disease Prevention and Control.

The Center was established in Rio de Janeiro, Brazil, in 1951, by decision of the Organization of American States (OAS), which delegated its administration to the Pan American Health Organization.

#### *1.1.1 Mission*

The basic mission of PANAFTOSA is to provide technical cooperation to the national programs for the prevention, control, or eradication of foot-and-mouth disease and other vesicular diseases within the framework of the Hemispheric Program for the Eradication of Foot-and-Mouth Disease (PHEFA). In May 1998 it incorporated into its mission the job of providing technical cooperation in epidemiology, information systems, and programs and risk analysis in brucellosis, bovine tuberculosis, rabies, and equine encephalitis.

#### *1.1.2 Objectives*

- To coordinate the activities of the national programs through subregional projects, border agreements, and bilateral or multilateral conventions and agreements.
- To mobilize resources to incorporate the relevant social sectors to make the programs both feasible and viable.
- To serve as the regional reference laboratory for the diagnosis of vesicular diseases and control of vaccines for foot-and-mouth disease for the countries of the Americas.
- To maintain a hemispheric system for epidemiological surveillance of vesicular diseases, rabies, brucellosis, tuberculosis, and equine encephalitis.
- To develop methodologies to improve the administration of programs, including the management and use of epidemiological information, and the

identification of political, economic, social, and cultural scenarios, formulating selective regional strategies and giving special attention to small producers to improve their living conditions.

- To promote and participate in field and laboratory research on the patterns of the vesicular diseases and zoonoses targeted by the Center in order to improve its capacity to solve problems related to their control and eradication.
- To establish programs and collaborate with the countries in ongoing programs for training human resources, incorporating the participation of individuals from the different fields of knowledge, as well as the private sector.

#### 1.1.3 *Analytical and Consultative Forums for the Strategic and Programmatic Orientations*

PANAFTOSA's program of work incorporates the mandates established in analytical bodies and forums of the scientific and technical communities and of the senior health and agriculture authorities of the countries' governments and their livestock production sectors, such as:

- The Inter-American Meeting, at the Ministerial Level, on Animal Health (RIMSA), where the ministers of agriculture of the Region meet to evaluate the activities of the Center in the preceding two years, to analyze the program budget for the coming biennium, making suitable recommendations to the Governing Bodies of PAHO.
- The Hemispheric Committee for the Eradication of Foot-and-Mouth Disease (COHEFA), created by Resolution XIII of V RIMSA, in 1987 and made up of a representative from the governments of each of the following subregions: Southern Cone, the Andean Subregion, Amazon Subregion, Central America, the Caribbean, and North America. The Director of PANAFTOSA serves as Secretary *ex officio*, and a representative of the producers from each of the above subregions is invited to sit on the Committee, whose objectives are policy promotion, evaluation, and the acquisition of financing for the Hemispheric Program for the Eradication of Foot-and-Mouth Disease.
- The South American Commission for the Control of Foot-and-Mouth Disease (COSALFA), which annually brings together the animal health directors and representatives of the livestock producers of the countries of South America.

COSALFA is an agency charged with promoting, coordinating, and evaluating national programs, subregional projects, and border agreements on foot-and-mouth disease. Another of its functions is to adopt standards or measures aimed at preventing the introduction of exotic diseases into South America, while acting as an advisory body to the Director of PANAFTOSA (who serves as its Secretary *ex officio*).

- The Commission of Countries Free of Foot-and-Mouth Disease (COPALIFA), which operates through two subcommissions: one for the countries of North and Central America and the other for the English-speaking Caribbean. Its objectives are to coordinate and promote prevention programs in these areas and to develop surveillance systems to systematically evaluate the risk of introducing the virus to these areas.

#### 1.1.4 *Organizational Structure*

The structure of PANAFTOSA consists the Office of the Director and four divisions: Administration, Epidemiology, Laboratories, Programs and Services.

PANAFTOSA headquarters is situated on 46 ha. of land with 12,000 m<sup>2</sup> of construction. It has 98 staff members, 21 of whom are professionals. Of these, 14 are international civil servants. Its support personnel consists of 20 staff members from the United Nations System (UN) and 57 from Brazil's labor force.

A move to new headquarters located in the Maracanã neighborhood of Rio de Janeiro is programmed for 1999. The property is being readied, and a maximum security biology laboratory is currently under construction.

## **1.2 *Hemispheric Program for the Eradication of Foot-and-Mouth Disease***

In April 1987, V RIMSA, through Resolution XIII, decided "to entrust to PAHO and COSALFA the preparation of a hemispheric program for the eradication of foot-and-mouth disease, including appropriate mechanisms for its implementation." This meeting approved the establishment of a Hemispheric Committee for the Eradication of Foot-and-Mouth Disease (COHEFA).

