Foot-and-mouth disease outbreaks in the **United Republic of Tanzania**, 2000–04

Month	Number of regions	Number of districts	Number of outbreaks	Number of cases	Number of deaths	Number at risk
January 2004	6	10	16	433	4	6 171
February 2004	10	19	51	70	0	2 086
March 2004	13	24	71	2 542	25	118 376
April 2004	10	19	43	5 017	47	112 170
May 2004	12	18	35	1 916	68	70 773
June 2004	11	19	53	31 107	111	167 773
July 2004	8	10	17	2 248	8	28 820
August 2004	11	23	44	4 379	104	80 557
September 2004				3 770	47	74 924
October 2004	8	14	25	358	1	45 955
November 2004	2	2	4	54	0	538
December 2004	3	3	6	27	0	2 668
Total	**19**	**69**	**339**	**51 921**	**415**	**710 811**
2000*			113	7 189	597	
2001*			75	7 655	165	
2002*			58	2 536	60	
2003*			160	19 915	347	

Source: P. Njau. Presentation at OSRO/RAF/404/SAF workshop, Onderstepoort, South Africa, 3–4 May 2005; and (*) World Organisation for Animal Health (OIE)

There was an outbreak in 2004 first reported in Namwala District and Itezhi-Tezhi District (July), in Mumbwa, Central Province, in Chibombo District (August), in Monze District (September) and in Nega-Nega (October) (see map, p. 8). The control measures exercised during this outbreak included quarantine, vaccination, zoosanitary measures, public awareness and sensitization training, disease reporting and surveillance activities.

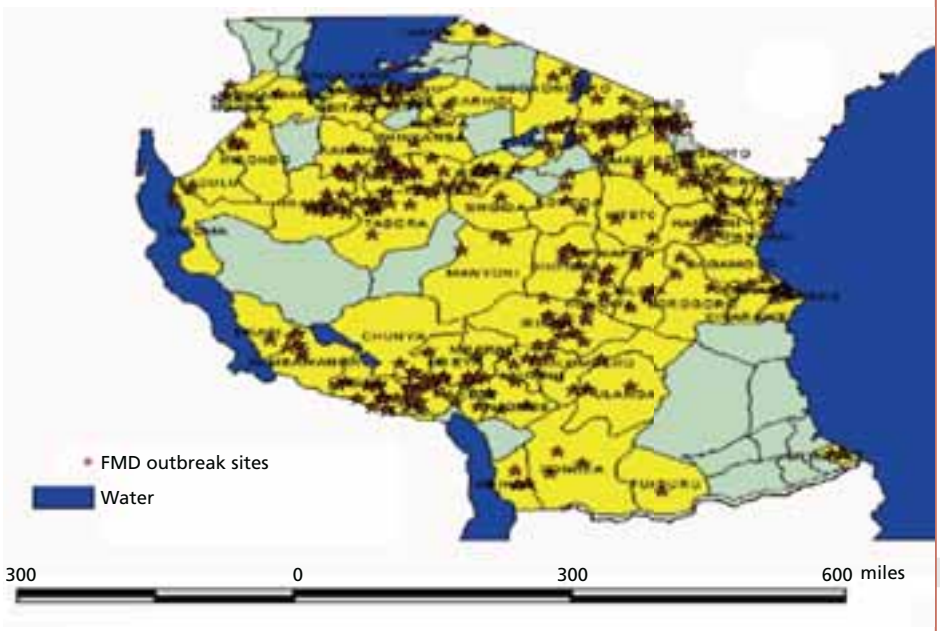
FMD is currently under control in Zambia. Disease monitoring and surveillance are ongoing. A ban on movement of livestock was lifted in March 2005. Movement of livestock to abattoirs is conducted with veterinary escorts, generally by truck, upon assurance that the abattoir is prepared to slaughter immediately.

Zambia's strategy for sustained FMD control focuses on defining and updating definitions of FMD clusters within the country (see map, p. 9), sustaining vaccination programmes and other control measures, holding regular meetings of the Livestock Coordination Group (a public–private stakeholder initiative) to review the FMD situation and creating a disease emergency fund.

In **Zimbabwe**, there were a series of FMD outbreaks in 2001–04. The primary outbreaks have all been associated with incursions of buffalo onto domestic property and the encroachment of humans introducing cattle on game reserves.

