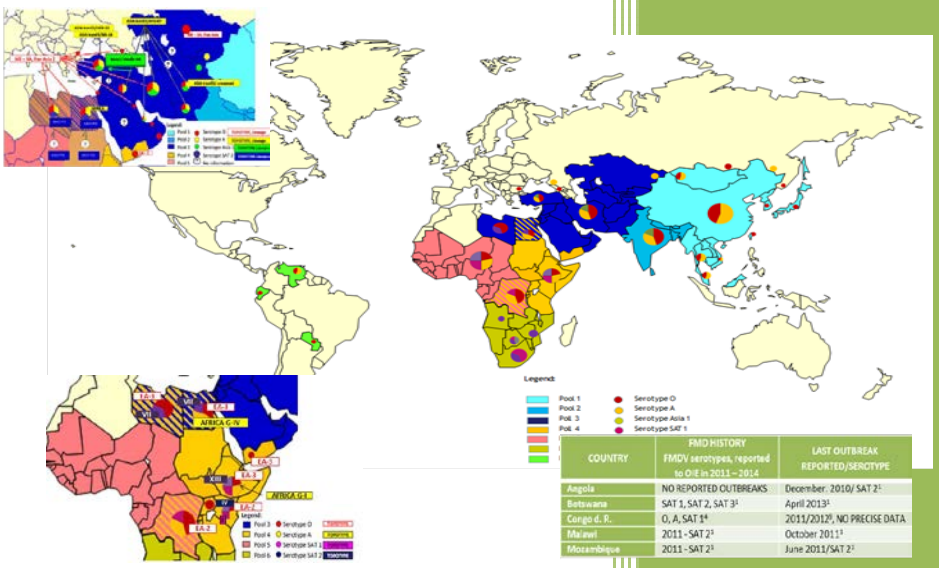
2015

Foot-and-Mouth Disease Situation
Monthly Report February 2015



COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2011 – 2014	LAST OUTBREAK REPORTED/SEROTYPE
Angola	NO REPORTED OUTBREAKS	December. 2010/ SAT 2[1]
Botswana	SAT 1, SAT 2, SAT 3[1]	April 2013[1]
Congo d. R.	O, A, SAT 1[4]	2011/2012[8], NO PRECISE DATA
Malawi	2011 - SAT 2[3]	October 2011[1]
Mozambique	2011 - SAT 2[3]	June 2011/SAT 2[1]

EuFMD

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european commission for the control of foot-and-mouth disease

Foot-and-Mouth Disease Situation
Food and Agriculture Organization of the United Nations
Monthly Report

FEBUARY 2015

Guest Editor
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#INFORMATION SOURCES USED:

Databases:
OIE WAHID World Animal Health Information Database
FAO World Reference Laboratory for FMD (WRLFMD)
FAO Global Animal Disease Information System (EMPRES-i)

Other sources:
FAO/EuFMD supported FMD networks
FAO/EuFMD projects and field officers

The sources for information are referenced by using superscripts.
The key to the superscripts is on the last page.

Please note that the use of information and boundaries of territories should not be considered to be the view of the U.N. Please, always refer to the OIE for official information on reported outbreaks and country status.

Contents

Guest Editor's Overview:

Greetings!

It is a great privilege to be the guest editor for February 2015 edition of EuFMD's monthly report series. During the period, FMD outbreaks have occurred in 6 of 7 pools and all the existing serotypes have been implicated. An increase in the disease situation in Asian countries in the recent past is a matter of concern especially in Republic of Korea, Mongolia, China and Thailand. FMD is endemic in all these countries posing a major hurdle in the growth of livestock economies. A unique feature in South Asian region is the presence of a large population of cattle and buffaloes, which makes the FMD situation more complex. For a vast majority of farmers in this part of the world, livestock provide livelihood security in terms of income and employment generation.

In South Asia, India has taken up the FMD Control in a big way to bring down the disease incidence and enhance productivity of livestock sector. A systematic FMD Control Programme was initiated in the year 2003 and expanded further in 2010 and 2014. Under this programme, all cattle, buffaloes and pigs are vaccinated twice a year in the target areas. By now nearly 60% of the cattle and buffaloes are covered and it is expected that the programme will be extended to cover the entire country within the next two years. This has led to the reduction in the incidence of the disease significantly. Since type-O is the most prevalent serotype in the endemic countries in Asia and accounts for the majority of outbreaks, the possibility of using high potency monovalent type-O vaccines for large-scale vaccinations may be considered to bring down the disease burden.

Effective implementation of FMD Control programme in South America has shown the world about the importance of Regional Initiative, and the success achieved there-in is an inspiration for the other developing countries especially in South and South East Asia to initiate coordinated efforts towards regional control of FMD. There is a need for all the stake holders in this region to address the key issues of mutual interest and collectively plan a systematic FMD Control with a clearly defined time frame in the lines of the Action Plan of PHEFA followed in South America in their pursuit of achieving freedom from FMD.

