PAN AMERICAN HEALTH ORGANIZATION
WORLD HEALTH ORGANIZATION

PAN AMERICAN FOOT-AND-MOUTH DISEASE CENTER

SITUATION OF THE

FOOT-AND-MOUTH DISEASE CONTROL PROGRAMS.

SOUTH AMERICA, 1992

March 1993

1. SITUATION OF THE FOOT-AND-MOUTH DISEASE-CONTROL PROGRAMS IN SOUTH AMERICA, 1992

1.1 General Situation

Veterinary services in South America registered a total of 3,513 foci of vesicular diseases during the year of 1992. This figure is 22.5% higher than that registered the year before, which slightly alters the falling tendency in 1990 and 1991. This report considers as synonymous the terms foci, herds and affected establishments.

The rate of affected cattle herds was 0.85 per 1,000; diagnoses of foot-and-mouth disease rose to 77%, while vesicular stomatitis registered a sharp drop (43%) compared with 1991.

Samples were taken for laboratory diagnosis of 1,823 foci (52%), with the virus agent being identified in 1,271 cases (70%); these figures were similar to those of the previous year. In the 857 diagnoses of foot-and-mouth disease (FMD) cases, the "O" type virus predominated in 576 foci (67% of the total), followed by the "A" type virus with 236 diagnoses (28%) and finally the "C" type with 45 (only 5% of the total). The 414 diagnoses of vesicular stomatitis were distributed between 302 cases (73%) of the New Jersey virus and 112 (27%) of the Indiana type.

The highest incidence of foot-and-mouth disease was registered in Colombia, Brazil and Argentina, whereas vesicular stomatitis once again had a high rate of incidence in Colombia (94.2% of the total diagnosed) with Venezuela registering 2.6% and Peru the remaining 3.1%.

In 1992 the indicators of morbidity and mortality registered in foci where bovines were predominant were 3.45 per 10,000 for animal population morbidity, 11.1% for internal morbidity and 2.0% for lethality.

The most noteworthy features of the period were the following:

a) Areas free from foot-and-mouth disease - The countries of North America, Central America and the Caribbean continued to remain free from foot-and-mouth disease. In Mesoamerica, 357 properties were registered as affected by vesicular disease, with laboratory diagnosis in 175 (49%) foci, 151 (86%) corresponding to the New Jersey virus and 24 (14%) to the Indiana virus. This situation represents an increase of 22% in the total number of foci, the highest incidence occurring in El Salvador, Honduras, Mexico and Costa Rica.

The South American countries that remain free from foot-and-mouth disease are Chile, Guyana, French Guiana and Suriname. Argentina's Patagonia region south of parallel 42, and the region north of the Chocó in Colombia have also remained free.

No information on vesicular stomatitis was received from the United States.

b) Area affected by foot-and-mouth disease - Compared with 1991, the epidemiological situation of foot and mouth disease in 1992 was similar, although the number of foci was slightly higher. The number of foci of vesicular stomatitis in this area was substantially lower (57%) than in 1991.

The following situation deserve special mention:

Uruguay maintained its situation of non-occurrence of vesicular disease since July of 1990, which has led to a request by its authorities for the International Office of Epizooties (OIE) to recognize the country as being free from foot-and-mouth disease through vaccination.

Argentina, with a rise in the number of foci of foot-and-mouth disease compared with 1991, also maintained a favorable epidemiological situation.

Brazil, after two consecutive years of reduced incidence of the disease, turned in a total figure of foci that was 40% higher than in 1991: the highest incidence was in the central-west, northeast and southwest regions, while the south registered a significantly lower figure.

Colombia, with its high level of incidence, registered a 12% lower rate of vesicular disease than the previous year, while Venezuela had 39.5% less in the same periods. Along with Peru, these were the countries that registered cases of vesicular stomatitis.

Paraguay, Peru and Bolivia had no significant changes in their epidemiological situation. Ecuador had 31% more foci of foot-and-mouth disease, but registered no diagnoses of vesicular stomatitis in 1992.

In the area where the Sub-regional Project of the Plata River Basin is being developed, a favorable epidemiological situation was registered for the second year running, with minimum incidence in areas characterized as primary endemic and an interruption of the usual seasonality. Territorially a very significant area, Uruguay registered no occurrences in 1992, nor did the southern region of the state of Rio Grande do Sul and practically the whole province of Entre Rios in Argentina.

1.2 Situation by the Country

ARGENTINA

The 1990-1992 National Plan for Control of Foot-and-Mouth Disease came to an end in 1992, after accomplishing the effective, coordinated participation of the different sectors of the farming and cattle-raising community.

With regard to the epidemiological situation, the total number of foci (350) was 50% higher than in 1991 (234).

As for geographical distribution, although the number of foci was greater, the total number of grid squares affected (108) was practically the

same as the year before (109). As far as temporal aspects are concerned, the problem presented the usual trend of greater seasonal incidence in the fall, the months of March and May-June. In the first case, breeding areas were affected; in the second, fattening areas that received cattle from the former areas. In October was registered a second peak in the fattening area. The analysis points out that there was higher incidence in the primary endemic region to the north of the country: in the first quarter of the year in the provinces of Chaco, Formosa and northeast of Corrientes, where official vaccination campaigns were recently started, then affecting part of Santiago del Estero and an epidemic situation in the secondary endemic fattening region comprising west of the province of Buenos Aires, east of La Pampa, south of Cordoba and central-south of Santa Fe. The Patagonia region south of parallel 42 remained free, and foci were absent in the provinces of San Juan (1974), Neuquen (1985), Rio Negro, Mendoza and Tucuman (1990), Catamarca, Jujuy, La Rioja and San Luis (1991). It is also worthwhile mentioning that the province of Entre Rios, within the Plata River Basin project, registered only two foci, in a coastal zone of the Parana River.

Samples were taken of 293 (84%) of the 350 foci, yielding 108 of the "O" type virus (49%), 72 of the "A" type (33%) and 39 of the "C" type (18%). The latter increased compared with 1991, when only 2 classifications were registered. The identified subtypes were O_1, A_{24}, A-79, A-81 and C_3.

The indices of morbidity and mortality in cattle were as follows: the rate of affected herds - 1.25 per 1000; internal morbidity - 4.6%; animal population morbidity - 2.1 per 10,000; and lethality - 0.9%. Morbidity rates per 10,000 were 3.87 in swine and 0.10 in sheep.

BOLIVIA

Data gathered by the National Service for Control of Foot-and-Mouth Disease, Rabies and Brucellosis (SENARB) in the area covered by the Program (the departments of Cochabamba and Santa Cruz and the Pilot Plan for the province of Beni) shows the occurrence in 1992 of 117 properties affected by vesicular disease, an increase of 800% on the figure for the previous year. Also, 111 other episodes occurred in the departments of Chuquisaca (76) and La Paz (35), totalling 228 affected properties for the year.

Geographic distribution was widespread, affecting 5 of the country's 9 provinces. It appeared first in Chuquisaca and then spread to the departments of Cochabamba, La Paz and Santa Cruz; there was notice of occurrence in every month of the year.

Material was collected on 35 (15%) occasions, yielding 18 diagnoses positive to the "O" type virus (the only one classified), proceeding from 3 of the 5 political-administrative units affected. As in 1991, there were no diagnoses of vesicular stomatitis virus, and the "C" type virus of foot-and-mouth disease has not been diagnosed since 1990.

The indicators of morbidity and lethality among cattle in the area of the Program showed 12.8% internal morbidity, animal populational morbidity of

9.87% per 10,000, 12.0% lethality and 2.34 per 1.000 herds affected. No disease was reported in sheep.

BRAZIL

The total number of occurrences of vesicular disease in 1992 was 1,224, 68% higher than the figure registered in 1991. The highest incidence of properties affected fell to the southeast region (37%), followed by the northeast (31%) and the central-west (26%). Incidence in the south region (2.2%) was considerably lower than in previous years.

Samples were collected from 342 (28%) of the establishments affected; the official laboratories diagnosed the "O" type virus on 158 occasions (67%), followed by the "A" type with 72 (30.5%) and the "C" type with 6 (2.5%). No diagnosis of vesicular stomatitis was made during the period.

The subtypes of foot-and-mouth disease virus identified were O_1, A_{24} and C_3.

The southeast, central-west and northeast were the regions most affected, accounting for almost 94% of all the foci, especially in the area where the states of São Paulo, Goias and Minas Gerais como together.

The coastal region of the state of Bahia had a high incidence of vesicular disease. In the southern region there was a sharp drop in occurrences of foot-and-mouth disease (28 foci) compared to 247 in 1991. The state of Santa Catarina and the territory of Roraima have had no disease registered since July, 1991.

The rates of incidence in cattle were 72 per 1,000 of herds affected, 15.6% of internal morbidity, animal populational morbidity of 3.77 per 10,000, and 1.9% lethality. Mortality per 1,000 rates were 0.63 in swine and 0.47 in sheep.

CHILE

In 1992 it maintains its status of country free from foot-and-mouth disease without vaccination, and also free from vesicular stomatitis.

The prevention program is inserted within the project for the prevention of exotic diseases which calls for operations based on a system of epidemiological surveillance and control in ports, airports, sanitary barriers on international borders, places where there is a concentration of cattle, livestock centers with possible connections to ports and airports, mountain summer pastures and rubbish heaps.

The strategy applied in the system of prevention and control of mountain pastures underwent no changes with respect to the previous year: risk zones are defined and receive special vigilance, control of summer pastures and maintenance of a cattle-free strip, among other measures. Strict observance of the sanitary requirements in all the merchandise that comes into the country,

and the vigilance that is undertaken, ensure that the risk of foot-and-mouth disease being introduced via authorized places of access remains minimal.

COLOMBIA

During the current year, 1,308 establishments were registered as affected by vesicular disease, a decrease of 11% compared to the previous year. The greatest number of foci occurred in the departments of Antioquia (221), Cordoba (83), Cundinamarca (64), Nariño (112), Norte de Santander (67), Santander (222) and Sucre (56). In the last five years the departments of Antioquia and Santander have presented the greatest number of cases, whereas in the last two years Cudinamarca has achieved a noteworthy reduction.

The departments of Amazonas, Chocó, Guaiania, San Andres, Providencia and Vaupés presented no record of vesicular disease.

In the departments of Antioquia, Cundinamarca, Santander and Tolima, the presence of vesicular diseases was registered for all the months of the year. Analysis of the records for the whole country show that the occurrence is concentrated in the January-February and June-November periods.

Of the 1,300 (99%) affected establishments where the species in jeopardy was known, the distribution was as follows: 1,228 bovine cases, 59 swine cases, 10 equine cases, and 2 cases each for the swine and equine species, and only one in sheep.

Material was collected from 975 foci (75%), resulting in 698 positive diagnoses (72%): 226 of the "O" type virus, 82 of the "A" type, 281 of the New Jersey and 109 of the Indiana virus. It should be pointed out that 55.8% of these diagnoses correspond to vesicular stomatitis, this being more frequently present in Antioquia, Cordoba, Santander and Sucre.

The rate of bovine herds affected by vesicular disease was 1.70 per 1,000, animal populational morbidity was 7.32 per 10,000, internal morbidity was 14.5%, and lethality was 1.2%.

ECUADOR

During the year of 1992, occurrence of vesicular disease was registered in 17 of the 21 provinces, with foot-and-mouth disease being diagnosed in 11 of them, which represents 52.0% of the federal divisions.

Records of the appearance of vesicular diseases show a concentration in May-June and from September to January, the latter period being responsible for 51.5% of the occurrences. It should be noted that 28.4% of registered foci concentrate in the month of June.

Epidemiological characterization of vesicular diseases reveals epidemic behavior in the provinces of Carchi, Imbabura, Pichincha, Cotopaxi, Tungurahua, Chimborazo and Bolivar, a behavior associated with the characteristic mobilization of cattle at the open border between Ecuador and Colombia. However, of the 174 herds affected, the highest frequency was

observed in the provinces of Bolivar (39), Carchi (29), Morona Santiago (21), Tungurahua (14), Cotopaxi (13) and Napo (12).

Of the 174 herds affected by vesicular diseases, samples were gathered for laboratory diagnosis from 46 (26%), this low sample count resulting from the delay in notification by the procedures. Two yielded no laboratory diagnosis, 14 were negative, and 30 (65.2%) were positive to the "O" type virus.

The rates of vesicular diseases in cattle were 0.69 per 1.000 affected, animal populational morbidity of 5.41 per 10.000, internal morbidity of 31.3%, and 3.5% lethality.

GUYANA

No occurrence of vesicular disease was registered for the period under study.

FRENCH GUIANA

No occurrence of vesicular disease was registered for the period under discussion.

PARAGUAY

In 1992 a total of 43 foci of vesicular disease was recorded in the country, a slightly lower figure than the 57 cases registered last year. Geographic spread was greater than in the last three years, with 31 grid squares being affected in 10 departments. The worst affected was Presidente Hayes (46.5% of the total number of foci), in the lower Chaco in the western region.

With regard to seasonality, the disease was observed in 10 months of the year, June being responsible for the highest incidence.

No significant changes were observed in the situation of the different areas vi-á-vis the previous year. The westerd situation continued to influence that of the eastern region.

The rates of incidence in bovines were as follows: 0.18 per 1.000 herds affected: 7.7% of internal morbidity; 3.31 per 10.000 animal populational morbidity; and 3.2% lethality.

The only type of virus diagnosed was the "O" type, subtype O_1 in 23 cases out of 32 foci with collected material (53% of the total foci).

PERU

In 1992, 94 establishments were registered as affected by vesicular diseases. Samples were collected in 68 foci but only 28 (41%) even identified. Foot-and-mouth disease was diagnosed in 15 of these establishments, 12 (80%) corresponding to the "O" type virus and 3 (20%) to the "A" type; vesicular

stomatitis was observed in 13 cases, all corresponding to the New Jersey virus.

The departments with the highest number of vesicular diseases recorded were Arequipa, Cajamarca, Lima, La Libertad and Lambayeque. Occurrence was associated with the mobilization of cattle for purposes of fattening, being observed during 10 months of the year, with June and October-November witnessing the highest rate of incidence.

The rate of herds affected in the cattle population was 0.2 per 1,000, internal morbidity standing at 21.5%, animal populational morbidity at 0.6 per 10,000, and lethality 4 per 1,000. No disease was reported for swine.

SURINAME

No ocurrence of vesicular disease was registered during the period under discussion.

URUGUAY

At the close of 1992, Uruguay commemorated thirty months of clinical absence of foot-and-mouth disease in the country. After completing 24 months in this situation, in the month of June the sanitary authorities made an official request to the OIE to include Uruguay in the list of countries free with vaccination. By resolution of the Ministry of Cattle Raising, Agriculture and Fishing in August, 1992 (Law 16.082), the first stage of eradication of foot-and-mouth disease was initiated, providing for immediate slaughter of diseased and contacted animals in the event of the disease appearing.

Epidemiological vigilance has become more active by reason of the degree of sanitary awareness acquired, the producer's non-tolerance of the disease, and the responsible participation of the private veterinary doctor.

34 suspicions of vesicular disease were investigated in 1992, all with negative results from the clinical, epidemiological, anatomic-pathological and laboratory points of view. The average reaction time, from notification to attendance of the suspicions by the veterinary services, was 3-4 hours.

A third serologic sampling was carried out in order to prove the abscence of infection in the national herds. This study embraced a sample of the bovine and ovine population, given the predominance of mixed breeding in the country and following the recommendations of the Pan American Foot-and-Mouth Disease Center (PANAFTOSA).

A bank of saline solutions is being set up for studies of exotic diseases such as vesicular stomatitis, bluetongue and others.

VENEZUELA

The total number of occurrences of vesicular diseases registered was 92. This is the lowest figure recorded in the last ten years, and represents a decrease of 39.5% against the previous year's total. This occurrence is

concentrated in the first and last months of the rainy season, which is when the herds are moved around more and more cattle are mobilized for fattening and slaughter.

Samples were taken for laboratory analysis from 34.8% of the foci registered. This yielded a positive result in 59.4% of the cases, 1 being "O" type virus, 7 being "A" type virus, 8 being New Jersey and 3 the Indiana virus. The subtypes of the foot-and-mouth disease virus were identified as O_1 and A_{24}.

As far as geographic distribution is concerned, the most affected federal regions were Aragua, Merida, Yaracuy and Zulia.

