



PAN AMERICAN HEALTH ORGANIZATION

C.P.F.A.  
Biblioteca

# IV INTER-AMERICAN MEETING ON FOOT-AND-MOUTH DISEASE AND ZONOSSES CONTROL

WORLD HEALTH ORGANIZATION

LIMA, PERU, 5-7 APRIL 1971

Draft Agenda Item 5

RICA24/25  
3 April 1971  
ORIGINAL: SPANISH

## STATUS OF FOOT-AND-MOUTH DISEASE

### CONTROL PROGRAMS (Summary)<sup>x</sup>, 1970

ARGENTINA  
BOLIVIA  
BRAZIL  
CHILE  
COLOMBIA  
ECUADOR  
PARAGUAY  
PERU  
URUGUAY  
VENEZUELA

---

(x) - This document is based on a summary of the information provided by the countries in answer to the questionnaires sent by the Pan American Health Organization.

## GENERAL SITUATION

In 1970, all the South American countries continued making progress and consolidating their activities to eradicate Foot-and-Mouth Disease (FMD), with the sponsorship and technical assistance of the Pan American Foot-and Mouth Disease Center (PAFMDC) and the coordinated financial support of the Inter-American Development Bank (IDB).

Argentina, Uruguay and the Brazilian state of Rio Grande do Sul include in their systematic vaccination campaigns their entire cattle herds, amounting to approximately 70 million animals. Chile, Paraguay, and the Brazilian states of Bahia, Espiritu Santo, Minas Gerais, Parana, Santa Catarina and Sao Paulo, increased the areas covered, in accordance with the goals outlined in their over-all programs. It is estimated that approximately 15 million head of cattle were incorporated in 1970.

Colombia, Ecuador, Peru and Venezuela completed the preparation of projects for national FMD control programs and presented them to the IDB, which is examining them prior to granting the pertinent loan requests, which amount to a total of 16 million dollars. Bolivia is engaged in the preparation of a similar program. In all these countries work has been carried out in varying degrees and with different characteristics, by both the official animal health services and by the breeders themselves, to protect livestock from the devastating effects of the disease.

Table 1 shows that in 1970 more than 330 million doses of FMD vaccine were produced in South America, or 15 percent more than in 1969, and that 309 million vaccinations were effected, mostly on cattle. Only Argentina included sheep in systematic vaccinations, in which it used 28 million doses. In this context, attention is drawn to the progress achieved in testing the effectiveness of the vaccine, following the methods recommended by the PAFMDC.

Uruguay tested its entire vaccine production and Argentina approximately half, while Brazil, Chile and Paraguay conducted the first tests. All these countries have established the necessary services for this important activity, and similar services are in the study or planning stage in the rest of South America.

The epidemiological picture as regards FMD in South America was predominantly one of low incidence, with only two significant exceptions. After several years of freedom from the disease, this spread to the eastern states of Venezuela and even penetrated the state of Bolivar, where it had never before occurred. And in several regions of southern Brazil there was a recurrence of FMD caused by a subtype O1 virus. Table 2 shows the distribution of virus identified in the outbreaks from which samples were collected.

It is also of interest to note the appearance and eradication of outbreaks in marginal areas of the continent usually considered free from the disease. These occurred in Magallanes, Chile (January and March); Rupununi, Guyana (March); Leticia, Colombia (August); Curacao (August) and Chubut, Argentina (November). Notwithstanding the success obtained in stamping them out, they constitute a warning of the latent capacity of propagation of the FMD virus and of the need to intensify prevention and control measures.

The development of national FMD control programs in Argentina, Brazil, Chile, Paraguay and Uruguay and the existence of projects in the rest of the countries, with the financial support of the IDB and the technical advice of the Pan American Health Organization (PAHO) lead to the expectation that in the near future the necessary basic structure for controlling FMD will be available on a hemisphere-wide scale. Table 3 gives some idea of the financial investment being made by the countries in this field, taking into account only the budgets of the official animal health services and the cost of the vaccine paid by the farmers. In the case of Argentina and Uruguay, which have their entire territory under FMD control and where the national budget refers only to operating costs, these represent an outlay of 30 and 20 cents per head of cattle per year, respectively. These averages reveal an extremely small investment in comparison to the economic importance of the livestock sector and to the degree of protection afforded to the animal population.