Venkat

I. GENERAL OVERVIEW

Pools represent independently circulating and evolving FMDV genotypes; within the pools, cycles of emergence and spread occur that usually affect multiple countries in the region. In the absence of specific reports, it should be assumed that the serotypes indicated below are continuously circulating in parts of the pool area and would be detected if sufficient surveillance was in place (Table 1).

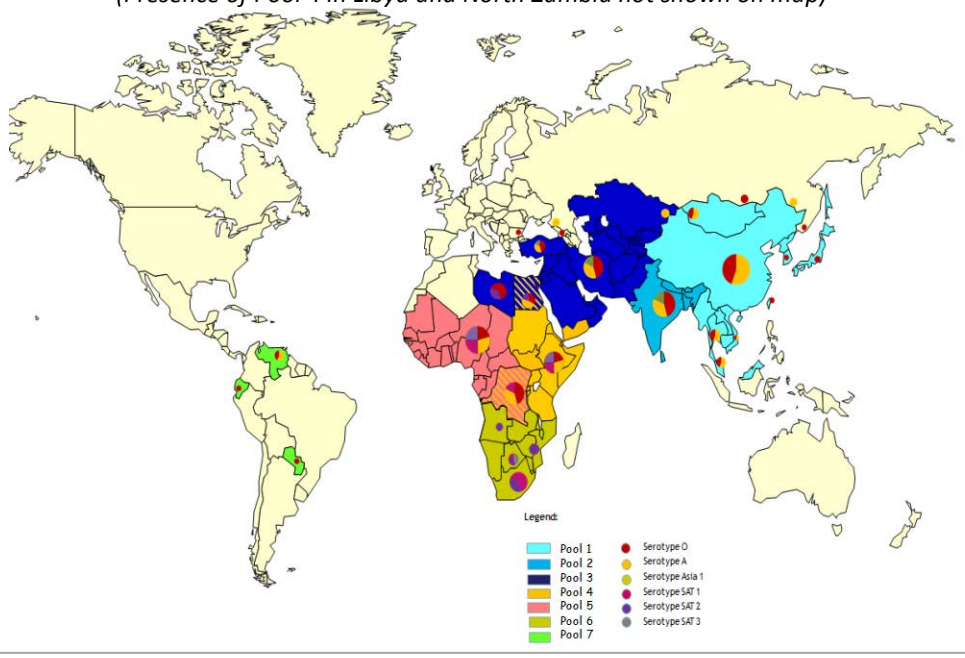
Table 1: List of countries representing each virus pool for the period 2010 – 2015

POOL	REGION/COUNTRIES – colour pools as in figure	SEROTYPES
1	**CENTRAL/EAST ASIA** Cambodia, China (People's Rep. of), China (Hong Kong, SAR), China (Taiwan Province), Korea (DPR), Korea (Rep. of), Laos PDR, Malaysia, Mongolia, Myanmar, Russian Federation, Thailand, Viet Nam	**O, A, Asia 1**
2	**SOUTH ASIA** Bangladesh, Bhutan, India, Nepal, Sri Lanka	**O, A, Asia 1**
3	**WEST EURASIA & MIDDLE EAST** Afghanistan, Algeria, Armenia, Azerbaijan, Bahrain, Bulgaria, **Egypt**, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, **Libya**, Oman, Pakistan, Palestine Autonomous Territories, Qatar, Saudi Arabia, Syrian Arab Republic, Tajikistan, Tunisia, Turkey, Turkmenistan, Uzbekistan	**O, A, Asia 1**
4	**EASTERN AFRICA** Burundi, Comoros, **Congo D. R.**, Djibouti, **Egypt**, Eritrea, Ethiopia, Kenya, **Libya**, Rwanda, Somalia, Sudan, South Sudan, Tanzania, Uganda, Yemen	**O, A, SAT 1, SAT 2, SAT 3**
5	**WEST/CENTRAL AFRICA** Benin, Burkina Faso, Cameroon, Cape Verde, Central Afr. Rep., Chad, **Congo D. R**., Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea Biss., Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome Principe, Senegal, Sierra Leone, Togo	**O, A, SAT 1, SAT 2**
6	**SOUTHERN AFRICA** Angola, Botswana, **Congo D. R.,** Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe	**{O, A}*, SAT 1, SAT 2, SAT 3**
7	**SOUTH AMERICA** Ecuador, Paraguay, Venezuela	**O, A**

Egypt, Libya and **Congo D. R.** (highlighted in bold) are indicated as being in multiple pools, since they have evidence of FMDV originating from 2 or more pools in the past four years. * ONLY IN NORTH ZAMBIA AS SPILL-OVER FROM POOL 4

Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2011-2015 *(Map 1)*

(Presence of Pool 4 in Libya and North Zambia not shown on map)



II. HEADLINE NEWS

POOL 1

Korea (Rep. of) [1] **–** Further FMD outbreaks, for a total of forty-one caused by serotype O, occurred between the 2nd and the 24th of February 2015 on 38 pig farms, two cattle farms and one mixed species farm (pig and cattle) in various areas of Korea (Rep. of).