Within hemispheric plan of action, the subregional divisions served as a framework for dividing the Region into a disease-free prevention and maintenance area in Central America, North America, and the Caribbean and an infected area encompassing all of South America at the start of the plan. Program execution was geared toward three

main levels: the regional plan, the subregional projects, and the national animal health programs.



The goals of the PHEFA Plan of Action are:

- to improve the economic and social efficiency of livestock activities;
- to increase the availability of meat and milk for the Region's inhabitants;
- to improve the access of livestock products to international markets.

The specific objectives are:

- to eradicate foot-and-mouth disease in South America through the creation of new disease-free areas;
- prevent introduction of the disease into disease-free areas;
- prevent introduction of the disease into newly colonized areas of livestock production, especially in the Amazon Subregion, while respecting the ecological integrity of the areas.

The strategy for the eradication of foot-and-mouth disease in South America is based on:

- regionalization of the continent, grounded in the epidemiological characterization of ecosystems and the crafting of subregional programs, complemented by articulation among the countries and subregions;
- community participation;
- creation of local committees, inviting community and intersectoral participation to improve the effectiveness of the decisions and actions of the programs;
- technical-administrative coordination of the programs;
- differentiation of strategies geared to producers, assigning special priority to small producers through activities to boost their productive capacity, with the consequent positive impact on their living conditions;
- greater use of specific information and social communication as the basis for improving the effectiveness of the programs.



## **2. Programming of PANAFTOSA Activities for 2000 and 2001**

### **2.1 Situation Analysis**

The current scenario for the execution of the PANAFTOSA Program of Activities can be summarized as follows:

#### *2.1.1 Foot-and-Mouth Disease*

- a) An absence of viral activity in extensive productive areas of South America. One of the most important changes that has helped to eliminate or reduce the disease in the latter years of the 1990s has been the genuine, mass participation of the livestock sector in the programming, management, and evaluation of activities for the eradication of this scourge. Organizing the local committees was especially important; these make it possible to involve the community in the management of the programs and to mobilize resources from other sources;
- b) a reduction in endemicity through strategic actions that target at-risk areas.

#### *2.1.2 Rabies*

The development and implementation of an information and epidemiological surveillance system; support for the development of campaigns for urban and rural rabies control; and the preparation of demographic studies of animal populations in at-risk areas, as defined at the Meetings of the Directors of the National Rabies Control Programs (REDIPRA), as well as the epidemiological situation analysis in every country.

#### *2.1.3 Brucellosis and Tuberculosis*

Characterization of the impact of these two zoonoses on human health and animal productivity, thanks to individualized situation analyses for each country, and the political will and joint participation of producers in carrying out programs for the prevention, control, or eradication of these diseases.

#### *2.1.4 Equine encephalitis*

Collaboration to establish an information and surveillance system that makes it possible to predict emerging epidemics, and to collaborate with the countries in crafting their programs.

## **2.2 Technical Cooperation Strategy**

The strategy for foot-and-mouth disease will be developed within the context of PHEFA, providing support for national and subregional programs and for border agreements.

Technical cooperation in both vesicular diseases and zoonoses will be oriented by the needs of the national and subregional programs, relying on the resources available in PANAFTOSA and the countries. Thus, when the Center does not have the technical resources needed to address a particular situation that represents a stumbling block for the program, an effort will be made to mobilize the resources horizontally from a country that possesses them.

Continuing efforts to promote the creation of organizational models that support the conception, execution, and evaluation of the programs is an issue of particular importance.

The technical cooperation of PANAFTOSA will intensify the modernization of the national (and especially local) information and epidemiological surveillance systems. It will promote community involvement in this task, provide opportunities to identify priority needs for the livestock industry and to emphasize the utilization of information at the local level.

With regard to training, the countries will be encouraged to develop ongoing plans that will enable them to comprehensively address technical and methodological aspects of the knowledge needed to conduct situation analyses and administer the control and eradication options.

The Center will maintain a line of research aimed at solving the problems detected in the program evaluations and the use of appropriate technologies. This shall be done in light of new scientific knowledge, and through the creation of Consortia to provide Technical Cooperation in aspects related to diagnosis, quality control of biological agents, and production of reference reagents in zoonosis, when PANAFTOSA lacks the institutional capacity to provide them.

The countries will be supported in their use of the risk analysis methodology associated with the importation of animals and animal products, and in the harmonization of the sanitary standards governing the international livestock trade, as required for the implementation of common markets and by the World Trade Organization.

Consistent with changes in their sanitary status, the countries will be receive support in developing systems to prevent the introduction of exotic diseases.

## **2.3 Proposed Changes**

### *2.3.1 General Objectives*

To cooperate with the countries to strengthen, intensify, and lend continuity to PHEFA through the subregional and national programs and border agreements, creating new disease-free areas in affected countries and areas while preserving areas that are already disease-free.

