



FEDERATIVE REPUBLIC OF BRAZIL
Ministry of Agriculture, Livestock and Food Supply
Secretariat of Animal and Plant Health and Inspection

Eradication of an FMD outbreak in Paraná, Brazil

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SUMMARY

This report is presented upon conclusion of the cleaning measures and confirmation of absence of virus circulation in the areas affected by the FMD outbreaks.

In Paraná, seven outbreaks were confirmed in the municipalities of Bela Vista do Paraíso, Grandes Rios, Loanda, Maringá and São Sebastião da Amoreira, located in the north and northwest of the state. The outbreaks were confirmed after following intense clinical and epidemiological investigations in the region. The event in Paraná was related to the entry of infected cattle from an outbreak registered in the municipality of Eldorado, Mato Grosso do Sul, in September 2005.

The eradication/cleaning strategy of the affected areas basically consisted of eliminating susceptible animals within the outbreaks and from herds related to those, by direct or indirect contact, and banning the trade and movement of FMD susceptible animals and risk products.

The eradication of the FMD outbreaks in Paraná was concluded on March 28, 2006 with a total of 6,781 bovines destroyed. No other susceptible species were present in these outbreaks. All the owners were compensated to a total amount of approximately US\$ 2,190,000.00.

A minimum standstill of 30 days was implemented in all the properties involved after the destruction. At the end of this period, non-vaccinated calves aged 6 to 12 months and negative for structural FMD virus proteins submitted to the LPB-ELISA were introduced as sentinel animals.

The stage following the liberation of the properties consisted in population-based serological surveys and sampling methodology applied to the remaining herds of the interdicted municipalities. These investigations used the FMD NSP antibody detection techniques recommended by the Pan American Center for Foot-and-Mouth Disease – PANAFTOSA (ELISA and EITB diagnostic system).

In Paraná viral circulation assessments were carried out independently in the interdicted areas and in the rest of the municipalities in the state. The surveillance to assess viral circulation in the interdicted areas involved 9,826 animals of 576 holdings. The serum samples were collected between March and August 2006. The investigation for the rest of the state of Paraná was carried out between April and August 2006 with 7,797 animals in 932 holdings. Analyses of the results, associated to supplementary epidemiological investigations, confirmed the absence of viral circulation.

Based on the above, the Brazilian Veterinary Service considers that the requirements established in the Terrestrial Code for restoration of the official status of FMD free zone where vaccination is practiced have been met. On May, 24, 2008, the State of Paraná regained the OIE recognition of FMD free with vaccination.

ERADICATION OF FOOT AND MOUTH DISEASE IN PARANÁ

After the clinical confirmation of vesicular disease in Mato Grosso do Sul, on September, 30, 2005, all the States were notified and began surveillance activities in the holdings that had received susceptible animals from the banned area of that state. After the FMD outbreak was confirmed, on October, 8, 2005, surveillance measures were intensified throughout the country.

On October 21, 2005, the Official Veterinary Service in the State of Paraná identified suspect cases in holdings that had received animals from another holding located at the interdicted area of Mato Grosso do Sul. The entry of 87 bovines between 12 and 24 months of age occurred prior to the detection of the outbreaks in the State of Mato Grosso do Sul. Both the origin and the destination holdings belonged to the same owner, and the holding which sent the animals was later confirmed as an outbreak of FMD.

The 87 bovines remained for 8 days in a holding located in the municipality of Bela Vista do Paraíso. From there they were transported to an auction in the municipality of Londrina, Paraná.

All the properties that received cattle from the above-mentioned auction were located in Paraná and were investigated by the Official Veterinary Service. The clinical inspections, epidemiological investigations and laboratory tests applied during the investigation led to the identification of 11 holdings with suspect FMD cases: the holding that had received the animals from Mato Grosso do Sul, five holdings that purchased animals in the auction and another five located in the proximity.