Mongolia [2] **-** Two FMD outbreaks for which serotyping is pending occurred on the 25th and 26th of February 2015, in Khovd, on two farms involving cattle, sheep and goats on both premises and also camelidae on one of them.

POOL 2

India [3] **-** The Project Directorate on Foot and Mouth Disease (PDFMD), Mukteswar, India, reported genotyping in 4 clinical samples in which FMDV serotype Asia 1 was detected.

POOL 3

Pakistan [4]- Ninety-two FMD outbreaks were reported during February 2015, throughout Pakistan, within the Progressive Control of Foot and Mouth Disease Project. Laboratory results indicated the circulation of three FMDV serotypes (A, O and Asia 1).

Turkey [5] **-** During February 2015, the Şap Institute, Turkey tested 22 samples received from 14 outbreaks occurring in Anatolia. These outbreaks were identified as being caused by serotype A (7), Asia 1 (2) and unserotyped (5) respectively.

POOL 4

Ethiopia [6] **– The** National Animal Health Diagnostic and Investigation Centre (NAHDIC), Ethiopia, tested 11 tissue samples collected from two outbreaks in which FMDV serotype O was detected.

Kenya [7]**–** The Foot-and-Mouth Disease Laboratory, Embakasi, Kenya, tested 8 tissue samples detecting FMDV serotype SAT 2 in five of them.

Uganda [8] **-** Dr. Ayebazibwe Chrisostom, Senior Veterinary Officer of the National Animal Disease Diagnostics and Epidemiology Centre (NADDEC) reported that starting from January 2015, 9 Districts were affected by FMD– outbreaks. The majority of FMD outbreaks are due to serotype O while SAT 1 may also be circulating on the Southern border.

POOL 5

Nigeria [9] **- T**he National Veterinary Research Institute, Nigeria, detected FMDV serotype A in 2 clinical samples.

Senegal [10] **–** The FAO Collaborating Centre on Emergency Preparedness for Transboundary Disease for Central and Western Africa (ISRA/LENVR), Dakar, Senegal tested 12 samples and detected FMDV serotypes O and A.

POOL 6

Botswana [2] **-** A FMD outbreak caused by serotype SAT 1 involving cattle which had started on the 27th of October 2014 was reported as continuing on the 20th of February 2015, in Ngamiland, in the village of Tubu, Gumare.

Zimbabwe [2] **–** Twelve FMD outbreaks caused by serotype SAT 2 were reported between the 28th of January and the 11th of February 2015, in cattle of various villages.

POOL 7

Ecuador [11] **-** In May 2015, the OIE Scientific Commission will propose to the World Assembly of Delegates Ecuador (mainland) as FMD free with vaccination and Galapagos Island as FMD free without vaccination.

Latin America [2]- No outbreaks reported

COUNTER

****** 38 MONTHS SINCE THE LAST OUTBREAK IN SOUTH AMERICA WAS REPORTED***

****** 126 MONTHS SINCE THE LAST SEROTYPE C OUTBREAK WAS REPORTED***

III. DETAILED POOL ANALYSIS

A. POOL 1 – Central /East Asia

Korea (Rep. of) [1]

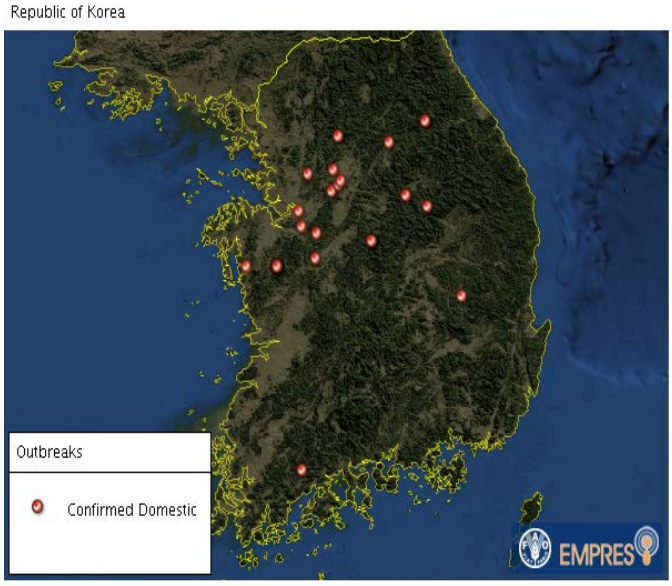
Forty-one further FMD outbreaks caused by serotype O occurred between the 2nd and the 24th of February 2015 in various areas of Korea (Rep. of).

A summary of the outbreaks is reported in Table 2 with location of outbreaks presented in Map 2. Number of reported outbreaks per day for January and February 2015 in Korea (Rep. of) is presented in Graph 1.

Table 2: summary of the locations and description and number of species involved in the outbreaks that occurred in Korea (Rep. of) during February 2015.