The rate of bovine herds affected was 0.7 per 1.000, with animal population morbidity at 0.8 per 10,000, internal morbidity at 9.1%, and lethality at 0.2%.

2. SITUATION OF THE FOOT-AND-MOUTH DISEASE CONTROL PROGRAMS IN SOUTH AMERICA, 1992

2.1 General Situation

2.1.1 Area affected by foot-and-mouth disease

Although the predominant situation in the majority of the countries of the region was the continuation of public budgetary restrictions, and therefore of limitations on funds assigned to the programs, some countries still showed the trend toward greater financial and administrative participation by the private sector. This fostered very good results in obtaining and consolidating favorable results in the plans of the anti-FMD programs.

The most significant advances were:

- Continuity in the development of veterinary attention models at the local level, with the participation of private and public sectors related to the areas of meat production, commercialization and industrialization.

- Strengthening of the organized community participation in the processes of scheduling, executing, follow-up and evaluation of the local work plans.

- Consolidation of the foot-and-mouth disease control, eradication and prevention actions coordinated among countries by means of subregional agreements.

- Linking the animal health and foot-and-mouth disease programs in general with the subregional processes of socio-economic integration, whose purpose is to facilitate commercial exchange in suitable sanitary conditions.

- The Plata River Basin Agreement, in its fourth year of activity, has managed to consolidate the actions of the countries in the Agreement's pioneer area, with the technical cooperation of PANAFTOSA and the coordination and advisement of the project consultants. Paraguay officially joined the agreement in 1992 and representatives of the livestock raisers in the four countries sit on the Directing Committee.

The surveillance system is in full operation, providing timely interchange of epidemiological information among the local, regional and central-level units.

Numerous training activities have been developed, including not only personnel from the official services, but also livestock raisers, private veterinarians, universities and agribusiness personnel.

Noticeable progress has been made in areas like biological safety, bearing in mind the goal of FMD eradication.

Finally, the progress attained to date by the agreement has encouraged the countries to ask PANAFTOSA to prepare a preliminary project for a second stage - the present stage ends in 1993 - with the objective of consolidating the results attained in the pioneer region and incorporating new areas that are epidemiologically interrelated with the present one. The document that extends the agreement for another five years is currently under consideration. Since 1989, the year the project began operations, to 1992, the countries have contributed a total of US$ 642,172 in funds for the project.

Uruguay, seeking to consolidate its sanitary situation, has declared the first stage of eradication and strengthened its prevention and epidemiological surveillance activities by means of seroepidemiological research. It has also expanded its human and material resources with animal health project 840, with funding from the Inter-American Development Bank (IDB) and technical cooperation from PANAFTOSA.

Argentina has united the resources of the provinces - Provincial Commissions and Ministeries of Agrarian Affairs - and local plans with the foot-and-mouth disease Program, thus energizing the prevention and epidemiological surveillance activities.

The Technical Group of the Andean Subregional Project, with the coordination of PANAFTOSA and the Inter-American Institute for Cooperation in Agriculture (IICA), met in March in Buenos Aires, on the occasion of the XIX Meeting of COSALFA. The five countries who attended discussed the execution of the zonal subprojects and analyzed the annual technical cooperation operating plan submitted by PANAFTOSA to the Cartagena Agreement Board (JUNAC); the plan seeks an estimated US$ 420,000 in funding by the European Economic Community (EEC).

The persistent lack of resources needed to implement the sanitary programs has affected the majority of the andean countries and the short supply of FMD vaccines - except in the case of Colombia - is another barrier to the execution of the national plans. In this last aspect, PANAFTOSA has

frequently cooperated with oil-adjuvanted vaccine, by request of the countries.

In 1992 the Government of Paraguay declared that the foot-and-mouth disease eradication plan was a national priority.

With respect to the subregional project in the Amazon area, because of the favorable epidemiological situation in the territory of Roraima where no clinical case of foot-and-mouth disease has been reported since 1991, the governments of Brazil and Guyana have proceeded with their efforts to render effective the foot-and-mouth disease prevention and eradication project in the Roraima/Rupununi region. In this regard a seroepidemiological survey has been undertaken to study viral activity in the region. By request of the two countries, the PAHO authorized the utilization of US$ 25,000 of its funds for that purpose. Venezuela has reaffirmed in its national program that it wishes to participate in the Amazon subregional project, but has so far been unable to implement its action.

Regarding the program coverage, the entire land surfaces of Argentina, Chile, Ecuador, Paraguay, Peru, Uruguay and Venezuela are under program. In the case of Bolivia, the covered surface amounts to 44%, herds covered total 50.9% and cattle coverage totals 48.5%. In Brazil, the respective totals are 53.9%, 75.6% and 84.2%, and in Colombia, 74.1%, 99.6% and 99.3%. Total FMD vaccine production in the region was 142.5 million doses, of oil-adjuvanted vaccine, and 17.5 million saponin-hydroxide doses, adding 181.4 million doses produced in Brazil with different types of adjuvants (oil, avridine, oil/aqueous, aqueous) totalling 341.4 million doses.

The availability of human resources was: 14,370 personnel of which 324 in the central levels, 631 in laboratories and 13,415 in the field.

The total funding amounted to US$ 22.35 million for the public sector. Private funding contributed 205.6 million for vaccine purchases and vaccination costs.

2.1.2 Area free of foot-and-mouth disease

In the Caribbean subregion a review of the sanitary laws in the countries was undertaken in order to try to harmonize procedures and standards for the prevention of the introduction of foot-and-mouth disease.

The different countries of this subregion have been visited by a commission composed of country representatives and personnel from the IICA and PANAFTOSA/PAHO, whose purpose is to review the present situation of the epidemiological surveillance, quarantine and diagnostic services and to establish training needs.

In Jamaica, Antigua, Trinidad and Tobago animal health plans have been drafted in accordance with guidelines set by the subregional technical group.

Under the auspices and coordination of the PANAFTOSA, a seminar on "Risk Analysis" was conducted; tourism and commercialization were studied as major

determinants of the risk factors. Personnel from the services of the Caribbean subregion countries participated in that seminar.

Concerning the subregion encompassing the countries of Central America, the Dominican Republic, Cuba and Haiti, the FMD Epidemiological Surveillance and Prevention Plans were reformulated.

In Panama and Mexico action proceeds to incorporate indicators from the animal production area into the existing Information System.

Participants from Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama, attended a course on Administration of Animal Health Programs, held at the PANAFTOSA/PAHO Center.

Action has been taken in El Salvador and Honduras to reformulate mechanisms of veterinary attention for small producers.

2.2 Situation of the Countries

ARGENTINA

The nation's surface area is 2,779,896 km^2, holding a population of 268,513 cattle herds, 54.2 million cattle, 22.9 million sheep, 7.4 million pigs and 3 million equines. The programs, being carried out by the National Animal Health Service (SENASA), cover the entire surface and animal population.

The implementation of 321 official vaccination plans was carried out in 1992, covering 53,555,735 head of cattle (98.8% of the stock). Oil-adjuvanted vaccine was utilized in 288 plans covering 49,350,404 cattle (92%); saponin-hydroxide vaccine was used in the remaining plans.

Various activities were conducted in the control of foci: training workshops were held for technical personnel from the official service, regional teams were formed to render attention to the foci, and the Plata Basin Project procedural manual was implemented. For the control of cattle transit, in addition to the communications on the origin and destination of the herds, sanitary control posts were sey up at the site of entry into given regions, such as Mesopotamia where posts were installed in two sites on the Paraná River, and in the provinces of Mendoza and San Juan. The Central Cordillera Project was also drafted to expand the free areas on the border with Chile.

Production of trivalent oil-adjuvanted FMD vaccine reached 93.176,500 doses, of which 70,693,100 (75.8%) were approved, and 16,918,300 trivalent saponin-hydroxide doses, of which 10,195,100 (60%) were approved. All approved doses were utilized in the country.

The program's infrastructure includes a central unit, a central laboratory - DICOM, for vaccine control and diagnosis, and 302 local units spread out in 20 regions. Personnel total 212 professionals, 525 auxiliary technical personnel, and 174 administrative personnel. The vehicle fleet

comprises 680 units; 130 new cars were acquired as part of the plan to update the fleet with financing from the World Bank.

In addition to the SENASA resources, there are technical and auxiliary personnel officialized through the Provincial and Zonal Commissions for conducting the plans; they depend both technically and operationally on the official body, which means a considerable contribution to the program.

Those human resources amount to 669 veterinarians, 1.429 veterinary assistants (vaccinators) and 555 administrative aides. With respect to financial resources, SENASA does not have the information; it is estimated that the private sector provided US$ 110 million for the campaign. The training activities saw 36 professionals in courses and seminars organized by the Plata Basin Project, 6 in the INTA-IICA-APHIS Course on Exotic Diseases and 4 in the Course on Development of Animal-Health Programs sponsored by PANAFTOSA. A total of 90 veterinarians participated in the workshops on attention to foci.

Regarding international trade, Argentina imported 53.199 live cattle from Uruguay, Brazil, Chile and Paraguay; 10,386 sheep from Chile, Uruguay, Paraguay and New Zealand; 4496 pigs from Brazil, Chile and Uruguay; 848 buffaloes from Brazil, and 5835 horses from Uruguay, USA, Brazil and other sources; 432,128 doses of cattle semen, 7174 doses of sheep semen and 806 bovine embryos from the USA, Canada, and New Zealand.

The exports of animals on the hoof totalled: 5889 cattle bound mainly to Brazil, Paraguay and Uruguay; 3.978 sheep, the majority shipped to Chile; and 4110 equines to several countries; 11,945 doses of bovine semen and 265 doses of sheep semen; 454 bovine embryos and 13 horses to Brazil, Israel and Ireland.

The activities of extension and sanitary education included promoting the FMD campaign in various press media and rural livestock shows. Material printed and distributed throughout the country totalled 10.000 posters, 5000 semi-annual bulletins and 50,000 stands.

National coordination of the programs was handled on three organizational levels: the National Commission, which has representatives from all the entities involved and is the body which sets the program's sanitary policies; the regional level, represented by the Provincial Animal-Health Commissions (COPROSA); and the zonal level, with its respective commissions that implement the local anti-FMD plan. These latter commissions have a technical council and an administrative council.

Private and official agencies participate at all levels. The national coordination level accomplished the following highlights during the year: formation of a technical and scientific council for diagnosis and vaccine control; drafting of the Central Cordillera project; setting up a Commission to draft the Foot-and-Mouth Disease Eradication Project.

PANAFTOSA lent technical cooperation to the latter two accomplishments, and its participation in the area of International Coordination was

highlighted in its technical cooperation in several areas, its underwriting of the activities in the border agreements with Paraguay and Chile, and visits of EEC Technical Commissions.

BOLIVIA

According to data published by the Ministry of Rural, Livestock and Agricultural Affairs (MACA), Bolivia's 1,098,581 km^2 are home to 98,139 bovine herds with a total cattle population of 5.5 million head. Additionally, there are 9.4 million sheep, 2.1 million pigs, 1.2 million goats, 1.5 million camelidae and 904,000 horses.

Coverage of the program conducted by SENARB has remained steady, reaching 44% of the nation's surface area. The area in execution is 55.6% of the surface under program, 17.8% of the herds and 11.2% of the bovine population, relative to the area in the program.

The program engages a total of 126 personnel distributed in the Central Office, three diagnostic laboratories located in Santa Cruz, La Paz and Cochabamba, and in 15 local administrative units in Cochabamba, Santa Cruz and Trinidad. 49 are professionals (39%), 42 are technical assistants (33%) and 35 (28%) are administrative assistants.

The transport pool includes 25 cars and pickups and one motorcycle. Financial resources total US$ 216,918 of which US$ 183,918 are public funds for operating expenses allocated 20% to the central level and 80% to the regional level. The private funding for vaccine purchase is estimated at US$ 33,000.

The livestock producers conduct approximately 50% of the vaccinations and public institutions like SENARB, MACA, corporations and others cover the rest.

The country neither produces FMD vaccines nor performs suitable controls of imported vaccines. SENARB acquires vaccines from PANAFTOSA for strategic and tactical vaccinations. Almost all the vaccine utilized is freely imported from Brazil and Uruguay, trivalent O, A and C, and is mostly oil adjuvanted.

Educational and extension activities are conducted by different livestock-raiser groups, forming three anti-FMD committees in Cochabamba, Santa Cruz and Beni, where the vaccination campaigns are coordinated. Likewise, SENARB maintains three coordination and technical assistance agreements with Cordecruz, the British Mission and LIDIVET, involved in training and qualifying livestock raisers and farm workers in the department of Cochabamba.

At the level of national coordination, the service coordinates with MACA and representatives of international entities and neighboring countries. A highlight of this year was the meeting to create a FMD-free area under the coordination of the PANAFTOSA/PAHO and assistance of other international agencies. That meeting took place in the Eastern Livestock and Agriculture

Chamber in Santa Cruz, and later another was held in Trinidad (Beni) for drafting an FMD at the national level.

Two border agreement meetings were held with Peru and Brazil.

BRAZIL

The country's land mass covers over 8,508,832 km^2. The animal population is broken down as follows: 143.9 million cattle, 20.4 million sheep, 33.0 million pigs, 11.7 million goats, 1.28 million buffalo and 6 million equines.

Program coverage rose to 4,583,812 km^2, up 17.21% over the 1991 total of 3,190,709 km^2. Likewise, there are 1,673,152 herds within the area under program, with a population of 121,199,564 head of cattle.

The FMD program is conducted by the Ministry of Agriculture, Supply and the Agrarian Reform (MAARA), through the Secretariat of Agriculture and Livestock Defense, their services in each state, and the state Secretariats of Agriculture.

The program's resources encompass 1705 local operational units, 2.066 professional staff, 5.992 technical assistants and 1.682 administrative assistants, all of whom depend on a fleet of 1.647 cars and 38 motorcycles.

Systematic vaccinations in 1992 covered 84,059,494 cattle and produced 181,393,550 vaccine doses, of which 90.9% were approved in the official quality controls.

Beginning in January 1992, the use of FMD vaccines in Brazil is limited to those that provide inmunity for no less than 6 months.

The animal-health defense activities developed in Brazil received funding from the federal government totalling US$ 7,665.189.90. US$ 2,665,746 are allocated to the regional level's various states and territories of the nation and the private sector provided US$ 74,651,307 in vaccine acquisition.

Seminars and courses recorded the participation of 823 veterinarians and assistants and 2758 livestock raisers and community vaccinators; the major programs included "Updating of FMD Field Activities", "Seminar on Animal Health Sanitary Education and Communication" and "Sanitary Extension and Education".

The following were the major accomplishments in sanitary education efforts: creation of six Animal Health Municipal Councils; 140,908 technical consultations rendered to livestock raisers; communicaton of 10,961 messages through the tv-radio-newspaper network; 122 talks for 52,063 producers and rural assistants; and distribution of 250,970 brochures and informative folders.

The Consulting Council for the Animal-Diseases Control Project was also created, made up of representatives of the Producers Associations,

Agribusinesses, MAARA and PANAFTOSA. It has already approved the foot-and-mouth disease eradication policies, basing its activities on the livestock circuits and the participation of the community in the planning, execution, financing and evaluation of the Program.

The General Coordination of Animal Health maintained on-going relationships with international agencies in the animal sanitary defense area (IICA-OIE, FAO, PAHO/PANAFTOSA) as well as with the bordering countries, national research institutes, Veterinary Medicine Schools and state agencies engaged in animal sanitary programs. The respective meetings for the Border Sanitary Agreements with Bolivia and Venezuela were held.

CHILE

The FMD-control program covers the entire country and its 757,720 km^2 containing 189,044 cattle herds totalling 3,336,200 head, plus 4,887,230 sheep, 1,134,516 goats, 1,071,950 pigs and 125,920 camelidae.

The major animal-health agency in Chile is the Division of Livestock Protection of the Agricultural and Livestock Service (SAG); it has the necessary infrastructure, but a high percentage of its personnel is not dedicated exclusively to the program but shares time on activities of the division's other projects. The FMD program is conducted in the 13 regions into which the country is subdivided. In the 54 local operational units, there are 95 personnel, of whom 38 are professionals, 41 are technical assistants and 16 are administrative assistants. These numbers include 26 veterinarians and 36 agricultural technicians contracted additionally for activities in the summer grazing areas. The automotive fleet totals 18 vehicles.