To cooperate with the health and agriculture authorities to strengthen and intensify activities aimed at prevention, control, or eradication of the zoonoses targeted by PANAFTOSA.

### *2.3.2 Specific Objectives and Goals by Subregions*

#### ***FOOT-AND-MOUTH DISEASE***

##### **a) *Southern Cone***

###### *Specific objective:*

- To keep the Southern Cone free of foot-and-mouth disease.

###### *Expected results:*

- Fully functional program for the prevention of foot-and-mouth disease and other exotic diseases throughout the Region.
- Development of functional and effective epidemiological surveillance systems for the prevention of foot-and-mouth disease and other exotic diseases.

###### *Activities:*

- Collaboration in the organization of seminar-workshops on developing prevention and emergency plans, legal and regulatory aspects, creation of indemnity funds, establishment of technical/administrative procedures, and

launching of education and mass communication campaigns in all countries of the subregion.

- Collaboration in the organization of courses on merchandise inspection and seizures, baggage control, and waste management and elimination; the courses will be for airport, port, and border personnel.
- Cooperation in the implementation of systems for prevention and active, sensitive surveillance targeting foot-and-mouth disease and other exotic diseases, through the maintenance and/or creation of local health care committees, with social participation.
- Participation in the organization of emergency simulations for eradication of foot-and-mouth disease outbreaks targeted to fieldworkers.
- Collaboration in the organization and implementation of seminars on laboratory aspects related to the differential diagnosis of foot-and-mouth disease.
- Support in the organization of seminars on the methodology for the epidemiological characterization of the risks of introduction and/or dissemination of foot-and-mouth disease and other exotic diseases.
- Collaboration in the organization of workshops on training and implementing the local units of epidemiological health information, with the participation of producers, private veterinarians, and other social actors, with the objective of reporting any sign that might be mistaken for foot-and-mouth disease.
- Cooperation in organizing information programs on prevention and reporting of foot-and-mouth disease and other exotic diseases, to be conducted at rural schools.
- Collaboration in the support and strengthening of biosafety in the handling of the foot-and-mouth disease virus.

b) ***Andean Area***

*Specific objective:*

- To create new areas free of foot-and-mouth disease, while protecting and expanding those that already exist, and reducing the frequency of cases in areas still affected.



*Expected results:*

- Maintenance of an effective health care system in the field in all countries of the subregion.
- Effective implementation of the subregional and national programs for the eradication of foot-and-mouth disease in the countries of the Andean Subregion.
- Fully implemented epidemiological surveillance systems by the end of 1999, with the sensitivity needed to detect and register the presence of vesicular diseases, based on broad community participation at the local level.
- Transformation of the border agreements into integrated animal health programs, under the coordination of an interinstitutional committee of the countries involved.
- Comprehensive attention in areas with small producers, aimed at strengthening weak points identified in the characterization of the production system, and introduction of health practices consistent with the purpose of the program.

*Activities:*

- Advise on the design of the management structure for local foot-and-mouth disease control programs, with broad community participation.
- Collaboration in the design and execution of courses to prepare facilitators/instructors charged with promoting the creation of local committees.
- Support for the holding of seminars/workshops on methodologies to increase community awareness of foot-and-mouth disease and the risks it harbors for national and international trade.
- Assistance in the organization of demonstration workshops for dealing with foot-and-mouth disease foci.
- Collaboration in the organization of international seminars on methodologies for managing programs against foot-and-mouth disease and unconventional information system structures.



- Cooperation in planning vaccination campaigns in keeping with the specific epidemiological characteristics of each region, with emphasis on border agreement areas.
- Support in the organization of workshop seminars on molecular diagnostic techniques for foot-and-mouth disease.
- Promotion of evaluation meetings based on the PANAF-TOSA model for integrated animal health programs.
- Collaboration with municipal authorities for implementation of a productive municipios program.
- Collaboration with the national laboratories in adapting to biosafety standards, and the implementation of procedures to reach that objective.

c) ***Amazon Area and Brazil***

*Specific objective:*

- To create new disease-free areas and/or areas without clinical manifestation of foot-and-mouth disease, and to maintain this status where it already exists.

*Expected results:*

- Strengthened programs to combat foot-and-mouth disease in the northern, southeastern, and northeastern regions of Brazil.
- Implementation of an epidemiological surveillance system with total coverage and with the sensitivity necessary for detecting and recording the presence of vesicular and exotic diseases, based on broad community participation through local committees.
- Effective operation of the border agreements in the Amazon area as strategic instruments for consolidation of the subregional program.
- Differentiated treatment of small producers, aimed at strengthening weak points identified in the characterization of their production system and introducing sanitary practices consistent with the goal of eradicating the disease.