Administration	Species Description (N° of Outbreaks)	N° at Risk	N° of Cases	N° of Deaths	N° Destroyed	N° Slaughtered
Chungchongbuk-do	swine (8), cattle (1) swine/cattle (1)	19412	5072	8	832	10
Chungchongnam-do	swine (15)	21526	8659	13	479	15
Kang-won-do	swine (5)	19123	2209	5	0	5
Kyonggi-do	swine (9), cattle (1)	23755	4638	5	1928	10
Kyongsangbuk-do	swine (1)	5500	677	1	0	1
	Totals	**89316**	**21255**	**32**	**3239**	**41**

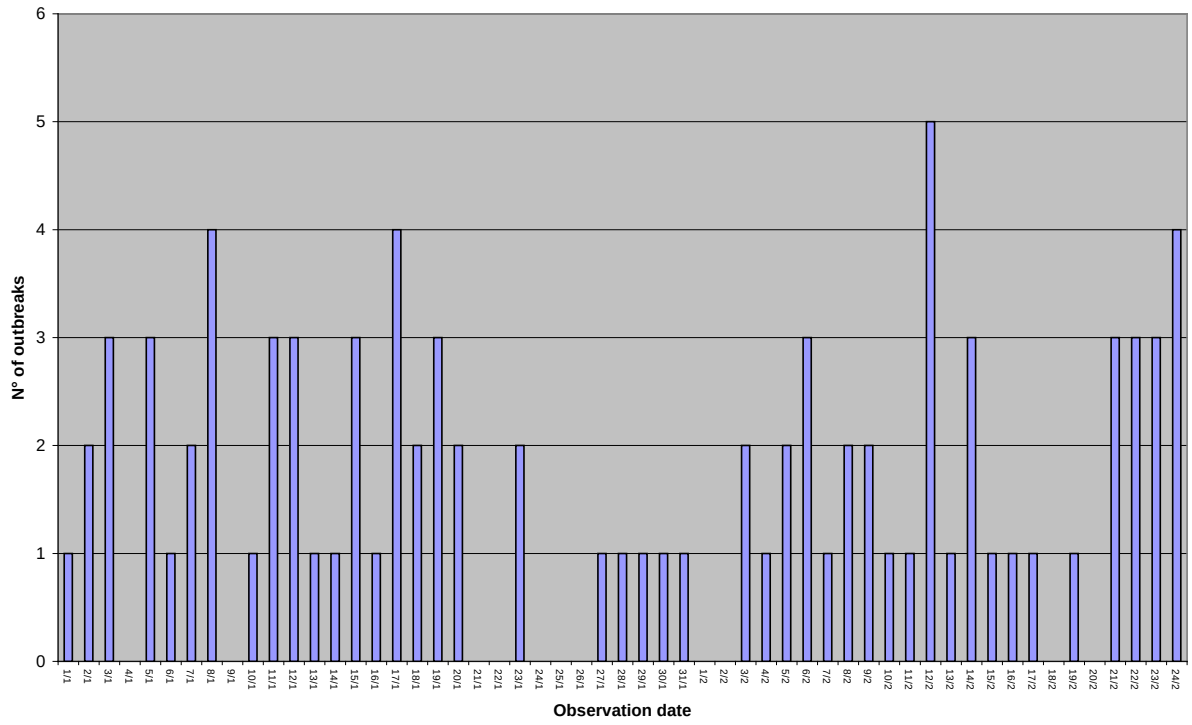
Map 2: Location of FMD outbreaks that occurred during February 2015 in Korea (Rep. of).



In comparing the location of the FMD outbreaks of the current month to those occurring during January, the outbreaks occurring in February are more internal as well as more outspread within the country.

The epidemic curve presented in Graph 1 shows a nearly constant daily occurrence of outbreaks with a wave-like pattern for both January and February.

Graph 1: number of reported outbreaks per day during January and February 2015 in Korea (Rep. of).



Mongolia [1, 2]

Two FMD outbreaks occurred on the 25th of and 26th of February 2015, in Khovd, Mongolia on two farms involving cattle, sheep and goats on both premises and also camelidae on one of them.

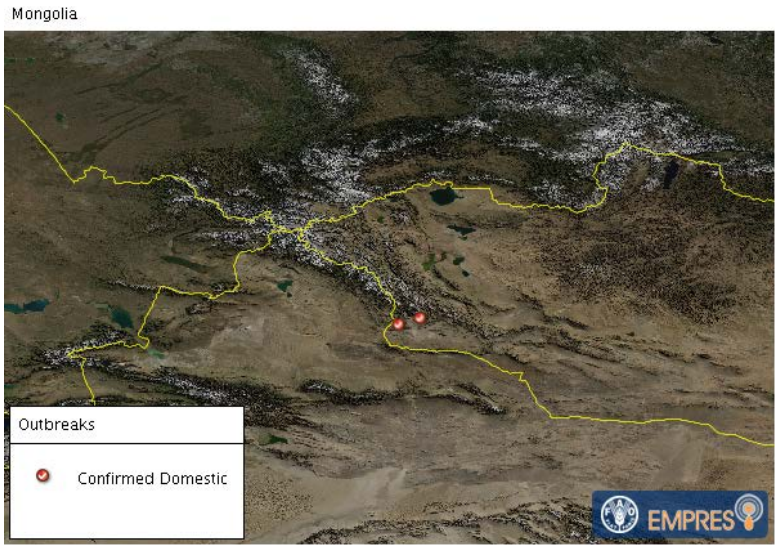
A summary of the outbreaks is reported in Table 3 with location of outbreaks presented in Map 3. The outbreaks are localised close to the borders of China (People's Rep. of).