Periodically, the personnel take retraining and are advised and supervised by the regional and central levels for the work at the 44 international checkpoints (18 at seaports, 9 at airports, 17 at border entry points). The main risk areas of introduction of FMD in Chile are the summer grazing lands, totalling 3,760,029 hectares, are located between the IV and IX regions. The country maintains a strip of land of 1,591,050 hectares (30% more than in 1991), beginning in the V region, with no livestock population. During the summer, 46 veterinarian doctors and 80 agricultural technicians are engaged in the control of 325,426 susceptible animals belonging to 5256 proprietors. They control the animals moving up to and coming down from the authorized summer grazing lands, and perform periodic inspections every 21 days on the medium and high-risk areas and twice during the summer on the low-risk fields. They also conduct the surveillance at slaughterhouses and animal shows.

The total budget for the project in 1992 totalled US$ 757,500 (some 36% more than in 1991), of which 97% (US$ 737,500) came from the public sector and 3% (US$ 20,000 was provided by the private sector. A substantial part (23.5%) of the allocation of public funds corresponds to the indemnization paid to owners of summer grazing lands for the non-use of their properties (US$ 137,900) and the hiring of temporary personnel to control the summer grazing lands.

No foot-and-mouth disease vaccines are produced in Chile; for emergencies the agreement with PANAFTOSA continues in force and maintains a permanent stock of Arg-79 and Arg-81 virus antigen for the preparation of 50,000 doses. Regarding the internal transit of animals, since the country was declared free of FMD (January 1981), the transit restrictions have been lifted and record is kept only of livestock movements to and from slaughterhouses and auctions/shows.

Concerning international trade, Chile imported the following live animals: 3429 sheep from Argentina, 128 pigs from the USA and Canada, and 52 equines from Argentina, USA and Uruguay. Also imported were 64.493 doses of bovine, 17.788 of pig and 100 doses of sheep semen, by order of importance from the USA, Canada and New Zealand. Lastly, imports also included 22,700 mt of meat, mainly from Uruguay and Paraguay, and 22,402 mt of dairy products among others from the USA, New Zealand, UK, Holland, Israel, Germany, Yugoslavia and Poland.

Exports in 1992 totalled the following: 17,631 animals, including 16,040 sheep and 476 cattle for slaughter to Argentina; 1523 doses of semen to Bolivia; 4406.8 mt of meat including the largest shipments of 2992 and 740 mt of pork to Argentina and Uruguay, respectively, and 450 mt of mutton to Peru. Milk exports amounted to 528 mt, mainly to Argentina and Peru.

In educational activities, seven professionals received epidemiology training in the University of Chile and six attended various courses at PANAFTOSA and APHIS/USA.

Sanitary education activities maintained their emphasis on the Chilean police (carabineros), livestock raisers in the pre-cordillera sectors and students at the rural schools in the VII Region; in the first case instructional material was prepared. With the laws updated about grazing lands in unpopulated strips, for the second group talks and discussions were held about requiriments for moving animals to authorized pastures and about the service's surveillance system; the program covered 46 schools with 3006 students and 147 teachers. At the international checkpoints substantial attention was dedicated to making the public aware of the prohibitions on the entry of animal products.

The national coordination level maintained permanent contact with the university ministries, cities, customs authorities, and other institutions. Internationally, coordination proceeded with PANAFTOSA/PAHO, FAO, OIE, IICA and EEC for the prevention of foot-and-mouth disease, while permanent contact was maintained with PANAFTOSA and with the animal-health services in and outside the region.

PANAFTOSA analyzed 334 samples of sera from camelidae set for export to New Zealand.

Chile's participation within the framework of the Agricultural Consulting Council of the Southern Region (CONASUR) was evident at meetings of the Regional Animal-Health Commission (CORESA), held to discuss the harmonization of criteria and standards for the international trade in animals

and animal products and by-products. With regard to border agreements, only one meeting was held between Argentina and the V Regional Commission.

COLOMBIA

According to the National Agricultural and Livestock Survey of the Ministry of Agriculture (1990), Colombia has a land surface of 1,141,748 km^2 holding 726,609 cattle herds, 22.3 million head of cattle, 1.5 million sheep, 2.2 million pigs, 2.4 million equines and 1.2 million goats.

The campaign against foot-and-mouth disease in Colombia covers 74% of the entire country and 99% of the bovine population, developing differential strategies according to the evolution and epidemiological behavior of the disease in the areas dedicated to breeding, fattening or mixed production, in accordance with the guidelines set by the Hemispheric Plan for FMD Eradication.

The control service operates 140 local units, two central units and two laboratory units. Of the 877 employees, 182 are professionals (20.75%), 404 (46%) are technical assistants and 291 (33.25%) are administrative personnel.

The transportation pool operates 428 vehicles, of which 264 are assigned to the ICA-USDA cooperative program. The remaining 168 are at the disposal of the program personnel.

The budget assigned to the program for 1992 totalled US$ 12,636,638; the public sector accounted for US$ 4,046,640 of which US$ 3,861,402 was allocated to the regional level. The private sector contributed US$ 8,589,998 in vaccine purchases and vaccination costs ($7,426,042 and 1,163,956, respectively).

Available vaccination records show that 13,501,984 doses of oil-adjuvanted bivalent A-O vaccine were administered, in two cycles, representing 1/3 of the cattle population. In the area of the Colombia-Brazil Agreement, 4195 trivalent A-O-C doses were given. Controls of FMD vaccine continued utilizing the footpad generalization test in cattle, as well as sterility, innocuity and physicochemical tests.

In conjunction with the civil and military authorities, the Colombian Agricultural and Livestock Institute (ICA) exercises throughout the nation a strict control of the intra- and inter-regional mobilization of cattle bound for ranches, auctions, shows, and slaughter or packing houses. The Institute requires a record filled out at the originating ranch or farm, the applicable vaccination against FMD and the transit permit.

In 1992 Colombia recorded the following imports: 578 head of cattle from Canada, USA and Ecuador; 414,226 doses of semen from Switzerland, Canada, Venezuela, Brazil, USA and France; 138,000 BB chicks from Ecuador and the USA; 4890 mt frozen chicks from Ecuador, Venezuela and the USA; and 3641 mt of milk from countries in the Americas and Europe.

Exports for the year highlighted 50,792 cattle to Venezuela, 249,000 chicks to Ecuador and Venezuela, and 6719 mt of beef to Peru, Curaçao, Aruba and Venezuela.

Funds provided by the PAHO were used in 1992 to train five veterinary doctors in the following areas: diagnosis of exotic diseases (Spain), program administration (Brazil) diagnosis of bovine tuberculosis (Argentina) and diagnosis of equine encephalitis (Atlanta, USA).

In line with the border agreements with Venezuela, Brazil and Ecuador, joint activities were developed to prevent and control FMD and other diseases of regional economic importance.

Action related to the international meat market was also coordinated with the countries in the Andean Pact and the European Common Market.

The permanent exchange of information continued with the IICA, OIE, PANAFTOSA and the border countries.

ECUADOR

The country's land surface totals 274,168 km^2. The agricultural census conducted in 1974 indicates the existence of 251,445 bovine herds with 4.58 million head. According to the 1989 National Agricultural and Livestock Statistical System, there are 1.33 million sheep, 2.63 million pigs, 298,000 goats and 492,000 equines.

The National Animal Health Program sponsored by the Ministry of Agriculture and Livestock is the agency responsible for conducting and carrying out the sanitary policies which include foot-and-mouth disease prevention, control and eradication. The program extends over the country's entire 274,168 km^2 and operates through 64 country-wide units, 325 personnel and 36 vehicles. The personnel include 85 professionals (26.1%), 196 technical assistants (60.3%) and 44 administrative assistants (13.6%).

Financial resources in 1992 were as follows: US$ 243,259 for operational expenses in the central government, US$ 625,522 in the regional government. US$ 190,000 were from the private sector for vaccine purchases, and $ 45,000 for vaccinating costs.

The program had available 1,051,059 doses of A-O FMD vaccine, of which 1,020,000 doses were imported from Brazil and Colombia and 31,059 doses were produced in Ecuador. The latter were saponin-hydroxide vaccines and the imported vaccine was oil-adjuvanted.

The national laboratories conduct internal controls by means of physico-chemical and biological indirect testing.

In 1992 the Program applied 653,950 doses of oil-adjuvanted FMD vaccine; of which 457,549 doses were annual and 196,401 doses were applied every six months. Additionally, 31,059 doses of saponin-hydroxide produced in Ecuador were administered.

The vaccination strategy fundamentally involved perifocal vaccination in the areas affected by FMD and supplying vaccine to ranches or producers who maintain a regular schedule of vaccination. Both the Animal Health Program and the owners conduct the vaccinations (30% and 70%, respectively).

The control of animals in transit placed importance on the regions of Sierra and Amazonia. The program requires that the livestock owner present a certificate of FMD vaccination in order to obtain the permit for animal transit.

Imports in 1992 amounted to: 52 cattle from the USA, 53 from Mexico, and 54,177 bovine semen doses from the USA, Costa Rica, Canada and Spain. Exports registered 200 head of cattle bound to Colombia.

The Service's activities were promoted and publicized through the printing and distribution of 1600 booklets, 1500 folders, 1500 flyers and 1500 posters.

With the auspices of the Pan-American Sanitary Bureau, a workshop was held on "The information system as a unit of epidemiological surveillance". 40 veterinary doctors attended. One professional was also trained in medical records, under the auspices of the OIE and the Argentine Animal Health Service, and a person was sent to the PANAFTOSA Center for training in the development of Animal Health Programs.

A highlight was the preparation of the "MODEL OF LOCAL VETERINARY ASSISTANCE" with the participation of Livestock Producers Associations, a benchmark document for programs of cooperation and technical assistance.

The XXIII General Meeting of the Colombia-Ecuador-PAHO Agreement was held in Cali, Colombia. Analysis centered on the degree of compliance of the resolutions of the previous meeting and the compatibilization of animal health standards for the exchange of animals and animal products.

The Ecuador-Peru-PAHO Health Agreement held its regular annual meeting in Sullana, Peru, to evaluate the sanitary control of livestock commercialization in the border area of both countries.

Joint activities with the IICA were conducted to prepare a draft of the "Modernization of the agriculture and livestock health services in Ecuador" and to draft the animal health regulations for the province of Galápagos.

GUYANA

With a surface of 214,969 km^2 the Republic of Guyana hosts 230,000 head of cattle, 3000 equidae, 130,000 sheep, 77,000 goats and 80,000 pigs, according to the 1991 edition of the FAO Production Yearbook.

The public services engage 20 veterinary doctors and 4 acting veterinarians in diagnosis or training institutions, as well as animal health technical assistants.

Guyana has been a member of COSALFA since 1979 and has maintained its status as a FMD-free country. Joint action with Brazil is presently being developed in the area encompassing the Rupununi Savannan and the Territory of Roraima. Guyana also maintains Animal Health Border Agreements with Brazil and Venezuela.

PARAGUAY

The institution responsible for the FMD-Control Program in Paraguay is the National Animal Health Service (SENACSA) of the Ministry of Agriculture and Livestock Raising. The country has a land surface of 406,752 km^2 and hosts 229,478 bovine herds, an animal population of 7.88 million cattle, 365,000 sheep, 1.03 million pigs, 114,000 goats and 327,000 equines.

The animal health activities are performed through 47 regional offices distributed in 17 sanitary zones, 588 personnel (83 more than in 1991), including those in the Central Office and the Laboratory. 133 (22.6%) are professionals, 220 (37%) are technical assistants and 235 (40%) are administrative assistants. The vehicle pool totals 84, of which 48 (61.5%) are pickups and 36 (38.5%) are motorcycles.

The financial resources available through the public sector totalled US$ 3,431,559 (on a par with the 1991 figures), of which US$ 2,886,349 (84%) was for operating expenses and US$ 545,210 (16%) for capital expenditures.

In January, the National Eradication Program was launched. From 1992 on, all vaccinations use only oil-adjuvanted vaccine according to the scheme recommended by PANAFTOSA for animals under and over two years of age. At this time its eastern part joined the Plata River Basin Agreement.

Vaccination coverage reached 77% of its 5.39 million cattle population in the eastern region and 53.5% of the 2.49 million cattle in the western region. Vaccination control inspection was conducted on 3% of the herds having more than 100 head and on 59% of the herds under 100 head. The trivalent O-A-C oil-adjuvanted vaccine is produced by two private laboratories that put out 14 series totalling 9.99 million doses; 100% was approved by official controls. 50,000 doses were exported in 1992. SENACSA operates 16 animal mobilization control checkpoints strategically located on cattle transit routes and also performs "mobile" control programs.

With respect to international trade in animals, products and genetic material, 1832 cattle were imported in 1992, 712 from Argentina, 22 from Brazil and 1098 from Uruguay; 204 horses were imported, being 14 from Argentina, 4 from the USA, 22 from Brazil and 164 from Uruguay; 51,603 doses of semen were brought from Germany (14,900), Argentina (1200), Canada (4550), Italy (3600), and the USA (27,053); and 10 embryos from Belgium.

Exports in 1992 tallied the following figures: 806 cattle to Argentina (140), Brazil (320) and Bolivia (346); 42 equines to Argentina (24), Bolivia (8), Brazil (5), and Uruguay (5); and 16,091.7 mt of meat, mainly to Germany, Brazil, Chile, Israel, Holland and Peru.

Seven veterinarians from the Service attended training activities abroad. Within the Technical Cooperation Agreement for the Control and Eradication of FMD in the Plata Basin 25 technicians received various training experience in field and laboratory situations. With the support of international entities, SENACSA held five seminars attended by 173 veterinarians.

In the activity of sanitary education, 257 meetings were held and attended by some 10,000 persons - livestock raisers, veterinarians and others engaged in the livestock-raising sector. SENACSA also spent some US$ 20,000 on a Sanitary Education Publicity Plan during the vaccination periods.

Coordination efforts on the national level involved the Agricultural-Livestock-Raising Extension Service and the Under Secretariat of Livestock Production, and on the international level, with the PAHO through its reference centers, PANAFTOSA and INPPAZ, and through the Plata Basin Agreement with Argentina, Brazil and Uruguay, the IICA, OIE, GTZ and others.

PERU

Peru's 1,285,215 km^2 of surface, according to the agricultural and livestock statistical office of the Ministry of Agriculture (1990), is home to 463,182 bovine herds totalling 4.04 million heads, plus 12.22 million sheep, 2. million pigs, 1.72 million goats, 3.73 million camelidae and 1.32 million equidae.

The Animal Health Service in 1992 was involved in a restructuring program that included the entire Ministry of Agriculture and Fisheries. Likewise, a diagnosis of the institutional situation was conducted for the implementation of an IDB credit assigned to strengthen the sanitary programs and the infrastructure of diagnosis and animal quarantine.

With PANAFTOSA cooperation a project was drafted to declare the southern region of Peru free of foot-and-mouth disease.

Production of oil-adjuvanted FMD vaccine totalled 500,000 doses of trivalent A-O-C and 272,512 doses were imported from Brazil and Uruguay. Strategical and tactical vaccination administered to 571,000 bovines and 35.000 swine by official personnel, cattlemen's associations (Fongales) and veterinary posts.

The program covers the entire nation and functions in the field with 163 local operating units, 75 professionals, 252 technical assistants and 21 administrative assistants. The transportation pool comprises 60 4-wheel vehicles and 228 motorcycles.

Total financial resources contemplated by the central government were equivalent to US$ 393,259, of which $ 114,202 were earmarked for operating costs and 279,057 for capital expenditures.

Exports in 1992 recorded 1000 alpacas shipped to Ecuador and 121 equines shipped to Ecuador, Argentina, Honduras, Panama and the USA. Imports included

beef from Germany (3774 mt), Brazil (171 mt), Canada (6 mt), New Zealand (128 mt), Uruguay (349 mt) and USA (52 mt). Powdered milk was imported mainly from Germany (1.600 mt), Belgium (2.109 mt), Ireland (2.067 mt), USA (1.200 mt), France (1.125 mt) and New Zealand (9.454 mt).

The respective annual meetings were held in accordance with the Border Sanitary Agreements with Ecuador, Bolivia and Chile.