On December 5, 2005, once the outbreak in the holding of origin, located in Mato Grosso do Sul, was confirmed, the epidemiological link was established, and an FMD outbreak was declared in the State of Paraná, in a holding located in the municipality of São Sebastião da Amoreira. This holding was considered as an FMD outbreak because 23 females coming from a confirmed outbreak presented antibodies against non-structural proteins (NSP) of the FMD virus.

The other suspect cases were submitted to a supplementary epidemiological analysis in January and February 2006, supported by PANAFTOSA, during which 2,205 serological tests were performed to detect antibodies against NSP. The serum collection for the laboratory tests concentrated in bovines younger than 24 months, including those animals with clinical signs consistent with vesicular disease and others purchased in the auction of Londrina.

Despite the impossibility of viral isolation, the analysis carried out, according to PNEFA standards and OIE guidelines, confirmed another six FMD outbreaks in holdings of Paraná that had been interdicted since 21 October 2005. Table 1 presents data on the registered outbreaks and Figure 1 shows their geographical location.

Table 1. Data on the outbreaks confirmed in Paraná in 2005 and 2006

| ID | Municipality | Diagnosis | Latitude | Longitude | Confirmation (dd/mm/yyyy) | Destroyed animals | | |
|----|---------------------------|---------------------------|----------------|----------------|---------------------------|-------------------|------|------------|
| | | | | | | Bovines | Pigs | Small Rum. |
| 1 | São Sebastião da Amoreira | clinical/epidemiological* | -23° 27' 58,0" | -50° 44' 57,0" | 05/12/2005 | 1,810 | 0 | 0 |
| 2 | Bela Vista do Paraíso | clinical/epidemiological* | -23° 05' 23,7" | -51° 12' 33,1" | 20/02/2006 | 84 | 0 | 0 |
| 3 | Grandes Rios | clinical/epidemiological* | -24° 11' 04,6" | -51° 20' 38,1" | 20/02/2006 | 39 | 0 | 0 |
| 4 | Maringá | clinical/epidemiological* | -23° 20' 34,9" | -51° 52' 24,1" | 20/02/2006 | 144 | 0 | 0 |
| 5 | Loanda | clinical/epidemiological* | -22° 59' 47,3" | -52° 58' 08,2" | 20/02/2006 | 1,728 | 0 | 0 |
| 6 | Loanda | clinical/epidemiological* | -22° 58' 10,6" | -52° 59' 35,4" | 20/02/2006 | 2,745 | 0 | 0 |
| 7 | Maringá | clinical/epidemiological* | -23° 19' 57,8" | -51° 50' 59,0" | 20/02/2006 | 231 | 0 | 0 |