Clinical samples collected from cattle, sheep and goats were tested by the State Central Veterinary Laboratory (National laboratory) using non-structural protein (NSP) ELISA and reverse transcription - polymerase chain reaction (RT-PCR). While the diagnosis was confirmed on the 04/03/2015, serotyping is pending. Measures applied are quarantine, movement control inside the country, screening, zoning and vaccination in response to the outbreaks. No treatment of affected animals is being carried out and source of outbreaks is unknown or inconclusive

Table 3: summary of the locations and description and number of species involved in the outbreaks that occurred in Khovd, Mongolia during February 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered
Camelidae	Not reported	14	0	0	0
Cattle		286	0	0	1
Goats		347	0	0	0
Sheep		64	0	0	0
	Totals	**711**	**0**	**0**	**1**

Map 3: Location of FMD outbreaks that occurred during February 2015, in Khovd, Mongolia.



Russian Federation [2, 12]

Previously reported FMD outbreaks caused by serotype A and O, respectively reported on the 30th of January and on the 12th of February 2014 in Zabajkal`Skij Kray are ongoing. The following measures are still being applied: quarantine, movement control inside the country, screening, vaccination in response to the outbreaks with a total of 15,961 cattle and 10,517 sheep/goats vaccinated, disinfection of infected premises/establishment(s) and modified stamping out. Treatment of affected animals is not being carried out.

The All-Russian Research Institute for Animal Health (FGBI-ARRIAH), OIE Reference Laboratory, has examined 1190 sera for post vaccination monitoring.

Table 4: Summary of the history of FMD Pool 1, 2012 – 2014, for geographic distribution see Map 4 below.

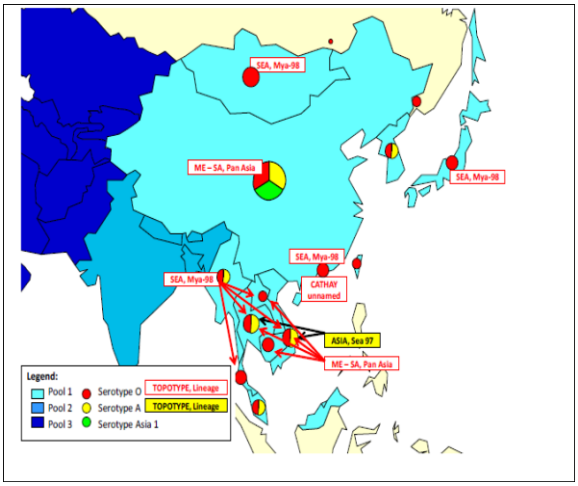
COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2014	LASTEST OUTBREAK REPORTED/SEROTYPE#	Comment
Cambodia	O, 2013-2014/NOT SAMPLED	Jun 2014/O, Aug 2014/ not typed	Typing required
China (People's Rep. of)	2012-2013/O, 2013/A,	Nov 2014/O, Jan 2015/A	Genotyping required
China (Hong Kong, Sar)	O	Oct 2014/O	
China (Taiwan Province)	2012-2013/O,	Jul 2013/O	
Japan	FMD-FREE WITHOUT VACCINATION	Jul 2010/O	
Korea (DPR)	2012-2013/DISEASE ABSENT	May 2014/not confirmed, July 2014/O	
Korea (Rep. of)	2012-2013/DISEASE ABSENT	Feb 2015/O	See text
Laos PDR	2012/DISEASE PRESENT WITH QUANTITATIVE DATA BUT WITH AN UNKNOWN NUMBER OF OUTBREAKS	Mar 2013/O	
Malaysia	2012 –2013/O 2013/NOT TYPED	Jan 2013/not typed, Jun 2014/O	Typing required

Mongolia	2013/A	Sept 2013/A, Apr2014/O Feb 2015/not typed	See text Typing required
Myanmar	2012-2013/O	Jun 2014/O, July 2014/ not typed	Typing required
Russian Federation	2012/O, 2013/A	June 2014/O, Oct 2014/A	See text genotyping required
Thailand	O, A and NOT TYPED	Jun 2014 /A, Oct 2012/O, Sept 2014/not typed	Genotyping required
Vietnam	O, NOT SAMPLED 2013- 2014/A,	Apr 2013/A Jun 2014/O, July 2014/not typed	Typing required

Map 4: FMD distribution by serotype and topotype in South East Asia, 2010 – 2014 (EuFMD).