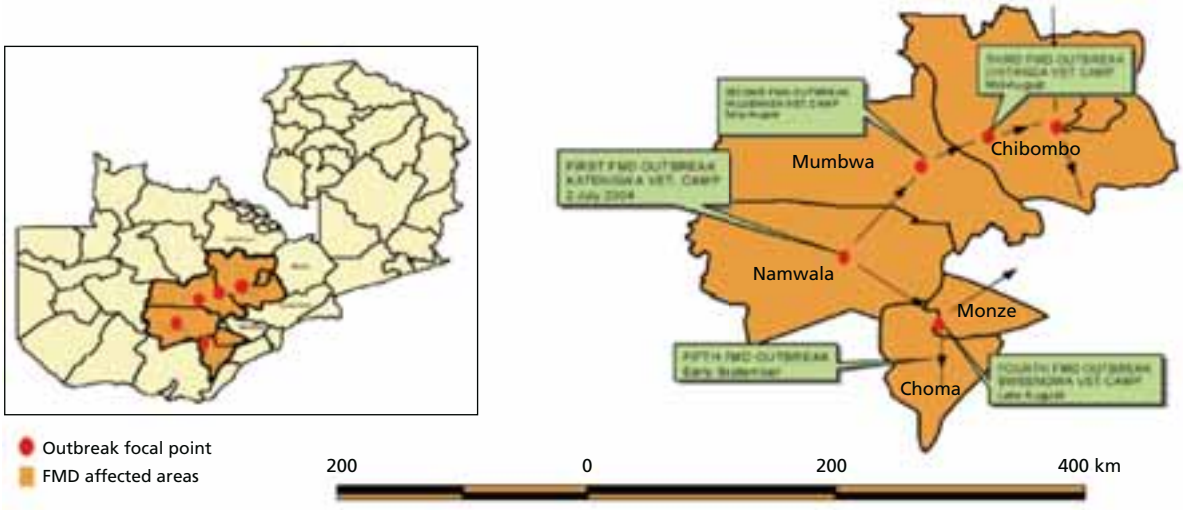
The first primary outbreak, in August 2001, resulted in several secondary outbreaks in southern Zimbabwe (see vector map, p.10). Another primary outbreak, which

Foot-and-mouth disease outbreaks reported in the **United Republic of Tanzania**, 2004, by district



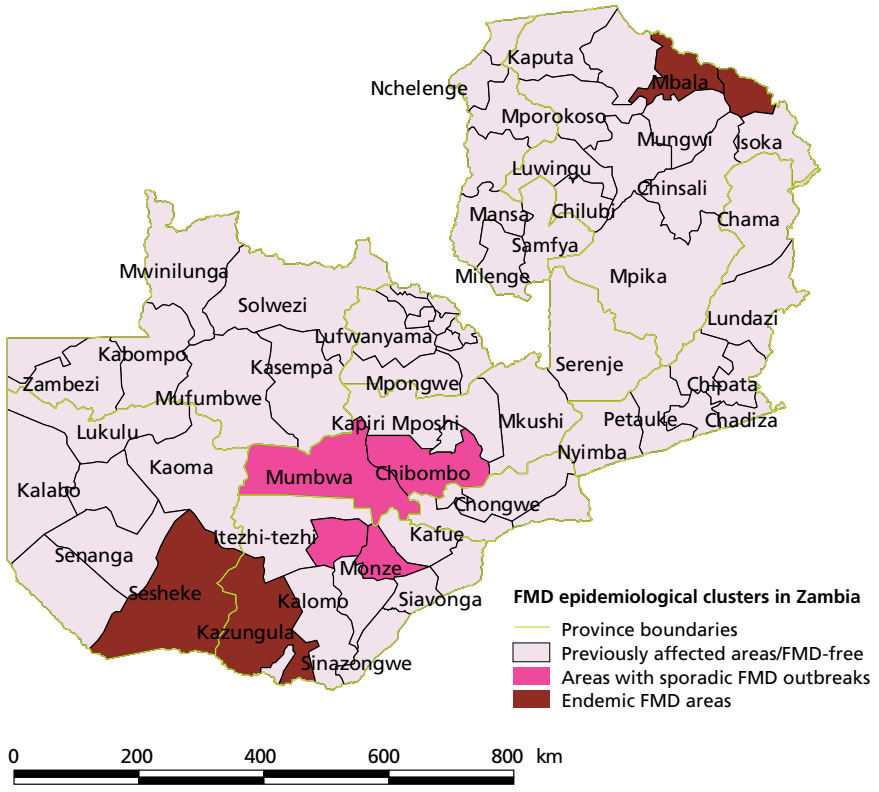
Source: P. Njau. Presentation at OSRO/RAF/404/SAF workshop, Onderstepoort, South Africa, 3–4 May 2005