* associated to epidemiologic investigation and detection of NSP of FMD virus

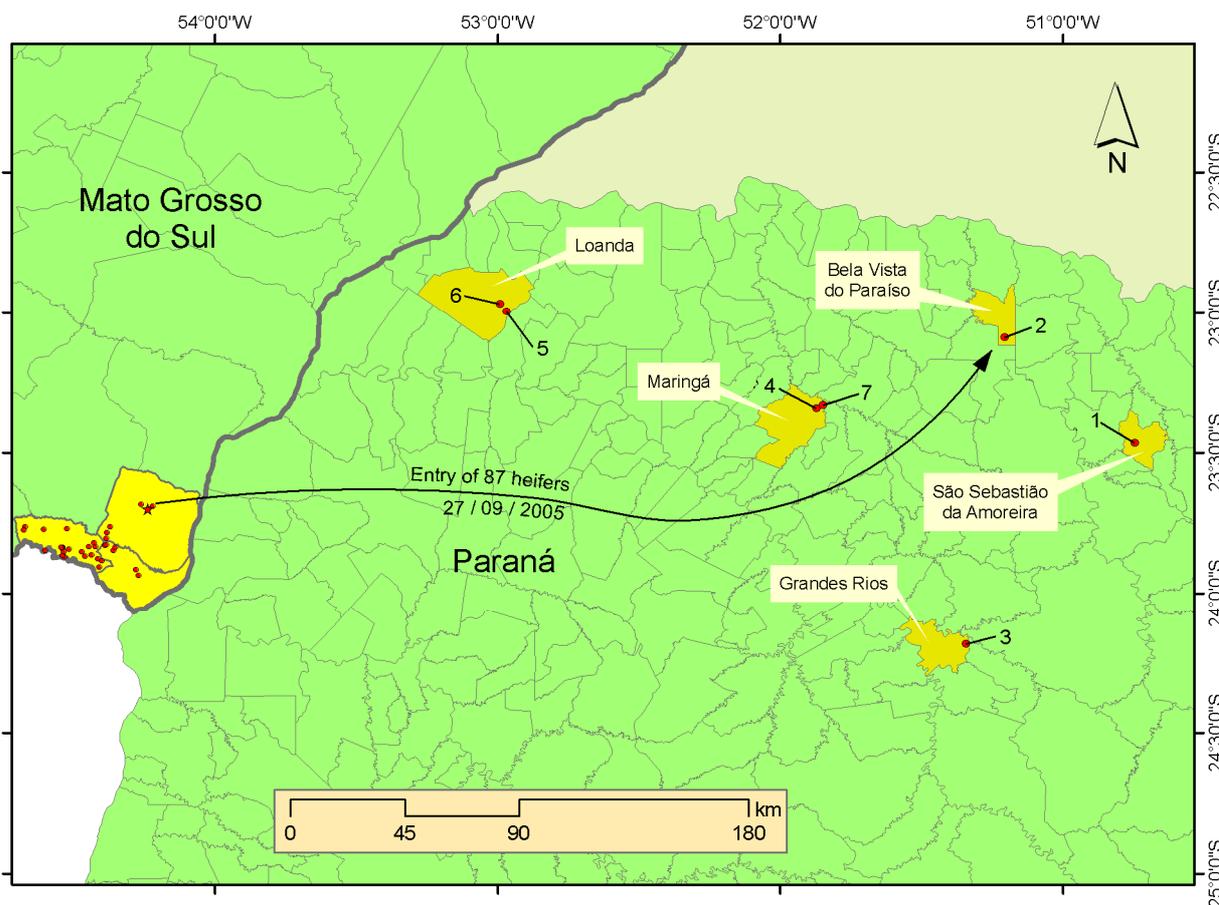


Figura 1. Geographical representation of the outbreaks registered in Paraná (The number of the outbreaks shown in the map corresponds to the ID field of Table 1)

Faced with the confirmation of the outbreaks, the Official Veterinary Service applied the necessary measures to regain the previously recognized status as FMD free zone where vaccination is practised in accordance with the guidelines established by the OIE, particularly the deadlines and activities laid down in item 2, article 2.2.10.7, of the Chapter on FMD of the Terrestrial Code.

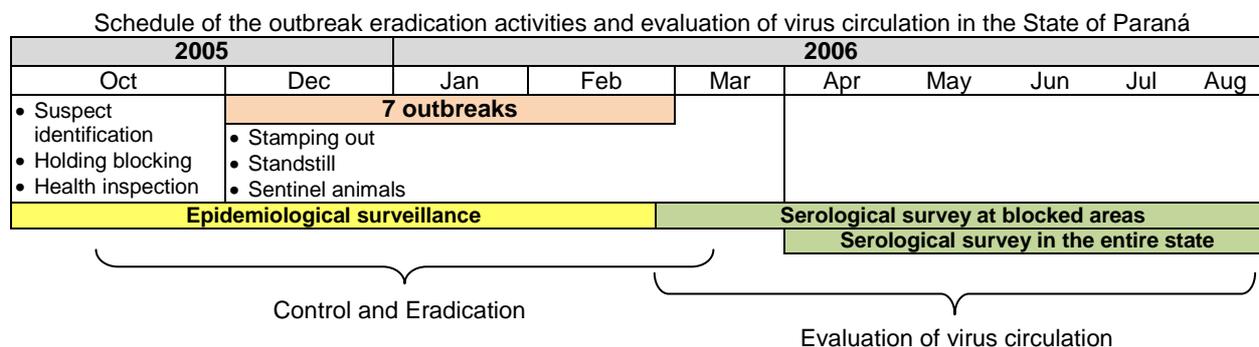
The eradication of the FMD outbreaks in the State of Paraná was concluded on March 28, 2006 with a total of 6,781 bovines destroyed. No other susceptible species were present in these outbreaks. All the owners were compensated to a total amount of approximately US\$ 2,190,000.00.