Conjectured circulating FMD viral lineages in pool 1 per 2014 [16]:

- Serotype O: O/SEA/Mya-98, O/ME-SA/PanAsia, O/CATHAY
- Serotype A: A/ASIA/Sea-97
- Serotype Asia-1 (not detected in the region since 2005 (Myanmar) and 2006 (Vietnam, P.R. China)



B. POOL 2 – South Asia

India [3]

During February, the PDFMD, Mukteswar, India has carried out the genotyping of field isolates in which FMDV serotype Asia 1 was detected. Sixteen field isolates positive for FMDV serotype O were subjected to vaccine matching strain differentiation tests. A total of 20,009 serum samples were tested for FMDV antibodies for epidemiological studies. The diagnostic kits employed are those developed at PDFMD.

The laboratory personnel are regularly involved in the investigation of FMD field outbreaks and in providing expert advice to Government, national/local authorities or to other services. The laboratory has ongoing research studies and collaborations with international organisations.

Table 5: Summary of the history of FMD Pool 2, 2012 – 2014, for geographic distribution see Map 5 below.

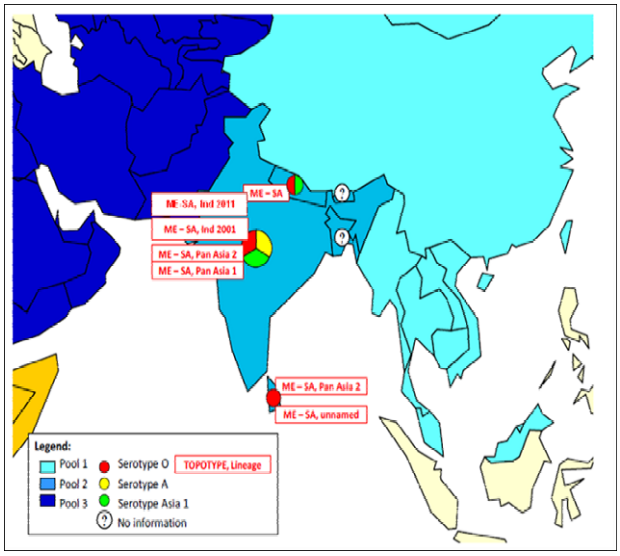
COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2014	LASTEST OUTBREAK REPORTED/SEROTYPE#	Comment
Bangladesh	DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	Follow –up needed
Bhutan	NOT TYPED, 2013/NOT SAMPLED 2013-2014/O	Not available	Follow –up needed
India	O, A, NOT SAMPLED 2012-2013/Asia 1 2013/NOT TYPED	Jan 2015/ O, Feb 2015/Asia1	See text

Nepal	O, 2012-2103/Asia 1	Apr 2014/O	
Sri Lanka	2012 – 2013/O	Sept 2014/O	

Map 5: FMD distribution by serotype and topotype in South Asia, 2011 – 2014 (EuFMD).

Conjectured circulating FMDV lineages in pool 2 per 2014 [16]:

- O/ME-SA/Ind-2001 (the O/ME-SA/Ind-2011 lineage that emerged during 2011 has not been recognized during 2012-13)
- O/ME-SA/PanAsia-2 (last detected in 2011 in Sri Lanka)
- A/ASIA/IND (genotype 18)
- Asia-1 (lineage C subdivided into Eastern and Western clusters)



C. POOL 3 – West Eurasia & Middle East

Pakistan [4]

Ninety-two FMD outbreaks were reported throughout Pakistan during February with 289 sick animals treated and 2,775 animals at risk vaccinated on free of cost basis during these outbreaks. Laboratory analysis indicated that three FMDV serotypes (A, O and Asia 1) were circulating in the country. Landhi Cattle Colony remained the area in the country where most outbreaks are occurring (50 out of 92 episodes).

Under the FMD vaccination program, including regular vaccination in different production systems and on cost-share basis, a total of 8,776 animals were vaccinated (1,034 animals in dairy colony production system, 1,606 animals in market oriented rural smallholders, 77 animals in government livestock farms and 6,059 on cost-sharing basis). No clinical case of the disease was recorded in vaccinated animals anywhere in the country. This successful demonstration has convinced a large number of farmers to start vaccinating their animals (including on cost-share basis) particularly against FMD.

Eight diagnostic laboratories are providing FMD diagnostic and serotyping services in all provinces/regions of the country. ELISA kits, other expendables and technical backstopping are provided to these laboratories.

Four FMD awareness seminars for farmers were held in Punjab to which 55 farmers from Vehari and Bahawalpur participated. Ten training workshops were organized in Punjab, Sindh and Khyber Pakhtunkhwa with 156 veterinary officers, 91 veterinary assistants, stock assistants and 24 female veterinary officers participating in these workshops. These events included capacity building of field veterinary staff with emphasis on female veterinary staff and freshly appointees.

Turkey [5]

During February 2015, the Şap Institute, Turkey tested 22 samples received from 14 outbreaks occurring in Anatolia. These outbreaks were identified as being due to serotype A (7), Asia 1 (2) and unserotyped (5) respectively.