#### ARGENTINA

The national FMD control program continued in operation without significant changes. The Health Control Service (SELSA) of the Secretariat of Agriculture and Livestock had a budget equivalent to 4.5 million dollars for current FMD control activities.

The private laboratories responsible for producing FMD vaccine prepared 168 million trivalent doses (OAC) under state control. 79 million doses were submitted to official tests. 5 million doses were rejected for different reasons. In 1969 SELSA approved 14 million doses, that is, 19 million less than in 1970.

Vaccinations had a parallel increase: 132.5 million cattle and 28 million sheep vaccinated. It can therefore be said that the goal of vaccinating the total cattle and sheep population in the areas affected by FMD has been fully attained.

SELSA's Central Reference and Control Laboratory identified FMD virus in 835 establishments where animals showed symptoms of vesicular disease. It made 529 diagnoses of type A virus, 119 of type C, and 110 of type O. Frequency in the two preceding years was similar, FMD having been identified in 1427 and 1954 livestock farms, respectively.

The 835 establishments where FMD occurred had a total of 380 thousand cattle, of which 56 thousand, or 15 percent, were infected. SELSA estimates that the record of morbidity amounted to 90 percent of the cases recorded during the period covered.

The benign enzootic situation that prevailed throughout the territory was endangered in July, when there was an outbreak of type A virus that affected 22 farms in the north-western area of the province of Chubut. It was stamped out by the slaughter of infected and exposed animals, including 123 cattle, 116 sheep, 93 goats and 27 swine.

The province of Chubut was officially declared free of FMD in June 1969.

In order to cooperate in the FMD control campaign, a study group was formed by representatives of government agencies and farmers, mainly for the purpose of promoting a number of applied research projects which are considered indispensable to achieve greater progress in controlling the disease. This joint group is supported fundamentally by the Institute of Agricultural Technology of Argentina (INTA) and by the Regional Commissions for Agricultural Studies (CREA), and receives technical cooperation from the PAEMDC. One of the top priority projects of the group is the evaluation of new types of vaccine; the U.S. Department of Agriculture,

through the Plum Island Animal Disease Laboratory, participates in this research work.

The SELSA/IDB agreement for a 10.5 million dollar loan from the Bank, focused on the development of plans for establishing and equipping a new FMD Reference and Control Laboratory with ample capacity for present and estimated future needs. It is expected that construction and the purchase of equipment for this laboratory will be completed in 1971.

## BOLIVIA

Under contract with the Government, a private firm of agricultural consultants undertook the preparation of a project for a national FMD control program. It is expected that the Government will present it for consideration to the IDB together with a request for financial aid, sometime around the middle of the current year.

Private institutions, such as livestock breeders' associations and agricultural chambers, decided to cooperate with the Ministry of Agriculture in establishing local animal health programs in Cochabamba and Santa Cruz. FMD control activities would be incorporated subsequently to the national program. Technical advice was requested from the PARMDC.

The Vesicular Disease Diagnosis Laboratory of the National Institute of Animal Biology (INBA) of the Ministry of Agriculture, examined samples from 49 farms where an outbreak of vesicular disease occurred in the department of Beni, Cochabamba, Potosí, and Santa Cruz. Out of 37 positive results for FMD virus, 19 were type O, 14 type A, and 4 type C. The total number of cases notified included 920 bovine cattle and 59 swine.

Reportedly, outbreaks of vesicular disease occurred in other departments of Bolivia but no data are available. Dairies in Cochabamba suffered an epidemic caused by type A virus during the first half of 1970. The local veterinary services carried out an intensive vaccination campaign, even incorporating to the vaccine the virus strain obtained during the outbreak.

The INBA is the only laboratory that prepares FMD vaccine in Bolivia. In 1970 it produced as much as 300,000 trivalent doses (OAC), or one third more than in the preceding year. State services recorded 122,000 vaccinations during

the year covered by this report conducted by the farmers themselves. Although there is no official record, it is known that the actual number of vaccinations is higher and also that imported vaccine was used. The Dirección General de Ganadería began to implement appropriate measures to control the sale of imported vaccine.

### BRAZIL

Vaccination campaigns continued to be intensified in the 7 states (Bahia, Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina and Sao Paulo) that comprise the national FMD control program.

The whole of the bovine population of Rio Grande do Sul, amounting to 12 million animals, was incorporated during the month of April. In the remaining states mentioned above, the percentages covered ranged from 10 to 30 percent.