Foot-and-mouth disease outbreaks in **Zambia**, 2004



Source: F. Mulenga. Presentation at OSRO/RAF/404/SAF workshop, Onderstepoort, South Africa, 3–4 May 2005

Foot-and-mouth disease epidemiological "clusters" in **Zambia**



Source: F. Mulenga. Presentation at OSRO/RAF/404/SAF workshop, Onderstepoort, South Africa, 3–4 May 2005

occurred in August 2001 in Lupane in northwestern Zimbabwe, produced two secondary outbreaks. A third primary outbreak, which occurred in October 2001 northwest of Bulawayo, did not result in any secondary outbreak. A fourth outbreak, which occurred in August 2002 east of Masvingo around the Save conservancy area, produced a number of secondary outbreaks. The fifth and final outbreak, which occurred in October 2002 in the southernmost part of Zimbabwe, produced one secondary outbreak.

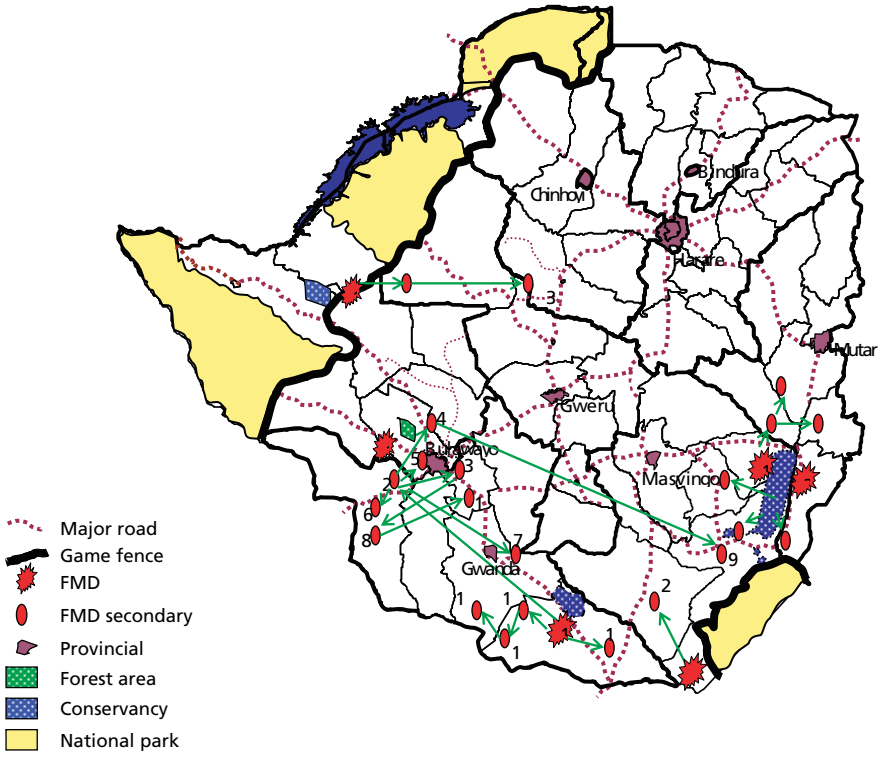
Acknowledgements

The information provided was assembled by Fred Musisi from reports made by participants of the FAO OSRO/RAF/404/SAF workshop, including various country representatives and the OSRO/RAF/404/SAF project staff of countries where activities were in operation. EMPRES is grateful for the contributions made by these participants. The workshop was organized through funding for project OSRO/RAF/404/SAF provided by the Government of the Republic of South Africa to an FAO appeal within the framework of the United Nations Consolidated Inter-Agency Appeal for southern Africa.