*Activities:*

- Collaboration in the planning, development, and evaluation of regional seminars on handling foci, and on new field work methods.
- Cooperation in the design of local program management structures for the control of foot-and-mouth disease, with broad community participation.
- Collaboration in the planning, development, and evaluation of regional courses in order to raise the level of awareness and motivate producers to eradicate the disease and create disease-free areas.
- Support for the organization, evaluation, and updating of information systems and epidemiological surveillance in local areas, with broad social participation.
- Collaboration in course design and execution in order to promote social participation in reporting, sample collection and shipment, vaccination, focus control, and control of animal movement.
- Promotion and participation in meetings related to the border agreements, in order to make them more effective in eradicating foot-and-mouth disease by standardizing technical-administrative criteria.
- Collaboration in the evaluation and updating of information and epidemiological surveillance systems in the areas of the border agreements.
- Joining with municipal authorities and social actors to organize the productive municipios system, following the methodology of PANAFTOSA.

d) ***Areas Free of Foot-and-Mouth Disease***

*Specific objective:*

- To protect and preserve the foot-and-mouth disease-free status of the countries of the Caribbean, Central America, and North America.

*Expected results:*

- Effectively functioning programs for prevention of the disease in each country of the region.

- Development and/or maintenance of efficient epidemiological surveillance systems for the prevention of foot-and-mouth disease and other exotic diseases, with broad social participation.
- Differentiated attention to small producers, with technical assistance to cover weaknesses identified in the characterization of their production systems.  
*Activities:*
- Collaborate in the organization of emergency simulations, directed at field staff, for eradication of foot-and-mouth disease outbreaks.
- Participation in training health surveillance staff at airports, ports, and borders, on the prevention of exotic diseases, and the design of infrastructure required to guarantee waste disposal without risk to susceptible populations and without harm to the environment.
- Collaboration in the organization of workshop-seminars on the structure of prevention and emergency plans, legal and regulatory aspects, creation of indemnity funds, establishment of technical-administrative procedure, and conducting of education and mass communication campaigns.
- Cooperation in the evaluation and updating of information and epidemiological surveillance systems.
- Collaboration in the design and execution of courses to promote social participation in activities of reporting on animal diseases.
- Participation in the design and execution of risk analysis studies on the introduction of foot-and-mouth disease and other exotic agents.
- Collaboration in the design and implementation of animal health information networks, involving all the institutions and organizations linked with livestock production.
- Participation with the municipal authorities and social actors in setting up the productive municipios system with the PANAFTOSA methodology.

## ***ZOONOSIS***

### ***Brucellosis and Tuberculosis***

*Objective:*

- To reduce the risk to humans contracting brucellosis and animal tuberculosis.
- To establish programs for the control and eradication of bovine and caprine brucellosis and bovine tuberculosis.

*Results:*

- Programs under way for the control and eradication of bovine and caprine brucellosis and bovine tuberculosis.

*Activities:*

- Development of a regional survey on the progress of the national programs for the control and eradication of brucellosis and animal tuberculosis.
- Technical support in the development of programs for the eradication of bovine and caprine brucellosis and bovine tuberculosis.
- Train laboratory staff in the diagnosis of brucellosis through state-of-the-art molecular biology, as well as conventional, techniques.
- Provide the biologicals and reagents needed for the reference diagnosis through a center or producing laboratory.
- Train government staff in the management of programs for the eradication of brucellosis and tuberculosis in livestock.
- Monitor effective surveillance systems.

***Rabies***

*Objective:*

- To reduce cases of human rabies.

*Results:*

- Countries supported technically in the elimination of rabies transmitted by dogs.
- Promotion of effective control of sylvatic rabies.

*Activities:*

- Promotion of systematic dog vaccination campaigns in the municipios of the Region.

- Technical support for operation of the epidemiological surveillance systems for rabies in humans.
- Technical support for the development of a consortium of laboratories for diagnosis of rabies.
- Promotion of risk analysis for sylvatic rabies.
- Coordination of the annual meeting of REDIPRA.

***Venezuelan Equine Encephalitis (EEV)***

*Objective:*

- To reduce the risk to humans of contracting EEV.
- Effective programs for of EEV control.

*Results:*

- Collaboration in the sectoral and intersectoral adaptation of epidemiological surveillance systems for EEV, and their incorporation--as active surveillance--within the hemispheric EEV monitoring system.
- Technical support provided for EEV vaccination programs.

*Activities:*

- Training of staff in the use of sentinel animals for early detection of EEV foci.
- Training of personnel in laboratory diagnostic techniques.
- Provision of reagents for laboratory diagnosis through a center or producing laboratory.
- Orientation and technical support for systematic EEV vaccination campaigns.