The official veterinary services controlled the application of 94 million doses of vaccine on cattle by the cattle owners. The production of trivalent vaccine (OAC) reached 113 million doses approved by the Government, after rejection of 4 million doses, 91 million doses were approved in 1969.

After enactment of a new law regulating the production and sale of FMD vaccine, early in 1971, the Ministry of Agriculture implemented a system for testing the efficacy of the vaccine. Regular application of these tests will have a highly positive effect on vaccination campaigns.

The above measure coincides with the implementation of an agreement signed between the Brazilian Government and the IDB for a four-year FMD control program, financed by a loan of 13 million dollars from the Bank, to be applied in the aforementioned states and in Espiritu Santo. The agreement makes special provision for the establishment of official diagnosis and vaccine control laboratories and for personnel training.

The FMD control program in the territory of Roraima, neighbouring with Guyana and Venezuela, to meet commitments with these countries, completed its third year. At the same time, the Federal Government studied the feasibility of consolidating FMD control programs in livestock breeding areas.

with a potential for export in the states of Goias and Matto Grosso, where vaccination has been carried out at the initiative of the livestock farmers themselves and the local authorities of the veterinary services.

Disease was reported in 2,185 livestock farms, 74,000 bovine cattle having been affected. 1,049 samples were taken for identification of the agent that caused the disease, with the following results: 838 positive samples to FMD virus, 462 being type O virus; 203, type A virus, and 173, type C virus; 211 samples gave negative results.

The substantial increase in these statistics as compared with those for 1969, when 475 outbreaks of vesicular diseases were recorded, is parallel to the significant increase in outbreaks in certain areas of the southern states, particularly in the southwest of Rio Grande do Sul, caused by a subtype O<sub>1</sub> virus. General morbidity was low. On some occasions, however, the attack rate was relatively high. The problem was dealt with in time, using emergency ring vaccination measures and strictly restricting the movement of animals. At the same time, with assistance from the PAFMDC, a number of research projects and studies were started to determine the factors involved and seek appropriate measures to prevent repetition of this problem.

With the implementation of the agreement signed early in 1971 between the Government of Brazil, the State of Rio Grande do Sul, and PAHO for an animal health program in that state, an important step toward the attainment of this goal will have been taken.

CHILE

The first phase of the national FMD control program was launched in Region I, which comprises the provinces of Chiloe, Llanquihue, Osorno and Valdivia, with financial assistance from the Inter-American Development Bank. The first campaign, in the midst of winter, fulfilled its goal of vaccinating 60 percent of the existing bovine population, which is estimated at 900 thousand head. At the close of the year the necessary preparations were under way to incorporate Region II, covering the provinces of Arauco, Bio-Bio, Cautin, Concepcion, and Malleco, which have a total of approximately 860 thousand cattle. In this way the program will cover 60 percent of Chile's total bovine population.

National production of vaccine amounted to 5,200,000 doses of trivalent (OAC) vaccine, or 2 million doses less than in 1969. The decrease was due to changes required in the industry to adapt to the new quality control called for by the State.

In August, control to ascertain the effectiveness of the vaccine began to be applied, 400,000 doses having been rejected. In order to meet the transitory need of vaccine, 1,300,000 doses of Uruguayan vaccine were imported.

The Agricultural and Livestock Service (SAG) responsible for the national FMD control campaign, entered into agreements with the Ministry of Education, the University of Chile and the Southern University to obtain the cooperation of these institutions in the field of community education and in the development of research projects.

In 1970 SAG collected information on 1,039 farms affected by FMD, as compared with 1,208 the preceding year. Samples for diagnosis were obtained on 249 occasions, with the following result: 132 samples of type A, 56 of type O, 6 of type C, while 56 were negative.

The number of infected cattle was 19,471; swine, 2,664; sheep 314, and goats 172. Cattle morbidity was 72 per 10,000, mortality 4,6 per 100,000, and the case fatality rate 0,6 percent. SAG estimates that these figures are approximately half of the actual number of cases in the country. However, it admits that the incidence of the disease in 1970 was manifestly lower than in preceding years.



Notwithstanding the above, there were two outbreaks in the southern province of Magallanes which is considered free of FMD. One outbreak occurred in January and the second in March, affecting 12 stock farms in all. Both outbreaks were stamped out in due course through the application of a strict policy of slaughtering, isolation, quarantine and disinfection. In the affected and neighboring farms a total of 751 cattle, 14,688 sheep, and 951 swine were slaughtered. The last clinical case was recorded on March 22.