The Service participated in the Seminar on Program Evaluation held in September in Buenos Aires, Argentina, under the sponsorship of the FAO and PAHO/WHO. A veterinarian also attended a two-month course in Program Administration that started in October at the PANAFTOSA.

URUGUAY

Through the Animal Health Office, the General Office of Veterinary Services (DGSV) of the Ministry of Livestock, Agriculture and Fisheries (MGAP) is the institution responsible for foot-and-mouth disease eradication in the 156,657 km^2 country. The animal population totals 47,378 cattle herds with 8.5 million head, plus 23.7 sheep, 230,000 pigs and 437,000 equidae.

The DGSV operates 44 operational units; a central unit, a laboratory, and 42 local units in three distinct regions. Human resources amount to 467 persons, of whom 85 are professional staff (18%), 276 are technical assistants (59%) and 106 are administrative assistants (23%). The available vehicles comprise a pool of 243, of which 110 are 4-wheel vehicles and 113 are motorcycles. Funds from the MGAP/IADB Animal Health Project provided funds in 1992 for the purchase of 32 pickups and 60 motorcycles.

Public sector funds amounted in 1992 to 1.5 million dollars assigned the central government for operating costs of the program and 450 thousand dollars for capital expenses. Private sector funds amounted to US$ 8 million for vaccine purchases. Currently, the fund for indemnization due to foot-and-mouth disease and exotic diseases, created by law 16.082, totals approximately US$ 2.5 million.

Within the framework of the activities of massive vaccination of cattle, the program attained a direct inspection of 78% of the bovine population in the February to March period when the entire population is vaccinated, and 61% in May-June when animals under two years old are revaccinated.

The program continued to apply the "risk ranches" strategy in 1992. Such ranches are given a differential control by the veterinary services and also the participation of the producers and private veterinarians, through the National Animal Health Honorary Commission (CONAHSA) and the Departmental Commissions (CODESAS) set up in 18 of the country's rural departments.

The only vaccine authorized for use in Uruguay is the oil-adjuvanted vaccine which confers protection for a year in revaccinated animals. Vaccine availability reached 19,272,920 doses of oil-adjuvanted vaccine and 228,440 doses of saponin-hydroxide vaccine. 532,790 doses of oil-adjuvanted vaccine and 307,400 doses of saponin-hydroxide vaccines were exported. The potency

test utilized in the control of vaccines was the PGP (footpad generalization test) until March 1992, when it was discontinued for biosafety reasons.

The seroprotection and seroneutralization tests, and sometimes the C index in guinea pigs, are used. A decree issued in September 1992 allowed the official laboratory to send series of vaccine produced in the country to the PANAFTOSA - the reference laboratory for the Americas - or to official laboratories in the countries that are members of the Plata River Basin Agreement, for testing against virus discharge.

With funds from the PAHO/MGAP Technical Cooperation Agreement of the Animal Health Project financed by the IDB, the DGSV contracted Dr. Jerry Callis to conduct the feasibility study on the building of a high-security laboratory and on other aspects related to the biological safety of the vaccine production and control plants.

From the results of the third seroepidemiological sampling it can be primarily concluded that negativity in sheep sera indicates the absence of viral activity for this third study, whereas the seropositivity found in cattle over two years of age (3.8%), although very low, could indicate the effect produced by repeated vaccinations when the IDGA (VIA) test yields false positive reactions. Therefore, they will be tested by the EITB test, recently developed at the PANAFTOSA.

With respect to international trade in 1992, Uruguay reported the following imports: 5590 live animals, mainly from Argentina (3907 cattle and 365 horses) and from Brazil (676 cattle); 118,237 doses of bovine, sheep and pig semen from the USA, Argentina, Canada, Australia and New Zealand; 214 embryos from Canada. The country imported 1.402 mt of beef from Argentina and Paraguay, and 11,144 mt of pork from Brazil (10.165), Chile (288), Uruguay (321), Italy (288) and Sweden (79). Exports on the hoof totalled 213,152 head (98% more than in 1991), of which the largest shipments included the 101,300 sheep to Saudia Arabia, 94,123 cattle and 7246 equines to Argentina, and 7335 cattle to Brazil. Meat exports included 247,309 mt (48% higher than in 1991) to Argentina, Brazil, Chile, USA and other European and Asiatic countries, 216,692 mt of which were beef; and 61,414 mt of dairy products (38% more than in 1991), the largest amounts going to Argentina (49,058 mt), Brazil (6731 mt) and Mexico (2896 mt).

For technical training, some 50 Uruguayan professionals participated in the activities planned for the 1992 Plata River Basin program: through the PAHO/MGAP Project 840 Animal Health Technical Cooperation agreement, financed by the IDB, 34 veterinarians received grants to different countries. They were sent to Mexico, Brazil, Spain, Colombia and the USA for training in sanitary education, quarantines, long-distance education and seroepidemiological techniques. Six consultants were also contracted under the terms of the same project.

Major highlights in the area of coordination were the good results achieved regionally through the Plata River Basin agreement, and through interaction with PANAFTOSA and the OIE. Uruguay also participated in the activities of the Animal Health Regional Committee (CORESA).

VENEZUELA

On its 912,050 km^2 of land surface, Venezuela hosts 106,535 livestock establishments with 10.8 million cattle, 364,000 sheep, 2.6 million pigs, 1.3 million goats and 572,000 equines.

The Animal Health Directorate, dependent on the Agriculture and Livestock Health Autonomous Service of the Ministry of Agriculture and Livestock Raising (MAC), is the agency responsible for executing the policies governing animal health and foot-and-mouth disease control throughout the nation.

Given the economic opening of the country's agricultural sector, which needs an agricultural and livestock health service capable of responding efficaciously and efficiently to the new national reality by modernizing and incorporating the plant and animal health services, the efforts to upgrade food production have encouraged the adoption of organizational structures permitting greater independence for the administrative process, improved physical infrastructure, larger budgets, and the generation of service-related revenue.

The Animal Health Service engages 400 employees, of whom 188 are professionals (47%) and 177 of them are assigned to the operational level (94%); amongst the other staff, 56 are technical assistants (14%) and 156 are administrative personnel (39%). Except for the personnel assigned to the central plant (6%), the rest are spread throughout the 152 local operating units distributed among the State Units of Agri-Livestock Development.

The Directorate operates a car pool of 314 vehicles, all of which are assigned to field services. There have been no significant changes in the makeup or quantity of vehicles or human resources since last year.

The budget allocated by the central government for the animal health services was equivalent to US$ 409,375 for operating expenses, down some 24% since 1991. The private sector provided US$ 3,402,957 through vaccine purchases and US$ 680,591 for vaccinating costs.

Production of A-O bivalent oil-adjuvanted foot-and-mouth disease vaccine in 1992 totalled 5,629,700 doses. 3,183,700 doses were imported from Brazil and Colombia and the vaccine had an estimated market price of US$ 0.40/dose. 4,861,367 bovines were administered FMD vaccineon a six-month revaccination basis.

With respect to international trade, Venezuela reports the importing in 1992 of 37,093 cattle and 5139 mt of meat from Colombia and 31,969 mt of milk from England, Holland, New Zealand, Denmark and Ireland. Exports were mainly directed to Aruba, Curaçao and Colombia, and were of lesser significance.

In conjunction with the Veterinary Research Institute (IIV), the animal health service held meetings and talks in various regions of the country to encourage people to notify the proper authorities of disease occurrence and to properly collect and forward samples for laboratory diagnosis. These efforts

reflect the considerable undernotification of vesicular disease occurrence in the field and production units and the observation that even when occurrence is notified, the long delays in notification adversely affect the timeliness of the prevention and control actions. Moreover, the availability of more and better field samples enables the services to better characterize the virus strains active in the field in the country's various regions.

Proceeding with the project to redesign the Epidemiological Surveillance System, which the country has been working on for the past five years, the software was upgraded for the computer program that records the populational census, the occurrence of diseases and the activities that are conducted for their control and/or eradication. The program is utilized in conjunction with the state epidemiology units and initially tested in the state of Zulia as a pilot area.

The occurrence of vesicular stomatitis, historically concentrated in the central states (Aragua, Carabobo, Guárico) and western states (Zulia, Mérida, Tachira and Lara) has been the subject of an epidemiological and field followup study on the behavior of a vaccine. This study has been aided by the participation of producers, concretely the Association of Producers of High-Altitude Livestock in Mérida. Also, the IIV has been developing a protocol for the control of vesicular stomatitis vaccine, after having received a request to register this type of biological product. This matter is discussed with representatives of PANAFTOSA and taken up with the Service of the Colombian Agricultural and Livestock Institute to determine the feasibility of undertaking joint action, including action related to the disease's pathogeny and epidemiology.

With PANAFTOSA coordination, a seminar was held on the use of the ELISA technique in the diagnosis of vesicular diseases.

An agreement involving the Federation of Lake Maracaibo Basin Livestock Producers and the Agriculture and Livestock Health Autonomous Service has been made to set the standards for the producers' participation in the sanitary programs and the control of cattle mobilization. An Agriculture and Livestock Health Committee was also set up for the state of Zulia, composed of representatives of the Ministry of Health and Social Assistance, Armed Forces of Cooperation, College of Veterinary Doctors, MAC and Agricultural Producers.

The annual meetings of the Colombia and Brazil-Guyana Border Agreements were held.

The Venezuela-Colombia Border Agreement organized a seminar to compatibilize the sanitary strategies for the border area and review requirements for the importation and exportation of animals, animal products and by-products, and materials and inputs for livestock production. Steps were also taken to compatibilize the standards of registering and controlling livestock-production inputs. The mechanisms governing the control of animal transit between the two countries were also assessed and revises.

The procedures of national and international animal-health coordination are an important part of the Directorate's activities. On the national level,

these activities are carried out in conjunction with the Ministries of Finance, Interior, Health and Social Assistance, Defense, and Environment and Natural Resources, Centers of Higher Education and Agricultural and Livestock Research. On the international level, with the PAHO/WHO and their specialized centers (PANAFTOSA, INPPAZ), IICA, FAO AND OIE. Of special importance are the Technical Cooperation Agreements with the PAHO and IICA, with funding from the central government for the development of work plans prepared by the respective parties.

3. CONTINENTAL VESICULAR-DISEASES INFORMATION AND SURVEILLANCE SYSTEM: RESULTS AND PERFORMANCE

3.1 Introduction

As in previous years, the behavior of vesicular diseases in the South American countries was continuously monitored through a set of indicators that enable observers to interpret and characterize the occurrence levels and behavior of prevalent virus types. The monitoring is based on the historical series of vesicular disease occurrences stored in PANAFTOSA data base, which makes it possible to interpret the significance of the weekly occurrences in terms of grid squares affected and the frequency of affected herds, with totals and by types of virus, according to the political and administrative divisions of each country.

On the other hand, Table 5 indicates for each country of South America the months in which the recorded frequency of herds affected by some type of virus clearly exceeded the expected frequencies. These are situations that may be considered as epidemiologically significant or openly epidemic.

3.2 Performance in South America

This chapter evaluates the operational performance of communications within the Continental Epidemiological Information System, especially with respect to regular flows of information between the national animal-health services in South America and PANAFTOSA.

3.2.1 Alert Warnings

During 1992, 125 warnings were telexed to various countries in the area, warning them of the appearance of vesicular diseases in border areas of neighboring countries and also of the appearance of the disease in areas previously unaffected. The warnings were sent to: Argentina (25); Bolivia (16); Brazil (11); Colombia (13); Ecuador (16); Paraguay (14); Peru (5); Uruguay (4) and Venezuela (21).

3.2.2 Weekly communications on the presence of vesicular diseases, by grid squares

The epidemiological surveillance and information system of the national programs in the South American countries is based on a grid map determined

from geographical coordinates. The squares on this map serve as a basis for weekly telexed reports on the presence of vesicular diseases (regardless of the number of episodes). A numerical code is used to indicate and locate both the grid squares affected, where clinical cases of the diseases have been observed, and the week involved.

The faxed or telexed communiqués from the countries serve as data input for Center's computerized epidemiological file. PANAFTOSA then issues the Weekly Epidemiological Report that provides the countries on the continent with timely information enabling them to increase epidemiological surveillance in the area. The report is also distributed to countries and international agencies in the Americas and elsewhere.

a) Reception level

During 1992 the South American countries sent to PANAFTOSA 99.6% of the required weekly information reports (percentage comparable to previous years): 1991 (99.8%), 1990 (100%), 1989 (99%), 1988 (98%), 1987 (98.8%), 1986 (98.7%), 1985 (99.8%), 1984 (98%), 1983 (99.6%), 1982 (97%), 1981 (96%) and 1980 (99%). However, as pointed out in preceding years, it should be remembered that an undesirable situation has been noted in some countries of the region: the information is not being systematically transmitted but rather several weekly reports are delayed and then compiled into a single/communiqué. This generates an adverse repercussion on the timeliness of the reporting system and the subsequent late publication of the data. Moreover, the information's usefulness as a tool that permits fast and timely decision-making is thus also adversely affected.

b) Publishing level

PANAFTOSA published 100% of the weekly epidemiological information in its Weekly Epidemiological Reports. On the other hand, PANAFTOSA has tried to publish all reports received, except for those with excessive delays. This has favoured the publication of the information.

c) Timeliness of the weekly information communiqués

In 1992, the median of the time (expressed in days) elapsed for receipt of weekly communications on the presence or absence of vesicular disease episodes by PANAFTOSA were extremely high for Argentina, Peru and Venezuela; high for Bolivia, Brazil and Ecuador and stable for the remaining countries (Table 42). Also, Bolivia registered the maximal (138 days) and minimal (0 days) delays between the reports and their receipt by PANAFTOSA.

In general, there was an average delay of 14 days between the close of the epidemiological week and the publishing of the respective data. This delay is incompatible with the handling of epidemiological information in a quick, simple and periodical fashion, as required for monitoring and surveillance of the behavior of an acute disease that spreads easily. This limitation becomes even more critical when one takes into account the additional time delay before the countries actually receive the Epidemiological Report issued by PANAFTOSA.

3.2.3 Monthly information on vesicular disease episodes and their laboratory diagnosis

This information, complementary to the weekly information, refers to the number of herds affected according to each country's political and administrative divisions, and to the episodes in which specimens were taken for laboratory diagnosis.

a) Reception and publishing levels

In 1992 the countries sent to PANAFTOSA only 80.5% of the required monthly reports, a percentage only slightly better than in 1991. The difference to complete 100% was due to the fact that Peru did not send in any reports, Bolivia failed to send in 7, and Argentina missed one. On the other hand, just as in 1991, the Center published 100% of the reports received.

It is important to bear in mind that PANAFTOSA published, as additional information, the late reports received from the countries even after the publishing of the respective Monthly Epidemiological Report on Vesicular Diseases.

Brazil, Colombia, Ecuador, Paraguay and Venezuela published 12 of 12; Argentina and Uruguay, 11 of 12, and Bolivia, 2 of 12. Those countries which did not reach 100% compliance must put forth efforts to improve this situation.

Undoubtedly, the delays of up to 191 days in receiving the monthly information from the countries has caused a greater delay in the issuance of the respective Epidemiological Report, threatening its usefulness.

Therefore, it must be emphasized that such delays oblige the Center to postpone or delay the publication of the Monthly Report on Vesicular Diseases in order to be able to include information from a larger number of countries.

b) Monthly Report Delays

In 1992 the sending of the monthly epidemiological report from each country to PANAFTOSA showed no substantial changes, and some countries continue exhibiting the same flaws pointed out in the evaluations in previous years. Bolivia, for example, had longer delays in sending the monthly report to PANAFTOSA, and Peru did not send in any report at all during the year.

The countries continue to fail to provide the necessary epidemiological comments required for interpretation of the data, and to locate the virus types on the grid maps, when they forward the monthly reports. These remarks should be analyzed by the countries in order to improve the reporting system in the future.

3.2.4 Surveillance Activities: Laboratory confirmation

In South America in 1992, specimens for laboratory diagnosis were collected from 52% of herds with animals showing clinical signs of vesicular

disease. Argentina, Colombia, Paraguay and Peru were above average in this endeavor. Generally, the collecting of specimens declined in relation to 1991, due to Brazil, Bolivia, Ecuador and Venezuela.