## **2.4 Functional Approaches to Technical Cooperation**

### *2.4.1 For the Mobilization of Resources*

- Promote the mobilization of political will and resources, through hemispheric events such as RIMSA, REDIPRA, and COHEFA, and at the regional level such as COSALFA in South America and the subcommissions of disease-free countries for North and Central America and the countries of the English-speaking Caribbean.
- Support bilateral or multilateral coordination, accompanied by resource mobilization, through subregional programs and border agreements.
- Collaborate in the acquisition of external resources for strengthening the health service delivery systems in the prevention, control, or eradication of foot-and-mouth disease, rabies, brucellosis, tuberculosis, and equine encephalitis.
- Cooperate in the promotion of mechanisms for organizing animal health and veterinary public health programs at the national and local levels.
- Help to organize local eradication committees, with social participation.
- Collaborate and encourage horizontal technical cooperation among countries in support of the programs.

### *2.4.2 For the Dissemination of Information*

- Provide incentives for the systematic and accessible dissemination of scientific/technical and methodological information to the technical staff of the programs in the countries.
- Provide countries and international organizations with reliable and timely epidemiological information on the national and international appearance of diseases, through occasional communications (alerts) and periodic communications (regular epidemiological reports).
- Collaborate in the development and strengthening of a communications network on epidemiological information, linking the various units of the services system, both vertically and horizontally; special priority should be given to units at the

borders between countries, or units at the border of regions with differing epidemiological characteristics.

- Regularly exchange scientific and technical information on foot-and-mouth disease and zoonosis with specialized institutions at the international level, and make such information available to program staff in the field.
- Publish and disseminate periodic bulletins or reports, monographs, technical and teaching manuals, reviews of specific literature, and audiovisual and other resources to support the national program staffs.
- Encourage the use of computers and electronic communications media at the program executing institutions.

#### 2.4.3 *For Staff Training*

- Help the countries of the Region to establish programs for ongoing training of their human resources, with due regard for the various areas of knowledge and the participation of segments of the private sector in program activities.
- Continue support for the countries, developing seminars, courses, and workshops on priority topics related to improving the prevention, control, and eradication of the disease.
- Provide continuity to the regular courses that PANAFTOSA offers at Headquarters on the development of animal health programs, diagnosis of foot-and-mouth disease and diseases easily mistaken for it, and vaccine control. Also, provide in-service training in a wide range of disciplines to help to improve the technical quality and effectiveness of the programs.
- Cooperate with the countries in developing mechanisms to integrate the universities and scientific/technical institutions into the foot-and-mouth disease and zoonosis programs; this should include training the human resources of the programs and promoting the use of field units as teaching and research components by the above institutions, in order to improve their ability to train human resources in this area.
- Support national graduate-level courses in animal health, epidemiology, and preventive veterinary medicine.



- Collaborate with countries that are free of foot-and-mouth disease in the holding of seminars on the prevention of foot-and-mouth disease and other exotic diseases.

#### 2.4.4 *For the Definition of Policies, Plans, and Standards*

- Cooperate with the countries in the application of the strategic approach to preparing plans on foot-and-mouth disease and zoonosis, with due regard for the interests of all social actors.
- Support the countries that are free of foot-and-mouth disease to prepare and update prevention plans, based on the analysis of the risk of the virus being introduced in their territories.
- Provide technical assistance to the countries on preparing standards conducive to the harmonization of diagnostic tests and of the decision rules to be used in quality control of the vaccines. Also, strengthen standards related to focus control and the movement of animals, vaccine types and specifications, sample collection, and biosafety and epidemiological data for both foot-and-mouth disease and zoonoses.
- Collaborate with the countries in using risk analysis and the harmonization of sanitary standards to govern imports of animals, animal products, and by-products, in keeping with the demands of common markets and the World Trade Organization.

#### 2.4.5 *For Direct Technical Assistance*

- Provide technical assistance to the countries on the organization at the central level of a unit for research on epidemiological situations; this unit should define selective regional strategies in accordance with the disease ecosystems and the risks involved.
- Collaborate with the countries in the preparation of a systematic field working method consistent with the prevailing epidemiological characteristics and with the community participation group.
- Collaborate with the countries to change attitudes for the prevention, eradication, or control of foot-and-mouth disease and zoonoses.
- Provide assistance to the countries as they move toward eradication, gradually adding prevention activities to the control measures, until there has been a complete changeover.