### COLOMBIA

The policy of promoting vaccination by the farmers themselves and by private technical services continued to be applied.

The Colombian Agricultural Institute (ICA) supervised the application of approximately 11 million bivalent doses (OA) manufactured by the state laboratory, VECOL, which produced a total of approximately 12.5 million doses.

The Government presented a request to the IDB for a 20 million dollar loan to partially finance an animal health and agricultural research and extension project, including 7 million dollars for FMD and brucellosis control. The subproject on animal health envisages a first phase of four years for mass control of FMD in the departments on the Atlantic coast, to be extended subsequently to the entire national territory. The loan application is being examined by the Bank.

The ICA diagnosis laboratory studied biological samples from 273 livestock farms where vesicular diseases were reported. It diagnosed FMD virus in 145 cases, 92 being classified as type A and 53 as type O. Seventy-two samples showed positive reactions to vesicular stomatitis virus, with the following breakdown: 52 for New Jersey type and 20 for Indiana type. Fifty-six samples were negative.

The highest percentages of type O virus were recorded in the departments of Cundinamarca and Magdalena, and of type A virus in Nariño and Antioquia. None of these, however, reported the occurrence of epidemic outbreaks nor did any other part of the country.

A second outbreak of FMD was recorded in July in Leticia, in the department of Amazonas. The existence of a type C virus was identified. A similar outbreak occurred exactly

three years ago in Leticia, caused by a virus of the same type. On that occasion it was controlled by slaughtering diseased and exposed animals and with ring vaccination. During the present outbreak isolation and quarantine measures were used, as well as ring vaccination. In both cases vaccine was supplied by the PAFMDC. The disease broke out in four establishments owning 390 head of cattle. The last clinical case was observed in August. Leticia has a small livestock population of approximately 4,000 cattle, and is isolated from the livestock breeding areas of Colombia by an enormous distance covered by Amazonic forests with no land communications.

### ECUADOR

Vaccination of cattle continued, in accordance with the demands of farmers or the priorities assigned by the Government veterinary services to attack areas where the disease most frequently occurs. Statistics showed that 905 thousand cattle had been vaccinated, in 80 percent of the cases by State Services.

Slightly over 650,000 doses of bivalent vaccine (OA) were imported from Colombia, while the laboratory of the Animal Health Center of Ecuador produced 200,000 doses. Following a reorganization of the public administration, this laboratory was shifted from the Ministry of Production (formerly the Ministry of Production (formerly the Ministry of Agriculture and Livestock) to the Ministry of Public Health. A program of expansion and changes had previously been started, which will make it possible to produce in the near future all the vaccine required by Ecuadorean livestock.

This transformation of the laboratory is in accordance with the national FMD control program prepared at the end of the year and immediately presented to the IDB with a request for financial aid, amounting to 2.5 million dollars over a period of 5 years. The request is being considered by the Bank.

Encouraged by the requirements of this program, the Animal Health Center prepared a new Animal Health Bill to take the place of the law in effect since July 25, 1959, together with general regulations and specific regulations for animal quarantine stations.

Cases of vesicular diseases were reported in 229 farms having a total of 7,275 infected cattle. Samples were collected and analyzed on 177 occasions, foot-and-mouth disease virus

being diagnosed in 94 establishments, with 88 positive samples of type O virus and 6 of type A virus. In 33 establishments vesicular stomatitis was identified, with 23 results for New Jersey type virus and 10 for Indiana type. Fifty samples gave negative results.

The Animal Health Center estimates that the record available included approximately 40 percent of the outbreaks of vesicular disease that occurred. Unlike 1969, no outbreaks with the characteristics of an epidemic were observed.

The fourth meeting of representatives of the Agreement signed between Colombia, Ecuador, and PAHO for an FMD prevention and control program in the border region between Colombia and Ecuador was held. Among other recommendations should be noted those referring to expansion of the area covered by the program and the question of considering the inclusion of other important diseases such as brucellosis, tuberculosis, leptospirosis, trichomoniasis and vibriosis in the control program.