Virus types were identified in only 36% of the herds that exhibited clinical signs of vesicular disease. In this regard, the expected improvement was not reached. Generally, the percentages attained are low in some countries, which means less opportunity for identifying the viral agent active in the field. On the other hand, it was possible to identify the causative agent in 70% of the episodes in which samples were collected; as shown in Table 45, the percentage varied from country to country. Indices of positive diagnoses have been very low in Peru and Bolivia.

As emphasized in previous yearly reports, the countries must improve the monthly communications about the active virus subtypes, which is important epidemiological data to inform the countries belonging to the South American Commission for the Control of Foot-and-Mouth Disease (COSALFA), international agencies and other countries. This information is constantly requested by the EEC also.

3.3 Performance in Central America and Mexico

This section evaluates the operational performance of the communications of the Continental Epidemiological Information System, between the national animal-health services of the Central American countries and Mexico and PANAFTOSA, the agency responsible for coordinating the system.

3.3.1 Weekly communication on the presence of vesicular disease, by grid squares

The map of each country in this region of the American continent has been divided into a grid map based on geographical coordinates. The grid maps serve as a basis for the weekly telexed reports on vesicular disease presence (regardless of the number of episodes). As in the reporting system used in South America, a numerical code is used to indicate both the week reported and the grid squares affected.

a) Reception Level

During 1992 the countries of Central America and Mexico (excluding Belize and Honduras, which do not participate) sent in 84% of the weekly reports to PANAFTOSA, similar to preceding years.

El Salvador delayed reports starting with the 43rd week, Guatemala stopped reporting with the 44th weekly report, Mexico reported only up to the 49th week, and Nicaragua, as in previous years, was inconsistent with its reports.

The six countries that sent in weekly reports sent in an average of 43 weekly reports.

b) Publishing Level

Considering the data received by PANAFTOSA, 97.7% of epidemiological weekly reports were published considering that the Center published even the weekly information received very late.

c) Timeliness of weekly comunications

In general, the delays encountered in the weekly communication of information were exceedingly high, as in 1992 El Salvador, Guatemala and Nicaragua delayed longer in forwarding their weekly reports to PANAFTOSA. For all countries, there were reports with very long intervals before receipt by PANAFTOSA.

3.3.2 Monthly information on vesicular-disease episodes and their laboratory diagnosis

This information reports the number of herds affected, according to each country's political and administrative divisions, as well as the herds affected from which specimens were collected, according to the virus type identified. In 1992, with the exception of Mexico, the basic information for the monthly report issued by PANAFTOSA was taken from the monthly reports of the Vesicular Diseases Diagnostic Laboratory (LADIVES) located in Panama. Those reports were received at PANAFTOSA from 13 to 50 days after the end of the month to which the data pertain; the average delay was 20 days. The Center received 12 reports from LADIVES and 10 from Mexico: all the reports were published.

3.3.3 Surveillance activities: laboratory confirmation

The following summarizes the diagnosis conducted by LADIVES in 1992. During that year, the laboratory analyzed specimens from 270 vesicular events or episodes in which one or more samples were taken (Table 24). LADIVES was able to identify the virus types in 48% of the episodes.

Moreover, Mexico identified the agent in 50% of the vesicular episodes in which specimens were collected (Table 24).

3.4 Utilization of the Continental Information and Vesicular Disease Epidemiological Surveillance System for other diseases

During recent years the Continental System for Information and Epidemiological Surveillance of Vesicular Diseases coordinated by PANAFTOSA has enjoyed the participation of the majority of the Latin American countries. The system is based on the mechanism of weekly telexed reports based on grid maps for suspected cholera-like swine diseases and syndromes compatible with Equine Encepnalomyelitis (EE) in horses.

3.4.1 Notification system for suspected diseases clinically similar to hog cholera: PANAFTOSA/PAHO/IICA

This is a joint project between the PANAFTOSA/PAHO and the IICA, involving the collection and dissemination of information related to hog cholera. Gradually, the system and its performance have been improved, especially as the national programs become suitably developed, and it implements its information systems using the mechanisms based on the experience with vesicular diseases. The IICA publishes an annual report that contains the afore-mentioned information.

3.4.2 Notification system for syndromes compatible with Equine Encephalomyelitis (EE) in horses: INPPAZ/PANAFTOSA/PAHO

This is a joint effort between PANAFTOSA and INPPAZ. It includes the dissemination of information on equine encephalomyelitis in horses through Center's Weekly Epidemiological Report on the presence of vesicular diseases. Thus, in this fourth year of project, the countries have been including in their weekly communications to PANAFTOSA information on the grid squares where horses have been observed with neurological syndromes compatible with EE. Whereas most of the countries still have not implemented specific projects for EE control and surveillance, the amount of information published is limited. However, as the national programs develop and utilize the existing vesicular disease information mechanisms, this situation will tend to improve.

3.5 Recommendations

a) Maintain and improve the epidemiological information system, which is an asset of the continent's countries, forms a precious mechanism of support for the programs, and is one of the most important animal-health accomplishments in South America. Every possible effort must be made to keep it operating efficiently.

b) Shorten the time taken to send the weekly and monthly reports to PANAFTOSA.

c) Ensure that the information generated by the system is timely and reliable, and that communications follow standard procedures.

d) Pay closer attention to the use of the information, not only as an objective basis for the epidemiological characterization of foot-and-mouth disease and realignments of control goals and strategies, but also in the forecasting, recognition, and follow-up of epidemic situations and their solutions.

e) Include monthly information on identified virus subtypes and their location on the grid maps. This requires ongoing, permanent integration between field and laboratory.

f) During epidemic situations maintain PANAFTOSA continually informed because it is the reference agency for consultation by the countries and

international agencies. Complete information should be submitted at least weekly, indicating not only the grid squares affected, but also the number of foci and respective virus types, by grid squares. Whenever a variant appears, it should be duly indicated on the grid map. Omitting information on proven foci is a serious error that undermines the credibility and reliability of the veterinary services.

g) Encourage increased integration between the laboratory and the field- and central-level epidemiologists so that accurate information may be furnished on types and subtypes and their repercussion on foot-and-mouth disease epidemiology.

h) Utilize the epidemiological information in the operating field units. Field veterinarians will therefore be able to act with knowledge of the behavior of diseases in their region and their relationship with other areas of the country. This will enable disease prevention and control measures to be more efficatious and effective.

i) Forward field specimens regularly to PANAFTOSA for the reference laboratory.

j) Make timely use of the seroepidemiological information to detect serological and immunological variations in the active strains in the field, and implement timely and effective corrective sanitary measures.

k) With respect to the information forwarded annually for the report on "The situation of foot-and-mouth disease and its control in the countries", closer attention must be paid to the preparation of the data. Based on problems noted in the incoming information most of the countries sending information to COSALFA fail to make the necessary effort and the data preparation appears to have become a simple routine procedure. On the other hand, some improvements over the last year have been observed in the reports issued by several countries.

SOUTH AMERICA, 1992

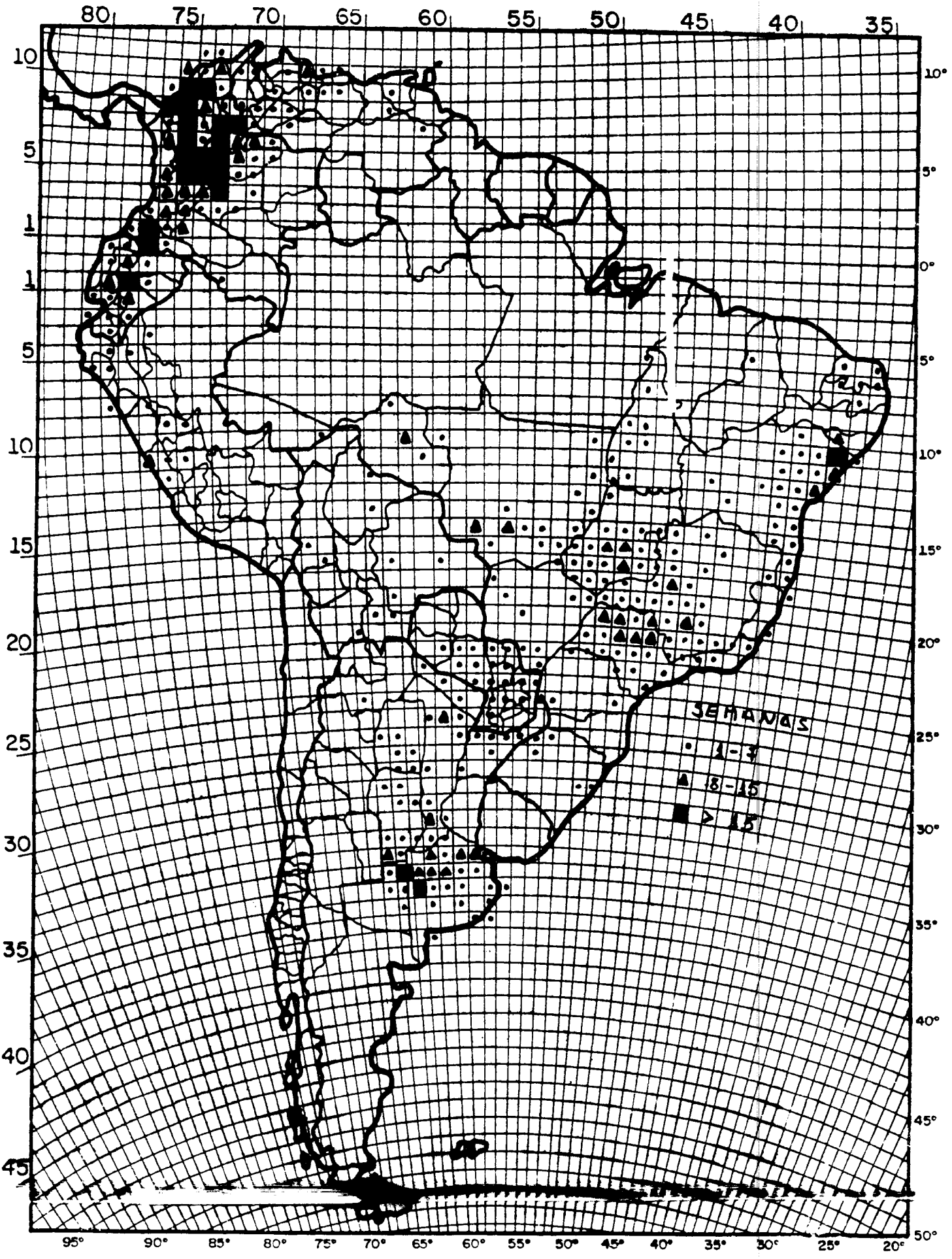

TABLE 1. Number of affected properties by vesicular disease and causal agent. South America, 1992.

Country	Affected Herds	Affected Herds Sampled	Diagnosis				
			Foot-and-Mouth			Vesicular Stomatitis	
			O	A	C	New Jersey	Indiana
Argentina	350	293	108	72	39	0	0
Bolivia /1	228	35	18	0	0	0	0
Brazil	1,224	342	158	72	6	0	0
Colombia /2	1,308	975	226	82	0	281	109
Ecuador	174	46	30	0	0	0	0
Paraguay	43	32	23	0	0	0	0
Peru	94	68	12	3	0	13	0
Uruguay	0	0	0	0	0	0	0
Venezuela /3	92	32	1	7	0	8	3
Total	3,513	1,823	576	236	45	302	112

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease - free countries.
/1 BOL - Includes 111 episodes which occurred in the area not covered by the Program.
/2 COL - Includes 8 episodes without identification of the affected species.
/3 VEN - Includes 2 episodes without identification of the affected species.

TABLE 2. Affected properties by foot-and-mouth disease based on virus type by contry and year. South America, 1986/1992.

Country	Virus Types	1986	1987	1988	1989	1990	1991	1992
Argentina	O	30	23	95	103	196	37	108
	A	11	486	35	39	115	60	72
	C	315	27	5	4	5	2	39
Bolivia	O	3	0	0	2	13 /1	2 /1	18 /1
	A	11	12	13 /1	0	4	2	0
	C	0	1	4 /2	4	0	0	0
Brazil	O	126	94	92	71	43	38	158
	A	102	161	91	72	43	18	72
	C	17	13	19	28	91	64	6
Colombia	O	167	100	268	280	83	74	226
	A	276	73	153	542	250	113	82
	C	0	0	0	0	0	0	0
Ecuador	O	6	2	2	23	29	19	30
	A	19	11	15	9	5	5	0
	C	0	0	0	0	0	0	0
Paraguay	O	4	3	2	30	2	27	23
	A	0	0	0	0	0	0	0
	C	0	0	0	0	0	0	0
Peru	O	0	0	1	0	32	2	12
	A	17	10	6	2	0	0	3
	C	0	0	0	0	0	0	0
Uruguay	O	2	2	2	17	13	0	0
	A	1	115	0	0	11	0	0
	C	28	5	6	24	1	0	0
Venezuela	O	13	20	6	9	3	6	1
	A	8	6	10	34	16	16	7
	C	0	0	0	0	0	0	0

Notes: /1 BOL - Icludes 3 episodes (88), 1 episode (90), two in 1991, and one in 1992 which ocurred in Chuquisaca Department, not covered by SENARB.
/2 BOL - Includes 1 episode in the Department of Beni, not covered by SENARB.

TABLE 3. Sub-types of the Foot-and-Mouth Disease virus identified in 1992.

Argentina	O_1	A_{24}, A_{79}, A_{81}	C_3
Bolivia	O_1	-	-
Brasil	O_1	A_{24}	C_3
Colombia	O_1	A_{24}	-
Ecuador	O_1	-	-
Paraguay	O_1	-	-
Peru	O_1	A_{24}	-
Uruguay	-	-	-
Venezuela	O_1	A_{24}	-

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 4. Strains used for production of foot-and-mouth disease vaccines. South America, 1992.

Countries	Virus Strains		
	O	A	C
Argentina	O_1 Caseros-Arg/67 O_1 Campos-Br/58	A_{79}-Arg/79 A_{81}-Arg/87	C_3 Arg/85
Brazil	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	C_3 Indaial-Br/71
Colombia	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	-
Ecuador	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	-
Paraguay	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	C_3 Resende-Br/55
Peru	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	C_3 Resende-Br/55
Uruguay	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	C_3 Resende-Br/71
Venezuela	O_1 Campos-Br/58	A_{24} Cruzeiro-Br/55	-

Source: Information sent by the countries and by the Reference Laboratory, Pan American Foot-and-Mouth Disease Center.

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.
Reference strains for South America and production and control strains: O_1 Campos-Br/58, A_{24} Cruzeiro-Br/55, C_3 Indaial-Br/71.

TABLE 5. Virus types whose monthly frequency, registered by affected herds and by vesicular disease, was markedly greater than the expected frequencies. South America, 1992

Month	Argentina	Bolivia	Brazil	Colombia	Ecuador	Paraguay	Peru	Uruguay	Venezuela
January	O	O		NJ,I	O	O	NJ		A
February	O,A	O		O,NJ,I	O	O			O
March	O,A,C			O,NJ,I		O	O		A,I
April	O,A		O	O,NJ,I			NJ		
May	O,C		O	O,A,NJ	O	O			A,NJ,I
June	O			A,NJ,I	O	O			NJ
July		O		O,A,NJ,I			O,NJ		A,NJ
August	O,A,C	O	C	O,NJ,I		O			
September	O,A	O	O,C	O,NJ,I	O	O	O,A,NJ		A
October	O	O	C	O,NJ,I	O	O	O,A,NJ		NJ
November	O,C		O	O,NJ,I	O	O	O,A		A
December	O,A	O	O	O,NJ,I	O		NJ		

Nota: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 6. Vesicular disease morbidity in cattle. South America, 1992.

Country	Herds/a		Population/a				Rates			
	Total	Affected	Total (x 1000)	In affected herds	Diseased	Deaths	Affected Herds (0/00)	Population Morbidity (0/000)	Internal Morbidity (0/0)	Lethality (0/0)
Argentina	268,513	335	54,169.0	252,628	11,534	104	1.25	2.13	4.57	0.90
Bolivia	50,021	113	2,656.7	20,485	2,623	315	2.26	9.87	12.80	12.01
Brazil	1,673,152	1,199	109.487,6	264,648	41,283	794	0.72	3.77	15.60	1.92
Colombia	723,753	1,228	22,141.9	111,578	16,197	193	1.70	7.32	14.52	1.19
Ecuador	251,445	174	4,580.0	7,913	2,480	87	0.69	5.41	31.34	3.51
Paraguay	229,478	41	7,886.0	33,754	2,609	84	0.18	3.31	7.73	3.22
Peru	463,182	74	4,041.5	1,120	241	1	0.16	0.60	21.52	0.00
Uruguay	47,378	0	9.508,0	0	0	0	0.00	-	-	-
Venezuela	106,535	75	10,831.0	9,578	870	2	0.70	0.80	9.08	0.23
Total	3,813,457	3,239	225.301,7	701,704	77,837	1,580	0.85	3.45	11.09	2.03

Notes: /a - Covered by the program.
Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 7. Vesicular disease morbidity in swine. South America, 1992.