The introduction of sentinel animals in the depopulated holdings began on May 3, 2006 with 347 non-vaccinated calves aged 6 to 12 months, submitted to the LPB-ELISA test and negative for structural FMD virus proteins. During the holding time of these animals in the infected area, three samples of blood serum were collected, on days 0, 15, and 30, all of them presenting a negative result to ELISA 3ABC/EITB test.

The serological investigation to detect viral circulation in the interdicted areas involved 9,826 animals of 576 holdings. Serological samples were collected between March and August 2006 and were processed in a laboratory of MAPA. Analyses of the results, associated to supplementary epidemiological investigations, confirmed the absence of viral circulation.

The survey for the rest of the state of Paraná was carried out between April and August 2006 with 7,797 animals from 932 holdings. The results showed that only herds in the seven confirmed outbreak sites had been infected.

Once the outbreaks were confirmed, control and eradication actions were taken for a period of four months, while the activities for the evaluation of virus circulation lasted around six months. In the schedule below the duration of the main activities carried out in Paraná are summarized.



During 2006 and 2007 various serological surveys were conducted in the country following the detection of disease/infection in Mato Grosso do Sul and Paraná. These studies involved 6,665 rural properties and 99,461 bovines aged 6 to 24 months.

Specifically in the State of Paraná and bordering states (São Paulo and Santa Catarina) seroepidemiological surveys were carried out in 2006. Table 2 shows the information about the study carried out, and the results achieved.

Table 2. Information about seroepidemiological survey to evaluate the virus circulation started in 2006

| State | Region | Period in which samples were collected | Age of bovines sampled | Number of rural properties | Bovines | |
|----------------------|----------------------|--|------------------------|----------------------------|-------------------|----------------|
| | | | | | Number of Samples | Serum-positive |
| Paraná | Interdicted Area | March to August/06 | 6 to 24 months | 576 | 9.826 | 34 0.35% |
| | Non-Interdicted Area | April to August/06 | 6 to 12 months | 932 | 7.797 | 24 0.31% |
| Total | | | | 1.508 | 17.623 | 58 |
| São Paulo | The whole state | May to August/06 | 6 to 12 months | 455 | 9.100 | 3 0.03% |
| Santa Catarina* | The whole state | November/06 to January/07 | 6 to 36 months | 1.347 | 11.059 | 48 0.43% |
| Total general | | | | 3.310 | 37.782 | 109 |

* only one sampling

The surveys carried out demonstrated the absence of virus circulation in the states involved. In the states of Paraná and São Paulo, in all primary sampling units with at least one seropositive animal in the first sampling it was observed a reduction in the number of reactor animals in the second sampling. All seropositive animals were inspected at least four times, and it was not observed any clinical signs compatible with vesicular disease. The samples of blood serum of the animals that remained seropositives in the second sampling were evaluated according to the ELISA-LPB technique, showing antibodies titers not compatible with the infection. These animals were also submitted to two OPF samplings in a 15-day interval, resulting negatives to the tests of viral research.

After concluding the sanitary measures for the eradication and the results of the seroepidemiological surveillance which have demonstrated the absence of viral circulation, the protection zone was lifted and the restrictions to the State of Paraná were suspended in November, 2006.

On May, 24, 2008, the State of Paraná regained the OIE recognition of FMD free with vaccination.



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