#### PARAGUAY

In October, the national FMD control service (SENALFA) supervised the vaccination of 1,700,000 cattle, or practically one third of the stock of the country, completing a total of 4,400,000 vaccinations directly supervised during the year. Outside the campaign area 2.5 million cattle vaccinations were notified. More than 5 million doses of trivalent (OAC) vaccine were imported from Uruguay and almost 2 million from Argentina.

It should be noted, with reference to vaccine, that a private laboratory installed in Asunción produced a first batch of 720,000 doses of trivalent vaccine (OAC) at the end of the year; the effectiveness of the vaccine was tested and approved by SENALFA in accordance with regulations for the control of FMD vaccines drawn up recently. It is expected that in future Paraguay will have available all the vaccine required, prepared in its own territory.

Likewise, SENALFA started its provisional laboratory for the diagnosis of vesicular disease viruses while the definitive facilities are being built in accordance with plans already completed. Construction will be financed with funds loaned by the IDB for the FMD control program in Paraguay.

In 1970, SENALFA recorded 1,163 cases of FMD in cattle in 63 different establishments. Type O virus was identified in 15 samples and type A in 37. No type C virus was diagnosed during the year.

It is not possible to relate these figures to the real number of cases, chiefly because a large area of the country is not yet covered by SENALFA activities. Nevertheless, it is recognized that in the area covered, incidence of the disease has been very slight.

With a view to improving knowledge on the occurrence of the disease, SENALFA requested aid from the PAFMDC to reorganize its notification, statistics and evaluate section. The Center prepared a plan to be implemented during the present year, which is expected to serve as an experience and an example for other countries of the hemisphere.

#### PERU

Production of trivalent (OAC) vaccine, which is manufactured exclusively by the state laboratory of the Ministry of Health, amounted to 2,873,180 doses, or 60 percent more than the previous year.

3,220,894 doses of trivalent vaccine were applied in the twelve agricultural zones. Agencies of the Ministry of Agriculture applied 3,107,965 vaccines and private agencies 122,545. Almost all the dairy and beef cattle in coastal regions were vaccinated ~~three~~ times annually.

The Research Service of the Ministry of Agriculture identified 238 establishments with FMD, having recorded 4,184 bovine cases out of a population of 34,503 or an attack rate of 12 percent.

The FMD diagnostic laboratory examined 55 samples, with the following results: 18 type O virus, 23 type A, and 5 type C. Twenty-four samples showed negative results.

Vesicular stomatitis was identified in 26 establishments, 166 bovine cases out of a population of 3,111, or an attack rate of 5.33%. Out of 26 samples analyzed, 21 were Indiana type, 5 New Jersey type, and 37 gave negative results.

In the year under review the authorities of the Ministries of Agriculture and Health, with the advice of the area

consultant of the PAFMDC, drew up a national FMD control program which was presented in form of loan request to the IDB. The program envisages 3 basic projects:

- Project A: FMD control campaign in the field and at headquarters.
- Project B: Control posts and quarantine stations
- Project C: Diagnosis, reference and vaccine production laboratories.

The total cost of the project over a period of 5 years amounts to 11,750,200 dollars. The IDB would contribute 3,750,000 dollars and the national Government 8,000,200 dollars. The program was prepared taking into consideration plans for a further five years of activities.

#### URUGUAY

The Foot-and-Mouth Disease Control Agency (DILFA) supervised the four monthly obligatory vaccination throughout the territory on an estimated population of 8 million cattle. This work is supervised jointly with the help of livestock farmers committees operating through rural schools; there are over 800 of these operating under the control of DILFA, which assigns top priority to education and extension activities.

It is important to note that all FMD vaccine sold in Uruguay has first to pass official efficacy control tests. This is a goal to be sought in all South American countries. Private laboratories produced a total of 27,800,000 doses of vaccine in 1970, of which 700,000 were rejected.

In 1970 DILFA recorded animal cases of vesicular disease in 208 establishments, diagnosing the presence of FMD virus in 107 establishments, with the following breakdown for virus types: 65 O, 36 A and 6 C. During the second semester there was an increase in outbreaks, due to virus O, principally in the northern departments, usually described as having low morbidity and scant virulence.

#### VENEZUELA

The entire production and application of FMD bivalent (OA) vaccine was kept in the hands of the Ministry of Agriculture and Animal Husbandry. The figures for 1970 were

six million doses and approximately the same quantity of cattle were vaccinated. This is lower than in 1969, when approximately eight million doses were produced and applied.