Country	Population				Rates		
	Total (x 1000)	In affected Herds	Diseased	Deaths	Population Morbidity (0/000)	Internal Morbidity (0/0)	Lethality (0/0)
Argentina	7,374.5	11,029	2,852	554	3.87	25.86	19.42
Bolivia	2,126.5	218	20	2	0.09	9.17	10.00
Brazil	33,015.0	4,783	2,065	333	0.63	43.17	16.13
Colombia	2,187.0	16,371	1,488	164	6.80	9.09	11.02
Ecuador	2,627.6	19	12	0	0.05	63.16	0.00
Paraguay	1,003.0	521	217	19	2.16	41.65	8.76
Peru	2,415.7	...	...	...	...	...	...
Uruguay	230.0 /1	0	0	0	0.00	-	-
Venezuela	2,639.5	5,950	151	1	0.57	2.54	0.66
Total	53,618.8	38,891	6,805	1,073	1.33	17.50	15.77

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.
/1 URU - Figures obtained from the country report to COSALFA XIX.

TABLE 8. Vesicular disease morbidity in sheep. South America, 1992.

Country	Population				Rates		
	Total (x 1000)	In affected Herds	Diseased	Death	Population Morbidity (0/000)	Internal Morbidity (0/0)	Lethality (0/0)
Argentina	22,883.0	8,661	230	27	0.10	2.66	11.74
Bolivia	9,413.1	0	0	0	0.00	-	-
Brazil	20,384.8	2,216	964	79	0.47	43.50	8.20
Colombia	1,527.9	1,245	45	1	0.29	3.61	2.22
Ecuador	1,329.0	0	0	0	0.00	-	-
Paraguay	365.0	517	179	16	4.90	34.62	0.00
Peru	12,225.5	0	0	0	0.00	-	-
Uruguay	23.666,1	0	0	0	0.00	-	-
Venezuela	363.8	112	16	0	0.44	14.29	0.00
Total	92.158,2	12,751	1,434	123	0.16	11.25	8.58

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 9. Vesicular disease morbidity in goats. South America, 1992.

Country	Population				Rates		
	Total (x 1000)	In affected Herds	Diseased	Death	Population Morbidity (0/000)	Internal Morbidity (0/0)	Lethality (0/0)
Argentina	3,100.0 /1	1,323	113	0	0.36	8.54	0.00
Bolivia	1,226.7	0	0	0	0.00	-	-
Brazil	11,699.0	229	43	14	0.04	18.78	32.56
Colombia	1,237.3	452	28	0	0.23	6.19	0.00
Ecuador	298.0	0	0	0	0.00	-	-
Paraguay	114.0	659	433	43	37.98	65.71	9.93
Peru	1,721.7	0	0	0	0.00	-	-
Uruguay	12.0 /1	0	0	0	0.00	-	-
Venezuela	1,285.4	0	0	0	0.00	-	-
Total	20,694.1	2,663	617	57	0.30	23.17	9.24

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.
/1 ARG,URU - Figures from the country report to COSALFA XV.

TABLE 10. Vesicular disease morbidity in horses. South America, 1992.

Country	Population				Rates		
	Total (x 1000)	In affected herds	Diseased	Deaths	Populational Morbidity (0/000)	Internal Morbidity (0/0)	Lethality (0/0)
Argentina	3,051.0	0	0	0	0.00	-	-
Bolivia	904.1	0	0	0	0.00	-	-
Brazil	6,097.8	0	0	0	0.00	-	-
Colombia	2,365.0	4,657	188	0	0.79	4.04	0.00
Ecuador	492.0	0	0	0	0.00	-	-
Paraguay	327.0	0	0	0	0.00	-	-
Peru	1,325.0	1,170	15	0	0.11	1.28	0.00
Uruguay	437.0 /1	0	0	0	0.00	-	-
Venezuela	571.7	109	11	0	0.19	10.09	0.00
Total	15,570.6	5,936	214	0	0.14	3.61	0.00

Notes: Chile, Surinam, Guyana and Franch Guiana are vesicular disease-free countries.
/1 URU - Figure obtained from the country report to COSALFA XIX.

TABLE 11. Monthly distribution of Vesicular Disease affected properties. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	8	20	34	18	47	62	27	26	34	42	25	7	350
Bolivia /1	26	5	10	19	10	47	18	21	45	12	12	3	228
Brazil	31	36	143	162	112	158	69	86	102	117	146	62	1,224
Colombia /2	123	126	89	49	61	102	136	135	151	133	147	56	1,308
Ecuador	19	11	1	1	17	48	4	0	9	18	22	24	174
Paraguay	3	1	2	0	5	12	0	5	4	4	6	1	43
Peru	10	3	2	2	1	13	5	0	5	17	23	13	94
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela /3	3	9	3	1	7	9	10	8	16	18	1	7	92
Total	223	211	284	252	260	451	269	281	366	361	382	173	3,513

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.
/1 BOL - Includes 3 episodes which occurred in the area not covered by the program.
/2 COL - Includes 8 episodes without identification of affected species.
/3 VEN - Includes 2 episodes without identification of affected species.

TABLE 12. Monthly distribution of FMD affected properties. Virus type "O". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	2	5	3	4	18	32	3	6	14	12	6	3	108
Bolivia	1	1	2	0	0	0	1	4	4	4	0	1	18
Brazil	4	6	14	24	23	15	9	16	18	4	19	6	158
Colombia	7	10	25	10	11	5	26	24	33	37	29	9	226
Ecuador	7	3	0	0	5	3	0	0	3	3	5	1	30
Paraguay	1	1	1	0	3	4	0	4	2	3	4	0	23
Peru	0	0	1	0	0	0	1	0	2	6	2	0	12
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	22	27	46	38	60	59	40	54	76	69	65	20	576

Notes: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 13. Monthly distribution of FMD affected properties. Virus type "A". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dec	
Argentina	1	6	14	9	8	4	0	11	6	8	3	2	72
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	3	1	10	5	2	9	4	8	8	11	11	0	72
Colombia	3	1	4	7	20	17	9	5	6	5	5	0	82
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	1	1	1	0	3
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	1	0	1	0	1	0	1	0	2	0	1	0	7
Total	8	8	29	21	31	30	14	24	23	25	21	2	236

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 14. Monthly distribution of FMD affected properties. Virus type "C". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dec	
Argentina	0	0	1	0	14	12	1	2	1	1	7	0	39
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	1	1	4	0	0	6
Colombia	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0	0	0	0
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	14	12	1	3	2	5	7	0	45

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 15. Monthly distribution of Vesicular Stomatitis affected properties. New Jersey type. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
Colombia	38	39	26	6	3	26	26	19	22	25	34	17	281
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	2	0	0	1	0	0	2	0	3	4	0	1	13
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	1	4	1	0	0	2	0	0	8
Total	40	39	26	7	4	30	29	19	25	31	34	18	302

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 16. Monthly distribution of Vesicular Stomatitis affected properties. Indiana type. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
Colombia	24	22	8	5	0	7	9	9	6	3	9	7	109
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0	0	0	0
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	2	0	1	0	0	0	0	0	0	0	3
Total	24	22	10	5	1	7	9	9	6	3	9	7	112

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 17. Monthly distribution of cattle properties affected by Vesicular Diseases. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	8	20	34	18	47	62	26	22	28	40	23	7	335
Bolivia /1	26	5	9	19	10	47	18	20	45	10	12	3	224
Brazil	30	33	140	159	111	156	69	84	101	117	138	61	1,199
Colombia	119	118	86	45	59	97	132	121	143	121	136	51	1,228
Ecuador	19	11	1	1	17	48	4	0	9	18	22	24	174
Paraguay	3	1	2	0	5	11	0	3	4	3	6	1	41
Peru	10	0	2	1	0	6	5	0	5	17	19	9	74
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	3	8	4	4	1	7	6	8	12	18	1	3	75
Total	218	196	278	247	250	434	260	260	347	344	357	159	3,350

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.
/1 BOL - Includes 111 episodes which occurred in the area not covered by the program.

TABLE 18. Monthly distribution of cattle properties affected by FMD.
Virus type "O". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	2	5	3	4	18	32	3	4	12	11	6	3	103
Bolivia	1	0	2	0	0	0	1	4	3	2	0	1	14
Brazil	4	6	14	24	23	15	9	16	18	4	19	6	158
Colombia	6	8	26	10	10	5	24	22	30	33	24	7	205
Ecuador	7	3	0	0	5	3	0	0	3	3	5	1	30
Paraguay	1	1	1	0	3	4	0	4	2	3	4	0	23
Peru	0	0	1	0	0	0	1	0	2	6	2	0	12
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	21	24	47	38	59	59	38	50	70	62	60	18	546

Notes: Chile, Surinam, Guyana and French Guiana are disease-free countries.

TABLE 19. Monthly distribution of cattle properties affected by FMD. Virus type "A". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	1	6	14	9	8	4	0	11	6	8	3	2	72
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	3	1	10	5	2	9	4	8	8	11	11	0	72
Colombia	3	1	3	6	21	15	9	5	5	5	5	0	78
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	1	1	1	0	3
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	1	0	1	0	1	0	1	0	2	0	1	0	7
Total	8	8	28	20	32	28	14	24	22	25	21	2	232

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 20. Monthly distribution of cattle properties affected by FMD. Virus type "C". South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	0	0	1	0	14	12	1	2	1	1	7	0	39
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	1	1	4	0	0	6
Colombia	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0	0	0	0
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	14	12	1	3	2	5	7	0	45

Note: Chile, Surinam, Guyana and Franch Guiana are vesicular disease-freea countries.

TABLE 21. Monthly distribution of cattle properties affected by Vesicular Stomatitis. New Jersey type. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	0	0
Colombia	37	39	26	5	2	27	26	17	22	24	34	17	276
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	2	0	0	0	0	0	1	1	3	4	0	1	12
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	0	0	1	3	1	0	0	2	0	0	7
Total	39	39	26	5	3	30	28	18	25	30	34	18	295

Note: Chile, Surinam, Guyana and Franch Guiana are vesicular disease-free countries.

TABLE 22. Monthly distribution of cattle properties affected by Vesicular Stomatitis. Indiana type. South America, 1992.

Country	Months												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0
Bolivia	0	0	0	0	0	0	0	0	0	0	0	0	0
Brasil	0	0	0	0	0	0	0	0	0	0	0	0	0
Colombia	23	20	8	5	0	7	9	8	6	3	9	7	105
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0	0	0	0
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	0	0	2	0	1	0	0	0	0	0	0	0	3
Total	23	20	10	5	1	7	9	8	6	3	9	7	108

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 23. Monthly distribution of affected cattle by vesicular disease. South America, 1992.

Country	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Argentina	506	1,259	897	568	2,226	2,022	757	536	1,087	630	782	264	11,534
Bolivia	...	...	...	...	...	...	...	...	...	...	...	...	2,623
Brazil	528	1,981	5,428	6,799	4,261	3,795	1,684	2,922	3,705	2,450	6,904	826	41,283
Colombia	1,382	578	672	831	1,662	1,031	1,544	1,537	2,695	1,688	2,139	438	16,197
Ecuador	250	574	8	38	103	354	60	0	529	271	190	103	2,480
Paraguay	143	188	80	0	250	690	0	1,029	57	17	93	62	2,609
Peru	13	0	8	12	0	11	16	0	4	124	14	39	241
Uruguay	0	0	0	0	0	0	0	0	0	0	0	0	0
Venezuela	9	222	19	106	113	178	90	7	57	26	38	5	870
Total	2,831	4,802	7,112	8,354	8,615	8,081	4,151	6,031	8,134	5,206	10,160	1,737	77,837

Note: Chile, Surinam, Guyana and French Guiana are vesicular disease-free countries.

TABLE 24. Number of Vesicular Stomatitis affected properties by country and virus type. Central America and Mexico, 1992.

Country	Vesicular Stomatitis		No Diagnosis (a)	Total
	New Jersey	Indiana		
Belize	0	0	1	1
Costa Rica	13	9	18	35
El Salvador	47	10	49	106
Guatemala	10	1	9	20
Honduras	26	0	44	70
México	44	0	43	87
Nicaragua	6	0	11	17
Panamá	5	4	12	21
Total	151	24	187	357

Notes: a - With clinical-epidemiological and/or negative result.

TABLE 25. Coverage of FMD control programs. South America, 1992.

Country	Area (Km2)		Cattle Population		Cattle Population (x 1000)	
	Total	Under Program	Total	Under Program	Total	Under Program
Argentina	2,779,892	2,779,892	268,513	268,513	54,169.0	54,169.0
Bolivia	1,098,581	487,266	98,139	50,021	5,475.9	2,656.7
Brasil	8,508,832	4,583,812	2,205,029	1,673,152	143,949.3	121,199.6
Chile	757,720	757,720	189,044	189,044	3,336.2	3,336.2
Colombia	1,141,748	846,154	726,609	723,753	22,301.7	22,141.9
Ecuador	274,168	274,168	251,445	251,445	4,580.0	4,580.0
Paraguay	406,752	406,752	229,478	229,478	7,886.0	7,886.0
Peru	1,285,215	1,285,215	463,182	463,182	4,041.5	4,041.5
Uruguay	156,657	156,657	47,378	47,378	8,549.8	8,549.8
Venezuela	912,050	912,050	106,535	106,535	10,831.0	10,831.0
Total	17,321,615	12,489,686	4,585,352	4,002,501	265,120.4	239,391.7

TABLE 26. Foot-and-mouth disease vaccination. Number of vaccinated animals. South America, 1992.

Country	Systematic Vaccination					Strategical-tactical Vaccinations		
	Cattle (x 1000)			Sheep/Goats				
	3 Doses	2 Doses	1 Doses	Nº of Animals (x 1000)	Fraction of Doses	Cattle	Swine	Sheep/ Goats
Argentina	5,556.0	49,287.0	0.0	0.0	-	442,000	5,000	1,500
Bolivia	47.8 /1	52.6	118.6	0.0	-	5,330	0	0
Brazil	0.0	74,773.1	9,286.4	12.1	...	215,562	525	0
Colombia	0.0	7,556.1	4.2	0.0	-	0	0	0
Ecuador	0.0	98.2	488.6	0.0	-	0	0	0
Paraguay	0.0	1,104.9	4,419.6	0.0	-	22,948	0	0
Peru	0.0	0.0	0.0	0.0	-	571,000	35,000	0
Uruguay	0.0	3,680.8	6,167.0	0.0	-	0	0	0
Venezuela	0.0	4,861.4	0.0	0.0	-	0	0	0

Notes: Chile, Surinam, Guyana and French are vesicular disease-free countries.
/1 BOL - Vaccinations administered in the area not covered by the program.
... Data not available.

TABLE 27. Production, control, international commercialization and availability of FMD vaccine in dose x 1000 by country. South America, 1992.