Foot-and-mouth disease outbreaks in **Zimbabwe**, 2001–04, by province

Province	Number of foci	Date of last case dd/mm/yyyy
Manicaland	107	09/08/2003
Mashonaland Central	1	16/07/2003
Mashonaland East	14	23/02/2004
Mashonaland West	25	13/05/2004
Masvingo	177	07/10/2004
Matabeleland North	20	03/12/2004
Matabeleland South	14	05/01/2005
Midlands	70	10/10/2004
	354	2003
	8	2002
	18	2001
Total	**800**	

Primary foot-and-mouth disease outbreaks in **Zimbabwe**, August 2001–October 2002



Source: W. Madzima. Presentation at OSRO/RAF/404/SAF workshop, Onderstepoort, South Africa, 3–4 May 2005

Special disease analysis report on FMD Asia-1: EMPRES and the EUFMD

Foot-and-mouth disease serotype Asia-1 in China, 2005

In 2005, there was confirmation of foot-and-mouth disease (FMD) virus serotype Asia-1 infection in cattle in the Hong Kong Special Administrative Region of China, and subsequently in widely dispersed locations on the Chinese mainland. These infections represent a major eastward shift in the known distribution of this virus type.

Extensive spread within China may increase risk to neighbouring countries. There is evidence that some spread may have already occurred: on 15 June 2005, FAO received a report of Asia-1 infection in the Amur Region of the Russian Federation, close to the Chinese border. This infection was subsequently reported to the World Organisation for Animal Health (OIE).

The reservoir of FMD virus (FMDV) serotype Asia-1 is generally considered to be in South Asia, particularly in India and Pakistan – countries with very high bovine and buffalo population densities. This virus type has often been associated with epidemic spread from these reservoir animal populations into western Asia as far as Turkey, and even into Greece (2000). However, the eastward spread to dispersed, possibly widespread outbreaks on the Chinese mainland appears to be a new and worrying development. Where entry into naive animal populations occurs, epidemics can be particularly severe.

Actions taken

As part of EMPRES and European Commission for the Control of Foot-and-Mouth Disease (EUFMD) activities, FAO has tracked the reports of severe FMD outbreaks in central Asia and western China that have occurred between 2003 and the present and has actively engaged with the countries concerned to improve reporting and follow-up actions.

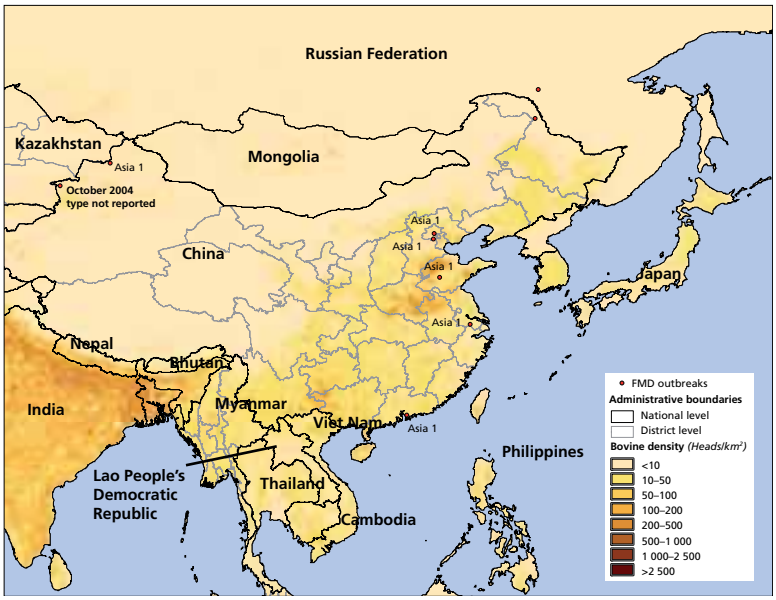
The development in China appears to be the consequence of a failure of the disease reporting system in a number of countries, mostly in central Asia, resulting in country-to-country spread and, it would appear, spread from western China to eastern China in 2005.