This difference is attributed, in part, to the necessity of adapting other virus strains in the production of vaccine to deal with a new subtype A, to the technical changes required in the laboratory, and to difficulties in obtaining suitable replacement for the transport of equipment used in vaccinations. The solution of these problems is contemplated in a project for a national FMD and brucellosis control program.

This project was recently presented to the IDB with a request for a three million dollar loan to help finance the subproject on FMD control over a period of four years. The loan will be used mainly in diagnosis, vaccine production, control laboratory and in new field equipment.

In 1970 FMD virus was diagnosed in 97 cattle farms having animals showing vesicular lesions, of which 55 were type O and 42 type A.

New Jersey type vesicular stomatitis virus was identified in 24 outbreaks. It is known that these figures only represent part of the real incidence, although the magnitude of the difference is not known.

FMD continued to spread into the eastern and northwestern areas of Venezuela, including the state of Bolivar, therefore the entire territory of the country was considered to be infected. On three occasions slaughtering was resorted to in an attempt to detain propagation of the disease in Bolivar, but results were unsatisfactory. The special conditions of extensive cattle farming and the lack of sufficient resources led to a change of policy and the adoption of systematic vaccination together with control of animal movements.

Table 1. FMD VACCINE PRODUCED IN SOUTH AMERICA <sup>and vaccination</sup>DURING 1970

(in millions of doses)

COUNTRY	Doses <sup>produced</sup> approved		Efficacy control	Cattle vaccinations	
	<del>1969</del>	1970		Individuals	State
ARGENTINA	144.0	163.2	79.0	161.141.320 <sup>a/</sup>	88.525 <sup>b/</sup>
BOLIVIA	0.2	0.3	-	122.470	-
BRAZIL	91.5	113.1	-	94.457.273	-
COLOMBIA	14.3	12.4	-	10.780.000	-
CHILE	7.8	5.2	0.6	3.000.000 <sup>c/</sup>	1.804.600
ECUADOR	0.6	0.2	?	123.676	781.664
PARAGUAY	-	0.7	0.7	6.974.230	-
PERU	1.9	2.9	-	112.545	3.107.965 <sup>d/</sup>
URUGUAY	20.0	27.8	27.8	20.337.651	-
VENEZUELA	8.4	5.9	-	-	6.174.430

a/ Includes 28,618,219 sheep vaccinations

b/ Includes 67,835 sheep vaccinations

c/ Estimated

d/ Includes 313,731 sheep vaccinations, 41,738 swine vaccinations and 391,329 goat vaccinations

SOUTH AMERICA

1 9 7 0

Table 2. Typing of FMD and Vesicular  
Stomatitis Samples

COUNTRIES	Foot-and-mouth disease			Vesicular Stomatitis		Negative	Total
	O	A	C	NJ	IND		
ARGENTINA	110	529	194	0	0	...	833
BOLIVIA	19	14	4	0	0	12	49
BRAZIL	462	203	173	0	0	211	1049
COLOMBIA	53	92	6	52	20	56	273 <sup>4</sup>
CHILE	56	132	6	0	0	55	249
ECUADOR	88	6	0	23	10	50	177
GUYANA	3	0	0	0	0	0	3
PARAGUAY	15	37	0	0	0	16	68
PERU	22	33	12	4	20	21	112
URUGUAY	65	36	6	0	0	101	208
VENEZUELA	55	42	0	24	0	...	121
T O T A L	1014	993	393	103	50	435	2988
	948	1124	396			520	3192

... Data not available



Table 3. INVESTMENT BY THE COUNTRIES IN FMD CONTROL  
DURING 1970  
(Thousands of US\$)

COUNTRY	CATTLE (millions)	STATE BUDGET	COST OF VACCINE PAID BY FARMERS
ARGENTINA	49	4.560	9.670
BOLIVIA	2.3	185 <sup>x</sup>	6
BRAZIL	95	1.275 <sup>xx</sup>	3.023
COLOMBIA	19	1.468 <sup>x</sup>	765
CHILE	2.8	3.165	211
ECUADOR	2.4	420	108
PARAGUAY	5.6	387	390
PERU	3.7	942 <sup>x</sup>	228
URUGUAY	8.2	132	1.570
VENEZUELA	8.3	2.457	xxx

x Aggregate budget for animal health; includes FMD activities.

xx Federal Government Budget; excludes resources from states.

xxx Free distribution by the State.