Country	Type of Vaccine	Produced	Controlled	Approved	Exported	Imported	Available
Argentina	Oil	93,176.5	93,176.5	70,693.1	0.0	0.0	70,693.1
	Saponin	16,918.3	16,918.3	10,195.1	0.0	0.0	10,195.1
	Total	110,094.8	110,094.8	80,888.2	0.0	0.0	80,888.2
Bolivia	Oil	0.0	0.0	0.0	0.0	...	...
	Saponin	0.0	0.0	0.0	0.0	...	...
	Total	0.0	0.0	0.0	0.0	...	...
Brazil /1	Oil	...	...	...	...	0.0	...
	Saponin	...	...	...	...	0.0	...
	Total	181,393.6	181,393.6	165,010.3	1,590.0	0.0	181,397.8
Colombia	Oil	13,390.7	13,390.7	12,488.7	1,109.7	4.2	11,383.2
	Saponin	0.0	0.0	0.0	0.0	0.0	0.0
	Total	13,390.7	13,390.7	12,488.7	1,109.7	4.2	11,383.2
Ecuador	Oil	0.0	0.0	0.0	0.0	1,020.0	1,020.0
	Saponin	31.0	31.0	31.0	0.0	0.0	31.0
	Total	31.0	31.0	31.0	0.0	1,020.0	1,051.0
Paraguay	Oil	9,998.0	9,998.0	9,998.0	90.0	0.0	9,908.0
	Saponin	0.0	0.0	0.0	0.0	0.0	0.0
	Total	9,998.0	9,998.0	9,998.0	90.0	0.0	9,908.0
Peru	Oil	500.0	500.0	500.0	0.0	272.5	772.5
	Saponin	0.0	0.0	0.0	0.0	0.0	0.0
	Total	500.0	500.0	500.0	0.0	272.5	772.5
Uruguay	Oil	19,805.7	19,805.7	19,805.7	532.8	0.0	19,272.9
	Saponin	535.8	535.8	535.8	307.4	0.0	228.4
	Total	20,341.5	20,341.5	20,341.5	840.2	0.0	19,501.3
Venezuela	Oil	5,629.7	5,629.7	5,629.7	0.0	3,183.7	8,813.4
	Saponin	0.0	0.0	0.0	0.0	0.0	0.0
	Total	5,629.7	5,629.7	5,629.7	0.0	3,183.7	8,813.4
Total	Oil	142,500.6	142,500.6	119,115.2	1,732.5	4,480.4	121.913,1 *
	Saponin	17,485.1	17,485.1	10,761.9	307.4	0.0	10,454.5
	Total /**	341,379.3	341,379.3	294,887.4	3,626.9	4,480.4	313,765.4

Notes: /* Includes stock of 50.000 doses maintained at the Pan American Foot-and-Mouth Disease Center for use in the event that emergency situations arise in Chile.

/** Includes the amounts of vaccine produced, controlled, approved and exported by BRAZIL not specified for the different types of vaccine.

/1 Includes vaccines containing different adyuvants (Oil; Avridine/Oil; Oil/Water; Water).

... Data not available.

TABLE 28. Inventory of human resources/a. Foot-and-mouth disease program.
South America, 1991-1992.

Country	1991				1992			
	Total	Central	Laboratory	Field	Total	Central	Laboratory	Field
Argentina	1,012	45	32	935	911	45	35	831
Bolivia	126	28	38	60	126	28	38	60
Brazil	9,403	51	114	9,238 /1	10,233	45	394	9,794 /2
Chile /3	112	4	5	103	95	4	5	86
Colombia	891	22	16	853	877	22	16	839
Ecuador	330	35	...	295	325	35	...	290
Paraguay	505	193	35	277	588	118	129	341
Peru	426	3	...	423	348	3	...	345
Uruguay	496	22	35	439	467	9	14	444
Venezuela	400	15	...	385	400	15	...	385
Total	13,701	418	275	13,008	14,370	324	631	13,415

Notes: a/ In some countries staff are not assigned exclusively to foot-and-mouth disease.
/1 BRA - Includes 2.452 Technical Auxiliaries on fixed-term contracts, as required.
/2 BRA - Includes 2.632 vaccination agents on fixed-term contracts, as required.
/3 CHI - Includes Veterinarians and Agricultural Technicians contracted for service in control of summer grazing lands - Does not include technical assistants carrying out inspection duties on import at seaports, airports, and frontier posts.
... Data not available.

TABLE 29. Foot-and-mouth disease control program resources/a.
South America, 1992.

Country	Operating field units	Human Resources					
		Professionals			Otros		
		Central	Lab.	Field	Central	Lab.	Field
Argentina	302	18	10	184	27	25	647
Bolivia	15	8	15	26	20	23	34
Brazil	1,705	36	125	1,905	24	254	7,889 /1
Chile /2	54	2	2	34	2	3	52
Colombia	140 *	10	7	165	12	9	674
Ecuador	64	10	...	75	25	...	215
Paraguay	47 /3	29	27	77	89	102	264
Peru	163	1	...	74	2	...	271
Uruguay	42	6	8	71	3	6	373
Venezuela	152	11	...	177	4	...	208
Total	2,684	131	194	2,788	208	422	10,627

Notes: /a In some countries, staff are not assigned exclusively to FMD programs.
/* Refers to offices reporting on animal health events.
/1 Includes 2.632 vaccination agents on fixed - term contracts, as required.
/2 Includes veterinarians and agricultural technicians contracted for inspection duties of imports at seaports, airports, and frontier posts.
/3 Data obtained from the country reports to COSALFA XVIII.
... Data not available.

TABLE 30. Vehicle inventories. FMD Control Programs.
South America, 1991-1992.

Country	1991				1992			
	Total Area Km2	Total	Cars	Motocycles	Total Area Km2	Total	Cars	Motocycles
Argentina	2,779,892	631	631	0	2,779,892	680	680	0
Bolivia	487,266	25	24	1	487,266	26	25	1
Brazil	3,910,709	1,708	1,550	158	4,583,812	1,685	1647	38
Chile	757,120	18	18	0	757,120	18	18	0
Colombia	846,154	424 /1	162	262	846,154	428 /2	162	266
Ecuador	274,168	32	...	...	274,168	36	...	...
Paraguay	406,752	78	39	39	406,752	84	48	36
Peru	1,285,215	288	60	228	1,285,215	288	60	228
Uruguay	160,737	236	97	139	156,657	243	110	133
Venezuela	912,050	314	314	0	912,050	314	314	0
Total	11,820,063	3,754	2,895	827	12,489,086	3,802	3,064	702

Notes: /1 COL - 60 pick-up trucks and 200 motocycles are assigned to the ICA-USDA Cooperative Program. The rest of the vehicles is privately-owned by FMD program staff.
/2 COL - 60 pick-up trucks and 204 motocycles are assigned to the ICA-USDA Cooperative Program. The rest of the vehicles is privately-owned by FMD program staff.
... Sin información

TABLE 31. Private and public expenditures (000 US$). FMD Program. South America, 1992.

Country	Total	Public			Private
		Operating	Capital	Total	
Argentina	...	...	...	...	110,000.0
Bolivia	216.9	183.9	0.0	183.9	33.0 /#
Brazil	84,982.2	6,139.2	1,526.0	10,330.9 /1	74,651.3 /#
Chile	757.5	641.4 /2	96.1	737.5	20.0 /3
Colombia	12,636.6	3,788.6	258.0	4,046.6	8,590.0 /*
Ecuador	1,103.8	820.8	48.0	868.8	235.0 /*
Paraguay	...	2,886.3	545.2	3,431.5	...
Peru	...	114.2	279.0	393.2	...
Uruguay	9,950.0	1,500.0	450.0	1,950.0	8,000.0 /#
Venezuela	4,492.9	409.4	0.0	409.4	4,083.5 /*
Total	114,139.9	16,483.8	3,202.3	22,351.8	205,612.8

Notes: /* Refers to expenses associated with purchasing and administering vaccines.

/# Purchase of vaccines. Administration costs not available.

/1 BRA - Includes US$ 2.665,7 thousand spent by State governments. Distribution of items in columns not specified.

/2 CHI - Includes cost of US$ 173,9 thousands for indemnization to owners of summer grazing lands for the prohibition to use them, as well as veterinarians and agricultural technicians hired temporarily for the control of summer grazing lands.

/3 CHI - Payment for antigen required to prepare 50.000 doses of monovalent A Argentina 79 and 81 vaccines maintained at PAFMDC for emergency situations.

... Data not available

TABLE 32. Cattle, meat, milk, semen and embryo imports. South America, 1992.

Importing Country	Country of Origin	Number of Cattle	Semen Doses	Embryos	Meat (m.t.)	Milk (m.t.)
Argentina /1	AUSTRALIA	-	1,000	-	-	-
	BRAZIL	2,019	-	-	-	-
	CANADA	88	40,412	149	-	-
	CHILE	290	-	-	-	-
	ITALY	-	21,125	-	-	-
	NEW ZEALAND	-	-	47	-	-
	PARAGUAY	215	-	-	-	-
	URUGUAY	50,675	-	-	-	-
	USA	98	369,591	610	-	-
Bolivia	...	...	...	...	...	...
Brazil	ARGENTINA	3,176	8,610	-	-	-
	AUSTRIA	11	4,299	87	-	-
	BELGIUM	-	200	15	-	-
	BOLIVIA	6,000	-	-	-	-
	CANADA	1,013	61,459	3,059	-	-
	FRANCE	-	128,575	618	-	-
	GERMANY	87	114,280	686	-	-
	ITALY	-	14.650	99	-	-
	NETHERLANDS	3,500	-	-	-	-
	SWITZERLAND	-	4,465	44	-	-
	URUGUAY	6,996	134	-	-	-
	USA	584	531,879	1,748	-	-
Chile	ARGENTINA	-	-	-	7,817	169
	BELGIUM	-	-	-	-	480
	BRAZIL	-	-	-	-	87
	CANADA	-	-	-	-	98
	CHECOSLOVAQUIA	-	-	-	-	2,952
	CUBA	-	-	-	-	49
	FRANCE	-	-	-	-	794
	GERMANY	-	-	-	-	1,557
	HOLAND	-	-	-	-	2,246
	ISRAEL	-	-	-	-	1,127
	NEW ZEALAND	-	4,500	-	-	2,613
	PARAGUAY	-	-	-	5,742	-
	POLAND	-	-	-	-	1,518
	SWEDEN	-	-	-	-	5
	SWITZERLAND	-	-	-	-	71
	UNITED KINGDOM	-	-	-	-	4,518
	URUGUAY	-	-	-	-	20
	USA	23	59,993	-	6	3,650
	VATICAN STATE	-	-	-	-	240
	YUGOSLAVIA	-	-	-	-	208
Colombia	BELGIUM, USA, ECUADOR NETHERLANDS AND PERU	-	-	-	-	3,641

continues

TABLE 32. Cattle, meat, milk, semen and embryo imports. South America, 1992.

continuation

Importing Country	Country of Origin	Number of Herds	Semen Doses	Embryos	Meat (m.t.)	Milk (m.t.)
Uruguay	ARGENTINA	3,907	5,865	-	1,114	-
	BRAZIL	676	-	-	-	-
	CANADA	-	41,561	214	-	-
	PARAGUAY	222	-	-	288	-
	USA	-	65,537	-	-	-
Venezuela	COLOMBIA	37,093	-	-	5,139	330
	DENMARK	-	-	-	-	9,789
	ENGLAND	-	-	-	-	4,104
	GREAT BRITAIN	-	-	-	-	1,058
	HOLAND	-	-	-	-	1,370
	IRELAND	-	-	-	326	5,062
	NEW ZEALAND	-	-	-	-	10,256
	USA	1,081	-	-	-	-

Notes: /1 ARG - Besides 6,259.19 tons of cheese and 33,380.82 tons of powdered milk from different countries in Europe and North America, besides New Zealand, Mexico, Brazil and Uruguay.

TABLE 32. Cattle, meat, milk, semen and embryo imports. South America, 1992.

continuation

Importing Country	Country of Origin	Number of Herds	Semen Doses	Embriyos	Meat (T.M.)	Milk (T.M.)
Colombia (cont.)	BRAZIL, CANADA, USA, FRANCE, SWITZERLAND AND VENEZUELA	-	414,226	-	-	-
	CANADA, USA AND ECUADOR	578	-	-	-	-
	USA	-	-	6,282	-	-
	IRELAND	-	-	-	0.1	-
Ecuador	CANADA	-	1,575 *	-	-	-
	COSTA RICA	-	250 *	-	-	-
	MEXICO	53	-	-	-	-
	SPAIN	-	2,522 *	-	-	-
	USA	52	49,830 *	-	-	-
Paraguay	ARGENTINA	712	1,200	-	-	-
	BELGIUM	-	200	10	-	-
	BRAZIL	22	-	-	-	-
	CANADA	-	4,550	-	-	-
	DENMARK	-	100	-	-	-
	GERMANY	-	14,900	-	-	-
	ITALY	-	3,600	-	-	-
	URUGUAY	1,098	-	-	-	-
	USA	-	27,053	-	-	-
Peru	AUSTRALIA	-	-	-	-	300
	BELGIUM	-	-	-	-	2,109
	BRAZIL	-	-	-	171	-
	CANADA	-	2,150	-	6	-
	CHECOSLOVAQUIA	-	-	-	-	35
	CHILE	-	-	-	-	178
	COLOMBIA	-	-	-	-	210
	DENMARK	-	-	-	-	150
	ECUADOR	500	-	-	-	-
	EEC	-	-	-	-	60
	ENGLAND	-	-	-	-	290
	FRANCE	-	-	-	-	1,125
	GERMANY	-	-	-	3,774	1,600
	IRELAND	-	-	-	-	2,067
	ISRAEL	-	-	-	-	15
	ITALY	-	-	-	-	110
	NETHERLANDS	-	-	-	-	608
	NEW ZEALAND	-	-	-	-	9,454
	PARAGUAY	-	-	-	1,278	-
	SPAIN	-	-	-	-	300
	UNITED KINGDOM	-	-	-	-	300
	URUGUAY	-	-	-	349	800
	USA	-	13,940	-	52	1,200
	VENEZUELA	-	1,920	-	-	-

continues

TABLE 33. Swine, semen and meat imports.
South America, 1992.

Importing Country	Country of Origin	Number of Herds	Semen Doses	Meat (m.t.)
Argentina	BRAZIL	3,103	-	-
	CHILE	633	-	-
	URUGUAY	760	-	-
Bolivia	...	...	...	...
Brazil	-	-	-	-
Chile	CANADA	11	17,638	47
	SWEDEN	-	-	11
	USA	117	150	-
Colombia	GERMANY AND USA	24	-	-
	SWITZERLAND	-	40	-
Ecuador	-	-	-	-
Paraguay	-	-	-	-
Peru	-	-	-	-
Uruguay	BRAZIL	69	-	10.165
	CHILE	-	-	288
	HUNGARY	-	-	321
	ITALY	-	-	288
	SWEDEN	-	-	79
	USA	-	274	-
Venezuela	-	-	-	-

TABLE 34. Sheep, semen and embryo imports.
South America, 1992.

Importing Country	Country of Origin	Number of Sheep	Semen Doses	Embryo	Meat (T.M.)	Milk (T.M.)
Argentina	AUSTRALIA	-	684	-	-	-
	CHILE	10,253	-	-	-	-
	NEW ZEALAND	9	6,490	-	-	-
	URUGUAY	574	-	-		
Bolivia	...	...	...	...	...	...
Brazil	ARGENTINA	-	260	-	-	-
	CANADA	5	-	-	-	-
	CHILE	-	150,000	-	-	-
	FRANCE	-	1.517	-	-	-
	NEW ZEALAND	1	-	-	-	-
	URUGUAY	506	-	-	-	-
Chile	ARGENTINA	3,429	-	-	-	-
	NEW ZEALAND	-	100	-		
Colombia	GERMANY	8	-	-	-	-
Ecuador	-	-	-	-	-	-
Paraguay	-	-	-	-	-	-
Peru	-	-	-	-	-	-
Uruguay	ARGENTINA	126	-	-	-	-
	AUSTRALIA	2	4,900	-	-	-
	BRAZIL	20	-	-	-	-
	NEW ZEALAND	1	100	-	-	-
Venezuela	COLOMBIA	80	-	-	-	-

TABLE 35. Goat and semen imports.
South America, 1992.

Importing Country	Country of Origin	Number of Goats	Semen Doses
Argentina	-	-	-
Bolivia	...	...	...
Brazil	-	-	-
Chile	-	-	-
Colombia	-	-	-
Ecuador	-	-	-
Paraguay	-	-	-
Peru	-	-	-
Uruguay	ARGENTINA	84	-
	BRAZIL	47	-
Venezuela	-	-	-

TABLE 36. Horses, semen and meat imports.
South America, 1992.