- Collaborate with the countries: in the diagnosis and characterization of strains of foot-and-mouth disease viruses active in the field; in the production of oil-adjuvant vaccines (and direct or indirect quality control thereof); in the epidemiological characterization of the behavior of the disease, including surveillance and specific research; in the evaluation of specific health services; in the analysis of the impact of programs, including the quantitative analysis of risks associated with domestic and international trade in livestock products.
- Serve the countries as a reference center on foot-and-mouth disease and vesicular diseases, for purposes of diagnosis, vaccine control, and epidemiological surveillance.
- Cooperate with the countries to maintain a foot-and-mouth disease vaccine bank, including antigens, sera, and cell lines, and to provide them with the necessary reagents.
- Advise the countries on the transfer of new diagnostic techniques.
- Provide assistance to the countries during emergencies.
- Cooperate with the countries in order to develop a sociocultural process of participatory education in the family production sectors, with special emphasis on the participation of women.

#### 2.4.6 *For Research*

- Collaborate with the countries of the Region in research on the patterns of foot-and-mouth disease, rabies, bovine tuberculosis, brucellosis, and equine encephalitis, in order to facilitate and improve the capacity to solve problems in the prevention, control, and eradication of the disease.
- Participate in studies on the development of diagnostic techniques and reagents, in cooperation with scientific institutions and universities.
- Continue to conduct, jointly with the countries, epidemiological studies on the mechanisms of the endemic qualities of the foot-and-mouth disease virus and the regionalization of disease situations; these studies should be applicable to the selection of specific operational strategies.

- Collaborate with the countries in the development of research on the role of the different social actors in the eradication programs, for the purpose of preparing strategies to increase their viability.
- Promote research on the genetic relationships between vaccinal and field strains, and correlate the genetic changes with the levels of protection offered by the vaccines.
- Promote molecular studies of field strains of the foot-and-mouth disease virus and of vesicular stomatitis relevant for Latin America, in order to contribute to a more thorough understanding of the epidemiology of the disease.
- Develop research, jointly with the countries, to strengthen the use of indirect tests for control of foot-and-mouth disease vaccines.
- Continue with field studies and approaches on the role of animals persistently infected with the foot-and-mouth disease virus, at different stages in the evolution of the disease.
- Sponsor research projects, jointly with the countries, on the transmission mechanisms for vesicular stomatitis.
- Collaborate with the countries in the development of a quality control methodology for the vesicular stomatitis vaccine.
- Conduct research, jointly with the countries, on matters related to the characterization of post-vaccinal reactions to immunizations against foot-and-mouth disease, and identification of the responsible factors.
- Cooperate with the countries or regions that have eliminated foot-and-mouth disease, in conducting risk analysis studies on the transmission of the disease through exports of animal products to disease-free countries.
- Cooperate with countries, especially those in the foot-and-mouth disease eradication phase, by implementing differential virological diagnosis.
- Continue studies of the molecular bases of the foot-and-mouth disease virus, and use PCR techniques.

- Continue collaboration with AIEA/FAO and the World Reference Laboratory of Foot-and-Mouth Disease at Pirbright (U.K.), in preparing ELISA antigen kits for foot-and-mouth disease.
- Encourage the study of monoclonal antibody panels for the characterization of foot-and-mouth disease virus strains.

### **3. Evaluation of the Pan American Foot-and-Mouth Disease Center, 1997-1998**

The mission of PANAFMOSA is to deliver technical cooperation to the countries of the Americas to eliminate foot-and-mouth disease, this is accomplished under the Hemispheric Program for the Eradication of Foot-and-Mouth Disease.

#### **3.1 *Impact and Achievements***

The Center has had a significant impact through its support for the national programs for the control or eradication of the disease and can point to a number of achievements over the course of its efforts:

- Implementation of the industrial phase of the oil-adjuvant vaccine, as well as of direct and indirect tests for quality control thereof.
- Development of diagnostic, serological, and viral activity identification tests
- Establishment of regional strategies to combat foot-and-mouth disease, by characterizing production systems and ecosystems that define the behavior of the disease.
- Conception, development, and implementation of a hemispheric epidemiological surveillance system, using geographical quadrants; in due course this approach was incorporated into the integrated epidemiological surveillance system for animal health (SIVESA), which prioritizes the operation of local units, with active participation of communities linked to the livestock sector.
- Advocacy of the development and strengthening of programs through an ambitious mobilization of political will.

- Development of a methodology for coordinated social participation—inside and outside the livestock sector—instruments for organization should be created through the local committees, to provide a functional and operational basis for the construction, execution, and evaluation of the programs.
- Strategic design of integration processes, with the creation and maintenance of border agreements and hemispheric and subregional programs.
- Support for maintaining areas free of foot-and-mouth disease; recognition of Uruguay as disease-free; recognition of Paraguay, Argentina, and the states of Rio Grande do Sul and Santa Catarina of Brazil as disease-free with vaccination. PANAFTOSA supported the seroepidemiological survey, utilizing the VIA and EITB tests, in order to validate the latter.
- Increase in the number of herds and geographical area free of foot-and-mouth disease, and significant reduction in the magnitude of epidemiological indicators in the affected area.
- Use of technical and methodological procedures to ensure transparency, equivalence, and credibility in the international arena in order to sustain free trade in livestock products.
- Negotiations between the Southern Cone countries and disease-free countries and regions for the export of meat.
- Active search for new sources of financial cooperation for national and subregional projects.
- Application of the principles and procedures of the agreement on Sanitary and Phytosanitary Measures (SPM) in the struggle against foot-and-mouth disease, including studies of risk analysis in exports and the division of the continent into regions as a function of risk.
- Development of the productive municipios initiative in areas of small producers and campesinos, through the establishment of primary veterinary care to improve their productive capacity, increase their earnings, and secure better living conditions, thus promoting public health and the well-being of this important group of proprietors.