The consequence of a failure of the disease reporting system in a number of countries is a country-to-country spread

Tracking and analysing news reports

In 2003, FAO obtained media reports and unofficial reports from field-based projects and various organizations of a serious change in the FMD situation in several central Asian countries. FAO encouraged the authorities of the countries concerned to confirm or refute the reports and offered assistance for field or laboratory epidemiological investigations. The sequence of reports would suggest that infection in Tajikistan was followed by outbreaks in Uzbekistan and Kyrgyzstan and, at some point in 2003, in Kazakhstan. Three of these countries share borders with Xinjiang Uygur Autonomous Region in western China.

Locations of FMD outbreaks reported in 2005, and of an unconfirmed epidemic in 2004



In December 2003, Tajikistan reported FMD to OIE, and Kyrgyzstan reported the occurrence of FMD to the OIE Regional FMD Reference Laboratory in Vladimir, Russian Federation (FGI-ARRIAH). In January 2004, this laboratory confirmed the presence of Asia-1 type virus in samples from Tajikistan. A summary of information received concerning Asia-1 infection in China, or dramatic disease events that might indicate Asia-1 incursion, is presented in the map.

Reports made by China

On 23 March 2005, the authorities of the Hong Kong Special Administrative Region of China reported to OIE the detection of Asia-1 virus infection in cattle. The infection was confirmed in samples subsequently submitted to the FAO World Reference Laboratory (WRL) at Pirbright, United Kingdom.

On 13 May 2005, China reported to OIE that outbreaks caused by the Asia-1 serotype had occurred in April (first observed 24 April) in Wuxi, Jiangsu Province, and Taian, Shandong Province.

On 26 May 2005, China reported to OIE that further Asia-1 outbreaks had been detected:

- Daxing, Beijing Municipality, and Sanhe, Hebei Province, both in eastern China; and
- Hoboksar, Xinjiang Uygur Autonomous Region, located in western China near the Kazakhstan border.

Media reports

On 26 October 2004, FAO analysed media reports that suggested a serious situation was developing in western China close to the Kazakhstan border (Yili Prefecture, Xinjiang Uygur Autonomous Region). FMD outbreaks with a different character than what would be expected were reported to be occurring. A statement declared that "the virus had mutated". The same report indicated that this region exported meat to other provinces in China, and that the situation had triggered aggressive control measures including slaughter. The outbreaks and virus type involved were not reported to OIE or FAO.

On 24 May 2005, FAO received media reports of an FMD outbreak of unknown type in Sichuan Province. The reports stated that the initial outbreak had occurred on 15 April 2005.

On 15 June 2005, FAO received media reports of Asia-1 infection in cattle in the Russian Federation (Busse, Amur Region, 120 km northwest of Blagoveshchensk). This area is close to the Chinese border, but at least 1 000 km from the nearest outbreaks confirmed by Chinese authorities in the reports previously cited. The outbreak was subsequently confirmed in a submission by the Russian authorities to OIE. This location of the outbreak suggests that infection is present in neighbouring regions of northeast China close to the Russian Federation border.

Disease mapping and analysis

Virus type analysis

The genetic information received from FAO and OIE Reference Laboratories (WRL, IAH-Pirbright, United Kingdom; FGI-ARRIAH, Russian Federation; Foreign Animal Disease Diagnostic Laboratory, National Veterinary Services Laboratories (FADDL/NVSL), United States Department of Agriculture, Plum Island, United States of America) indicates that the Asia-1 viruses isolated from the outbreaks in the Hong Kong Special Administrative Region of China in January 2005 bear a closer relationship to those from earlier outbreaks in central Asia (Tajikistan) and western Asia (Afghanistan and Pakistan) than to recent virus isolates from South Asian countries (India and Nepal).

Pattern and implication of findings

The findings suggest that Asia-1 infection in central Asian countries in 2003 was followed by infection in ruminant livestock in Xinjiang Uygur Autonomous Region, China. This analysis would fit with media reports of a new disease pattern in the similar livestock systems of northwestern China (Xinjiang Uygur) in October 2004. At some point, the virus was transmitted to eastern China by an unknown source.

Risk for other areas

Central Asia

Until information is provided to clarify the extent of infection and efficacy of measures in western China, Kazakhstan, Mongolia and the Russian Federation can be considered at risk for FMD outbreaks along their borders with China (at the time of writing).