The NRI, Şap is in the process of genotyping 3 samples, two of them were serotyped as FMDV A and one as Asia 1. Two sub-lineages were determined for FMDV serotype A, within the A Iran-05^{SIS10}. The first one, A Iran-05^{SIS10}-

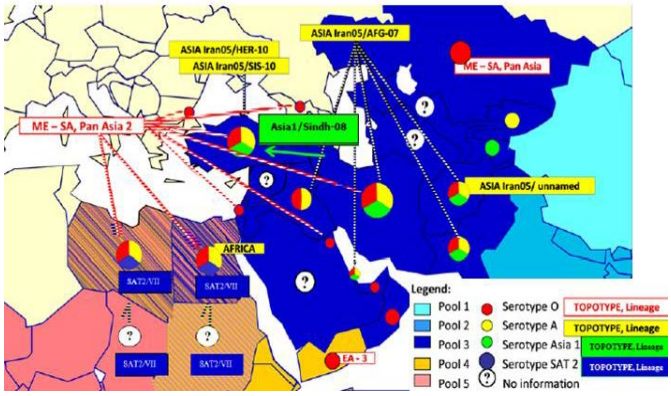
CAN14 is related to the virus currently circulating in the field while the second one is within a new genotype group, within the A Iran-05^{SIS10}, not previously observed in Anatolia. Data from the region is not sufficiently available to conclude whether this strain is a local genotype group or an incursion.
Sera samples (1,390) were tested using different types of antibody detection ELISAs:
-60 sera by NSP ELISA for screening, for research purposes and for the investigation of outbreaks,
-375 sera for Thrace risk-based surveillance program,
-955 sera for routine vaccine monitoring.
The laboratory provides expert advice on constant basis to the General Directorate for the evaluation of the FMD Risk-based National Strategic Plan. The Sap Institute has ongoing research activities in the framework of the Research and Development Plan on vaccine production and monitoring. NRI, Şap was also involved in the two workshops organized by EuFMD on peste des petits ruminants and lumpy skin disease in the framework of Thrace Risk-Based Surveillance Programmes that were held in Istanbul and Adana, Turkey.

Table 6: Summary of the history of FMD Pool 3, 2012 – 2014, for geographic distribution see Map 6 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2014	LASTEST OUTBREAK REPORTED/SEROTYPE[#]	Comment (Genotyping or vaccine matching tests needed for this pool)
Afghanistan	2013/O, A, Asia 1, NOT TYPED 2012/SEROTYPE NOT REPORTED	2014/A, Asia 1, O	Genotyping required
Algeria	2014/O	Sept 2014/O	
Armenia	2012-2013/DISEASE ABSENT	Not available	Follow –up needed
Azerbaijan	DISEASE ABSENT	Jun 2001	Follow –up needed
Bahrain	2012 /O	Oct 2014/O	
Bulgaria	FMD-FREE WITHOUT VACCINATION	Apr 2011/O	
Egypt	2012, 2014/SAT 2 2012 - 2014/O, A	Jan-June 2014/O, A, SAT2	
Georgia	DISEASE ABSENT	2002	Follow –up needed
Iran	O, A, 2012-2013/Asia 1	Jun 2013/Asia 1, Apr 2014/O, A	
Iraq	2012-2013/O, A	Dec 2013/A, O -	Follow –up needed
Israel	2012-2013/O	Nov 2013/O	Follow –up needed
Jordan	DISEASE ABSENT	2006	Follow –up needed
Kazakhstan	2012/O 2012 –2013/A	Aug 2012/O, Jun 2013/ A	Follow –up needed
Kuwait	2012/O 2013 – 2014/ DISEASE ABSENT	Jan 2012/O	Follow –up needed
Kyrgyzstan	2012-2013/O, A	Apr 2013 /O, A, Aug 2014/NOT TYPED	Typing required
Lebanon	DISEASE ABSENT	03/2010	Follow –up needed
Libya	NO DATA AVAILABLE	Oct 2013/O	Follow –up needed
Oman	2012-2013/O	Dec/2013	
Pakistan	DISEASE LIMITED TO ONE OR MORE ZONES	Feb 2015 / A, Asia 1, O	See text - genotyping required for most recent isolates
Autonomous	O,	Mar 2013/Sat 2, Nov 2014/O	

Territories Palestine	2012-2013 - SAT 2		
Qatar	2012-2013/O	Dec 2013/O	Follow –up needed
Saudi Arabia	2013/O	Nov 2013/O	
Syrian Arab Republic	DISEASE ABSENT	Mar/2002	Follow –up needed
Tajikistan	2012/NOT TYPED 2013/DISEASE ABSENT	Nov 2011/Asia 1, Nov 2012/ NOT TYPED	
Tunisia	2014/O	Oct 2014/O	
Turkey	Asia 1, A, O, NOT TYPED	Nov 2014/O, Feb 2015/ A and Asia 1	See text
Turkmenistan	NO DATA AVAILABLE	Not available	Follow –up needed
Uzbekistan	NO DATA AVAILABLE	Not available	

Map 6: FMD distribution by serotype and topotype for West Eurasia and Middle East, 201 – 2014 (EuFMD).



Conjectured circulating FMDV lineages in pool 3 per 2014 [16]:

- O/ME-SA/PanAsia-2 (predominantly from ANT-10 and FAR-09 sub-lineages)
- O/ME-SA/Ind-2001 (recent incursion per 2013 from the Indian sub-continent)
- A/ASIA/Iran-05 (from SIS-12, SIS-10, FAR-11 and BAR-08 sub-lineages) Asia-1 (Sindh-08 lineage).