### **3.2 Technology Developments such as the Diagnostic and Reference Laboratory**

For more than four decades the national programs for the prevention, control, and eradication of foot-and-mouth disease have enjoyed the support of the Diagnostic and Reference Laboratory. Since 1984 it has acted as the regional reference laboratory of the IOE and FAO for the Americas.

It has helped to create and consolidate the diagnostic infrastructure needed in the countries to combat viral diseases (particularly vesicular diseases).

Some of the activities of the laboratory are:

- Maintaining the collection of regional strains of foot-and-mouth disease and vesicular stomatitis viruses, including more than 200 strains of these viruses; these are used to prepare reagents to develop antigenic, immunogenic, and biochemical characterizations of the field strains.
- Standardizing methodologies and updating the national parties responsible for the laboratories in the various techniques, such as complement fixation, immunodiffusion in agar, virus neutralization, ELISA, and EITB.
- Conducting research on the use of biotechnology in diagnosis. The epidemiologically most important viral strains are characterized through molecular biology techniques such as DNA fingerprinting, PCR, and genetic sequencing, in order to update the vaccinal strains and monitor new viral field strains. This activity is fundamental, since it is not yet under way in the majority of the countries of the Region. The role of persistently infected animals in the epidemiological process is studied using cell cultures, DNA probes, and viral RNA sequencing. For the EITB technique, the nonstructural proteins of the foot-and-mouth disease virus have been expressed in *E. coli*; these antigens are purified for use in the test. The EITB is the most recommended technique available to determine the levels of residual viral activity in territories as they approach disease-free status and maintain their foot-and-mouth disease vaccination programs. In order to produce stable monoclonal antibodies against foot-and-mouth disease, bovine infectious rhinotracheitis, and blue tongue, a hybridoma bank has been developed. These antibodies are used in foot-and-mouth disease for diagnostic purposes in the ELISA tests on competition and control of the immunizing quality of vaccinal strains. The monoclonals are also very useful in the diagnosis of other viral diseases easily mistaken for foot-and-

mouth disease, an issue that becomes important as significant progress is made in eradicating the disease.

- Participating in the harmonization of diagnostic techniques, jointly with national and international organizations.

### **3.3            *Achievements by Subregion***

#### **3.3.1        *Southern Cone Subregion***

As of late 1998 foot-and-mouth disease is absent throughout the entire Southern Cone (Argentina, Chile, Paraguay, and Uruguay) and the southern part of Brazil. This is reflected in the fact that in the Brazilian states of São Paulo, Paraná, Minas Gerais, Goiás, and Mato Grosso over two years have passed without clinical detection of the disease.

Several achievements should be cited with regard to the International Technical Cooperation Agreement for the control and eradication of foot-and-mouth disease in the River Plate Basin. These include the elimination of the clinical disease in virtually the whole of the region considered, the elimination of viral endemicity, and international recognition of the achievements made.

The border areas were visited, and meetings of the Brazil-Paraguay, Bolivia-Argentina, and Chile-Argentina Agreements were held.

#### **3.3.2        *Andean Subregion***

The national programs for eradication of foot-and-mouth disease in the subregion are being politically and financially strengthened through joint public-private sector administration, technical-administrative decentralization, and the implementation of zonal components as a function of productive and marketing characteristics linked to high vulnerability to foot-and-mouth disease.

Bolivia, whose geographical situation and livestock production characteristics link it with Argentina, Brazil, Paraguay, and Peru, plays an important part in the survival and spread of foot-and-mouth disease. For programming purposes Bolivia is framed within the subregional Andean and River Plate Basin projects.

The inclusion of Bolivia in the River Plate Basin Project, with the approval of its committee and the endorsement of COSALFA, led to a series of activities of



PANAFTOSA, MAGDR, and Bolivian livestock producer associations in order to harmonize the working strategies and objectives of the control program in the region of the Eastern Plains of Bolivia.

A national epidemiological surveillance system, based in Santa Cruz de la Sierra, is being developed with support from the British Mission. PANAFTOSA has been commissioned by the MAGDR to coordinate this activity and to establish the National Eradication Plan.