Importing Country	Country of Origin	Number of Horses	Semen (doses)	Meat (m.t.)
Argentina	BELGIUM	18	-	-
	BRAZIL	95	-	-
	CHILE	39	-	-
	ENGLAND	18	-	-
	FRANCE	6	-	-
	GERMANY	9	-	-
	MEXICO	4	-	-
	PARAGUAY	25	-	-
	PERU	3	-	-
	POLAND	1	-	-
	URUGUAY	5,418	-	-
	USA	199	-	-
Bolivia	...	...	...	...
Brazil	ARGENTINA	63	-	-
	BELGIUM	12	-	-
	CANADA	1	-	-
	CHILE	7	-	-
	FRANCE	-	159	-
	GERMANY	16	-	-
	PERU	-	50	-
	PORTUGAL	4	-	-
	SWEDEN	2	-	-
	UNITED KINGDOM	16	-	-
	URUGUAY	24	-	-
	USA	172	-	-
Chile	ARGENTINA	24	-	-
	USA	19	-	-
	URUGUAY	9	-	9,077
Colombia	GERMANY, ARGENTINA ARUBA, BRAZIL, CHILE, COSTA RICA, ECUADOR, USA, SPAIN, PERU AND VENEZUELA	261	-	-
Ecuador	-	-	-	-
Paraguay	ARGENTINA	14	-	-
	BRAZIL	22	-	-
	URUGUAY	164	-	-
	USA	4	-	-
Peru	-	-	-	-

continues

TABLE 36. Horses, semen and meat imports.
South America, 1992.

continuation

Importing Country	Country of Origin	Number of Horses	Semen (doses)	Meat (m.t.)
Uruguay	ARGENTINA	365	-	-
	BRAZIL	25	-	-
	PARAGUAY	45	-	-
	USA	1	-	-
Venezuela	ARGENTINA	36	-	-
	COLOMBIA	180	-	-
	FRANCE	13	-	-
	SPAIN	3	-	-
	USA	284	40,705	375

TABLE 37. Cattle, meat, milk, semen and embryo exports.
South America, 1992.

Exporting Country	Importing Country	Number of Cattle	Semen (doses)	Embryos	Meat (T.M.)	Milk (T.M.)
Argentina	BOLIVIA	338	-	-	-	-
	BRAZIL	4,187	3,700	158	-	-
	ISRAEL	-	-	296	-	-
	URUGUAY	624	7,045	-	-	-
	PARAGUAY	740	1,200	-	-	-
Bolivia	...	...	...	...	...	...
Brazil	...	...	...	...	...	...
Chile	ARGENTINA	476	-	-	-	260.6
	BOLIVIA	-	1,523	-	-	7.6
	BRAZIL	-	-	-	-	48.0
	PERU	-	-	-	-	209.8
	URUGUAY	-	-	-	-	2.0
Colombia	ARUBA, CURAÇAO, PERU AND VENEZUELA	-	-	-	6,719.0	-
	BOLIVIA, USA AND	-	-	-	-	35.0
	VENEZUELA	50,792	-	-	-	-
Ecuador	COLOMBIA	200	-	-	-	-
Paraguay	ARGENTINA	140	-	-	10.7	-
	BARBADOS	-	-	-	17.1	-
	BELGIUM	-	-	-	20.0	-
	BOLIVIA	346	-	-	-	-
	BRAZIL	320	-	-	2,047.6	-
	CHILE	-	-	-	8,683.4	-
	CHINA	-	-	-	24.0	-
	EGYPT	-	-	-	51.4	-
	FRANCE	-	-	-	32.9	-
	GERMANY	-	-	-	934.9	-
	GHANA	-	-	-	16.7	-
	ISRAEL	-	-	-	1,549.5	-
	ITALY	-	-	-	38.0	-
	KUWAIT	-	-	-	100.8	-
	LA VALLETTA	-	-	-	17.1	-
	NETHERLANDS	-	-	-	455.9	-
	NETHERLANDS ANTILLES	-	-	-	90.1	-
	NIGERIA	-	-	-	34.3	-
	PERU	-	-	-	737.5	-
	SAUDI ARABIA	-	-	-	49.0	-
	SPAIN	-	-	-	724.8	-
	SUDAFRICA	-	-	-	*	-
	SWIZTERLAND	-	-	-	98.3	-
	UNITED KINGDON	-	-	-	123.6	-

continues

TABLE 37. Cattle, meat, milk, semen and embryo exports.
South America, 1992.

continuation

Exporting Country	Importing Country	Number of Cattle	Semen (doses)	Embryos	Meat (T.M.)	Milk (T.M.)
Paraguay (cont.)	TOGO	-	-	-	16.7	-
	TRINIDAD	-	-	-	17.1	-
	URUGUAY	-	-	-	200.0	-
	ZAIRE	-	-	-	*	-
Peru	BOLIVIA	-	-	-	-	85.9
	CANADA	-	-	-	-	32.0
	COLOMBIA	-	-	-	-	54.3
	ECUADOR	-	-	-	-	77.5
	SWITZERLAND	-	-	-	-	7.0
Uruguay	ARGENTINA	94,123	-	-	33,190.6	49,058.0
	BELGIUM	-	-	-	722.7	-
	BOLIVIA	70	-	-	-	5.0
	BRAZIL	7,335	-	-	52,088.9	6,731.0
	CANADA	-	-	-	-	12.0
	CANARY ISLANDS	-	-	-	922.6	-
	CHILE	-	-	-	30,041.9	4.0
	COLOMBIA	-	-	-	-	20.0
	ECUADOR	-	-	-	-	92.0
	EL SALVADOR	-	-	-	-	43.0
	FRANCE	-	-	-	6,908.6	-
	GERMANY	-	-	-	-	12.0
	ISRAEL	-	-	-	40,050.8	-
	ITALY	-	-	-	8,757.4	-
	JAPAN	-	-	-	1,883.1	89.0
	MEXICO	-	-	-	-	2,896.0
	NETHERLANDS	-	-	-	7,852.5	-
	OTHERS	-	-	-	3,286.2	-
	PARAGUAY	1,172	-	-	-	33.0
	PERU	-	-	-	-	1,003.0
	SPAIN	12	-	-	558.5	18.0
	UNITED KINGDOM	-	-	-	20,101.8	-
	USA	-	-	-	10,596.8	803.0
	VENEZUELA	-	-	-	-	595.0
Venezuela	-	-	-	-	-	-

Note: * Lower than 0.1 metric tons.

TABLE 38. Swine exports.
South America, 1992.

Exporting Country	Importing Country	Number of Swine	Meat (m.t.)
Argentina	-	-	-
Bolivia	...	...	...
Brazil	...	...	...
Chile	ARGENTINA	360	2.992
	BOLIVIA	10	-
	BRAZIL	-	46
	ECUADOR	30	-
	PERU	-	62
	URUGUAY	-	740
Colombia	ECUADOR	-	76
Ecuador	-	-	-
Paraguay	-	-	-
Peru	BOLIVIA	6	-
	ECUADOR	5	-
Uruguay	PARAGUAY	6	-
Venezuela	-	-	-

TABLE 39. Sheep, meat and milk exports.
South America, 1992.

Exporting Country	Importing Country	Number of Sheep	Semen (Doses)	Meat (m.t.)
Argentina	BOLIVIA	90	-	-
	BRAZIL	10	265	-
	CHILE	3,545	-	-
	SPAIN	8	-	-
	PARAGUAY	306	-	-
	URUGUAY	19	-	-
Bolivia	...	...	...	...
Brazil	...	...	...	...
Chile	ARGENTINA	16,041	-	-
	GERMANY	-	-	92
	NETHERLANDS	-	-	22
	PERU	-	-	450
	SPAIN	6	-	-
Colombia	CURAÇAO	-	218	-
	VENEZUELA	144	-	-
Ecuador	-	-	-	-
Paraguay	-	-	-	-
Peru	-	-	-	-
Uruguay	ARGENTINA	20	-	-
	BRAZIL	534	-	-
	PARAGUAY	529	-	-
	SAUDI ARABIA	101.300	-	-
	SPAIN	34	-	-
Venezuela	-	-	-	-

TABLE 40. Goat exports.
South America, 1992.

Exporting Country	Importing Country	Number of Goats
Argentina	URUGUAY	84
Bolivia	...	...
Brazil	...	...
Chile	-	-
Colombia	-	-
Ecuador	-	-
Paraguay	-	-
Peru	-	-
Uruguay	-	-
Venezuela	CURAÇAO	695

TABLE 41. Horse and embryo exports.
South America, 1992.

Exporting Country	Importing Country	Number of Horses	Embryos	Semen (Doses)	Carne (T.M.)
Argentina	ARAB EMIRATES	11	-	-	-
	BELGIUM	27	-	-	-
	BOLIVIA	14	-	-	-
	BRAZIL	102	-	-	-
	BRUNEI	62	-	-	-
	CHILE	81	-	-	-
	COLOMBIA	144	-	-	-
	COSTA RICA	60	-	-	-
	DOMINICAN REP.	41	-	-	-
	FRANCE	160	-	-	-
	GERMANY	141	-	-	-
	IRELAND	144	13	-	-
	ITALY	2,146	-	-	-
	MEXICO	10	-	-	-
	NETHERLANDS	9	-	-	-
	PARAGUAY	45	-	-	-
	PERU	6	-	-	-
	SPAIN	383	-	-	-
	URUGUAY	39	-	-	-
	USA	442	-	-	-
	VENEZUELA	43	-	-	-
Bolivia	...	...	...	...	...
Brazil	...	...	...	...	...
Chile	ARGENTINA	17	-	-	-
	BRAZIL	12	-	-	-
	COLOMBIA	77	-	-	-
	FALKLAND/MALVINAS	-	-	-	0.5
	JAPAN	-	-	-	2.3
	PERU	18	-	-	-
	SPAIN	37	-	-	-
	USA	13	-	-	-
Colombia	ARUBA, BRAZIL, USA ECUADOR, SPAIN, PANAMA DOMINICAN REP. AND VENEZUELA	366	-	-	-
	USA	-	-	243	-
Ecuador	-	-	-	-	-
Paraguay	ARGENTINA	24	-	-	-
	BOLIVIA	8	-	-	-
	BRAZIL	5	-	-	-
	URUGUAY	5	-	-	-

continues

TABLE 41. Horse and embryo exports.
South America, 1992.

continuation

Exporting Country	Importing Country	Number of Horses	Embryos	Semen (Doses)	Meat (T.M.)
Peru	ARGENTINA	20	-	-	-
	CHILE	5	-	-	-
	COLOMBIA	3	-	-	-
	ECUADOR	51	-	-	-
	HONDURAS	6	-	-	-
	PANAMA	2	-	-	-
	USA	39	-	-	-
Uruguay	ARGENTINA	7,246	-	-	-
	BELGIUM	4	-	-	-
	BRAZIL	81	-	-	-
	CHILE	10	-	-	-
	GERMANY	15	-	-	30,617.2
	ITALY	350	-	-	-
	PARAGUAY	178	-	-	-
	SPAIN	58	-	-	-
	USA	3	-	-	-
	VENEZUELA	6	-	-	-
Venezuela	ARUBA	2	-	360	-
	COLOMBIA	12	-	-	5.0
	CURAÇAO	18	-	-	-
	DOMINICAN REP.	8	-	-	-
	PANAMA	3	-	-	-
	RUSIA	4	-	-	-
	USA	8	-	-	-

TABLE 42. Continental Information and Epidemiological Surveillance System for Vesicular Diseases. Reception level and "delays" in Weekly reports of outbreaks by map grid squares. South America, 1992.

Country	Weekly reports				Days of delays /c								
	Received		Published/a		Until receipt /b			Rec.-Publication			Total /d		
	No.	%	No.	%	Md	Mx	Mn	Md	Mx	Mn	Md	Mx	Mn
Argentina	52	100	50	96	18	54	10	3	11	0	21	59	11
Bolivia	52	100	46	88	8	138	0	4	14	1	14	28	6
Brazil	52	100	51	98	10	28	6	4	14	0	14	35	7
Colombia	52	100	48	92	6	26	5	2	10	0	10	31	7
Ecuador	52	100	51	98	10	35	3	4	11	0	14	42	7
Paraguay	52	100	49	94	4	19	3	3	10	1	7	24	6
Peru	51	98	51	100	12	54	0	3	14	1	14	63	7
Uruguay	52	100	50	96	5	28	4	3	10	0	7	35	6
Venezuela	51	98	50	98	18	117	11	3	7	1	21	122	13

Notas: /a - Number of weekly reports published in proportion to those received.
/b - Time between last day of week covered by report and its receipt by PAFMDC.
/c - Md = Median; Mx = Maximum; Mn = Minimum. All time lengths are in days.
/d - Median times calculated between deadline date of week report and publication of report. This figure only includes "delays" of published weekly reports on the "FOOT AND MOUTH DISEASE AND VESICULAR STOMATITIS EPIDEMIOLOGICAL REPORT".

TABLE 43. Continental Information and Epidemiological Surveillance System for Vesicular Diseases. Level of reception and publication of monthly reports on affected herds and diagnosis, by countries. South America, 1992.

Country	No. Received	No. Published	Months not received
Argentina	11	11	1
Bolivia	5	5	7
Brazil	12	12	-
Colombia	12	12	-
Ecuador	12	12	-
Paraguay	12	12	-
Peru	0	0	12
Uruguay	11	11	-
Venezuela	12	12	-

TABLE 44. Continental Information and Epidemiological Surveillance System for Vesicular Diseases. "Delays" (days) in receipt of monthly reports. South America, 1992.

Country	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Median	RANGE
Argentina	155	127	97	67	37	33	18	50	20	20	42	...	35	18 - 155
Bolivia	191	163	133	103	202	...	...	...	...	...	...	...	148	103 - 191
Brazil	26	13	20	21	12	7	5	21	14	10	10	48	13.5	05 - 48
Colombia	39	36	38	32	30	36	40	46	27	31	29	32	34	27 - 46
Ecuador	47	23	34	61	105	75	52	46	43	38	49	45	46.5	23 - 105
Paraguay	51	34	31	31	30	29	31	22	22	24	71	32	31	22 - 71
Peru	...	...	...	...	...	...	...	...	...	...	...	...		
Uruguay	6	11	...	9	9	8	4	9	7	17	9	7	9	04 - 17
Venezuela	100	72	42	29	31	82	52	40	76	46	84	54	53	29 - 100
Median	49	35	38	32	31	35	25	31	22	22	42	29		

Note: ... Not received

TABLE 45. Epidemiological surveillance activities: Indicators on the laboratory confirmation of herds affected by Vesicular Disease. South America, 1992.

Country	Affected Herds			Percentage		
	Total	Sampled	W/posit. diagnoses	Sampled	W/posit. diagnoses	Of posit. diagnoses
Argentina	350	293	219	84	63	75
Bolivia	228	35	18	15	8	51
Brazil	1,224	342	236	28	19	69
Colombia	1,308	975	698	75	53	72
Ecuador	174	46	30	26	17	65
Paraguay	43	32	23	74	53	72
Peru	94	68	28	72	30	41
Uruguay	0	-	-	-	-	-
Venezuela	92	32	19	35	21	59
Total	3,513	1,823	1,271	52	36	70

TABLE 46. Continental Information and Epidemiological Surveillance System for Vesicular Diseases. Reception level and "delays" in weekly reports of outbreaks by map grid squares. Central America, 1992.

Country	Weekly reports				Days of delays /c								
	Received		Published /a		Until receipt /b			Rec.-Publication			Total /d		
	No.	%	No.	%	Md	Mx	Mn	Md	Mx	Mn	Md	Mx	Mn
Belice /e	-	-	-	-	-	-	-	-	-	-	-	-	-
Costa Rica	51	98	49	96	25	80	12	3	32	1	28	84	14
El Salvador	47	90	47	100	52	108	10	2	7	0	56	113	14
Guatemala	44	85	44	100	12	116	0	4	11	1	14	119	7
Honduras/e	-	-	-	-	-	-	-	-	-	-	-	-	-
México	48	92	47	98	13	173	3	4	11	0	17	175	7
Nicaragua	20	38	20	100	21	59	6	4	43	1	35	63	14
Panamá	52	100	49	94	13	62	5	4	9	0	17	63	6

Notes:
/a - Number of weekly reports published in proportion to those received.
/b - Time between last day of week covered by report and its receipt by PAFMDC.
/c - Md = Median; Mx = Maximum; Mn = Minimum. All time lengths are in days.
/d - Median times calculated between deadline date of week reported and publication of report. This figure only includes "delays" of published weekly reports on the "FOOT AND MOUTH DISEASE AND VESICULAR STOMATITIS EPIDEMIOLOGICAL REPORT".
/e - The country did not send this report.