The Colombian Livestock Institute, the National Federation of Livestock Producers of Colombia, and the USDA are promoting the expansion of the Atlantic Coast subproject to the eastern region, as envisaged in component 1-A of PHEFA, with the active participation of the productive sector. The strategy for action is based on the division of the country into regions based on the level of risk of the introduction and dissemination of the agent.

Based on an agreement to carry out the Project for the Eradication of Foot-and-Mouth Disease in Ecuador (1996-2000), the Ecuadorian Livestock Health Service, the Federation of Livestock Producers of Ecuador, and PAHO/WHO have managed to establish 134 local Committees. These were created with the technical support of PANAFTOSA. This effort is based on epidemiological regionalization, with broad private sector participation in the different project activities, in order to expand the coverage of vaccination efforts and train human resources in the public and private sector.

Peru has updated its foot-and-mouth disease eradication project; its initial emphasis was on creating a disease-free area in the south of the country. It has received support from the Inter-American Development Bank and PANAFTOSA for these activities.

In Venezuela, PANAFTOSA has collaborated in the training of personnel and the evaluation of the epidemiological surveillance system. This stemmed from an agreement signed between the Ministry of Agriculture and Livestock, the National Federation of Livestock Producers, and PAHO/WHO in order to lay the foundations for technical cooperation in activities to eradicate foot-and-mouth disease in the country.

Agreements between the government service (SASA-MAC) and the Federation of the Lake Maracaibo Basin and the National Federation of Livestock Producers have permitted the establishment of 19 state coordinating committees, 105 local livestock health committees, and 162 centers that issue transit guidelines on animals and animal products. Until now, this mode of organization has included the participation of the

productive sector in the sanitary control of livestock transit; this is expected to provide a foundation for sanitary programs, especially for foot-and-mouth disease.

The coordination among countries was implemented through the meetings of border agreements between Ecuador-Peru, Bolivia-Chile-Peru, Colombia-Venezuela, and Ecuador-Colombia.

### 3.3.3 *Amazon Subregion and Brazil*

The central area of Brazil, which has approximately 80 million head of cattle, has seen a significant reduction in the disease. Activities have been conducted with coordinating commissions of the livestock circles and the municipal health councils, which, along with the Ministries of Agriculture and Supply, jointly program and execute activities in foot-and-mouth disease control and eradication. Furthermore, the Fund for Livestock Development has actively participated in state projects to develop control measures, information systems, and epidemiological surveillance.

In Venezuela, the Autonomous Livestock Health Service, in concert with the government of the State of Bolívar and the support of PANAFTOSA, conducted an epidemiological sampling of sera that showed an absence of viral activity in this State.

### 3.3.4 *Disease-free Areas*

The countries of Central America, the Caribbean, and North America, and, in South America, Chile, French Guiana, Guyana, Suriname, and Uruguay have maintained their disease-free status.

Trends in trade that could increase the level of risk in Central America and the Caribbean were evaluated in a seminar.

## **3.4 *Evaluation of Activities by Functional Approaches to Technical Cooperation***

PANAFTOSA activities with the PAHO Member States are detailed in the document "Technical Cooperation Programs of the Pan American Foot-and-Mouth Disease Center, 1997-1998", found in the Annexes of the work portfolio of the XI RIMSA Meeting.

### **3.5 Participation at Meetings and Other Events**

As in previous item, details of these activities are found in the document mentioned above.

### **3.6 Extrabudgetary Projects**

- a) *Regular Agreement Between the Government of Brazil and PAHO for the Maintenance and Operation of the Center.* Signed in Rio de Janeiro, Brazil, in 1951, this provides the headquarters and involves payment of the operating expenditures of the Center. The contributions stipulated are found in Resolution RIMSA10.R2 (1997), which set the annual quotas of the Government of Brazil for support of the Center at US\$ 800,000 in national currency for 1997 and the equivalent of \$2 million for the period 1998-2001. In 1997 the Government contributed the equivalent of \$842,158, and in 1998 a total of \$434,384.
- b) *The International Technical Cooperation Agreement for the Control of Foot-and-Mouth Disease in the River Plate Basin* (Argentina, Brazil, Paraguay, and Uruguay). This Agreement established \$498,976 for the biennium 1997-1998, with a balance due at the end of the biennium of \$189,049. The quota agreed for 1999 is \$530,000, making a total due of \$719,049.

### **3.7 Description of Linkage and Coordination, Interprogram and Interagency Activities**

The Center has been conducting joint activities with technical and financial cooperation agencies of the Inter-American system, the United Nations system, national development agencies, universities, nongovernmental organizations, organized communities, and producer associations in diverse areas related to the scientific, technological, and methodological development of epidemiological and sanitary surveillance. This includes management activities.