D. POOL 4 – Eastern Africa

Ethiopia [6]

NAHDIC detected FMDV serotype O in eleven tissues samples collected from 2 outbreaks. The laboratory is waiting for the results of FMDV positive samples that were forwarded to the WRLFMD for serotyping and genotyping. A total of 467 serum samples for export of animals were tested for FMDV antibodies. Inter-laboratory comparison trials of 8 FMD samples for antibody detection between NAHDIC and National Veterinary Institute (NVI) of Ethiopia was conducted during February with 100% agreement.

Kenya [7]

The Foot-and-Mouth Disease Laboratory, Embakasi, Kenya, has detected the presence of FMDV serotype SAT 2 in five of the eight tissues samples tested. The same laboratory has conducted vaccine potency assays for FMDV.

Uganda [8]

Dr. Ayebazibwe Chrisostom, Senior Veterinary Officer of the National Animal Disease Diagnostics and Epidemiology Centre (NADDEC) reported that starting from January 2015, 9 Districts were affected by FMD. However, it is not clear whether the outbreaks occurring in Southwestern Uganda are related to those in Central, Eastern and West Nile Regions of the country. Investigations were carried out for the FMD outbreaks reported in Kyankwanzi and Nakaseke and FMDV serotype O was confirmed by antigen detection ELISA. SAT 1, topotype NWZ may also be circulating on the Southern border.The FMD outbreaks in the eastern parts of the country, i.e. in Kween and Busia seem to be related to cross-border animal/animal product movements from the Kenyan side while animal movements within the country (animals from Kalerwe abattoir were taken on farms) appear to be causing those of the Central Regions. Other FMD outbreaks are related to the illegal movement of animals. Preliminary sequencing results classified the FMD serotype O viruses within the EA-1 and EA-2 topotypes. Dr. Chrisostom remarked on the

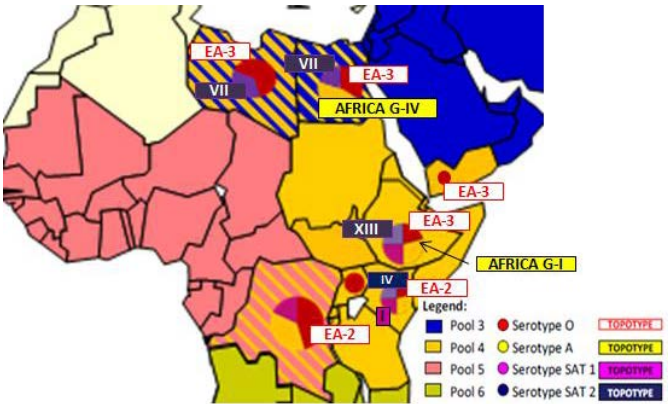
need of collaborations with reference and vaccine producing laboratories on vaccine matching for FMDV serotypes circulating in Uganda.

Table 7: Summary of the history of FMD Pool 4, 2012 – 2014, for geographic distribution see Map 7 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 - 2014	LASTEST OUTBREAK REPORTED/SEROTYPE[#]	Comment
Burundi	NO DATA AVAILABLE	Aug 2013 / not available	Typing required
Comoros	NO DATA AVAILABLE	2010	Follow –up needed
Congo d. R.	NO DATA AVAILABLE	Jun 2013/not typed	Typing required
Djibouti	DISEASE ABSENT	Not available	Follow –up needed
Egypt	2012, 2014/SAT 2 2012 - 2014/O, A	Jan-June 2014/O, A, SAT2	
Eritrea	2012/O	Jan 2012/O	Follow –up needed
Ethiopia	O, 2012/A, SAT 2	Jun 2014/A, Nov 2014/SAT 2, Feb 2015/O, Jan 2015/confirmation pending	See text Genotyping required for most recent isolates
Kenya	O, SAT1, SAT2, 2012 – 2013/A, 2012/NOT TYPED	Jan 2015/ A, O, SAT 1, Feb 2015/SAT 2	See text Genotyping required
Libya	NO DATA AVAILABLE	Oct 2013/ O, Sat 2/Apr 2012	Follow-up needed
Rwanda	2012-2013/A, O, SAT1, SAT 2	Nov 2012/not typed	Typing required
Somalia	2012/NOT SAMPLED 2013 – 2014/ NO DATA AVAILABLE	2011	Follow –up needed
Sudan	O, 2013/SAT 2, 2013-2014/NOT TYPED	2013/O, SAT2	Follow –up needed
South Sudan	NO DATA AVAILABLE	2011	Follow –up needed
Tanzania	2012/O 2012-2013/A, SAT 1, SAT 2,	Mar 2013/O Apr2013/ A, SAT 1, SAT2	
Uganda	2012/O, SAT 1 2012-2013/NOT TYPED	May 2014-Jan 2015/O, A, SAT1, 2 and 3	See Text Genotyping required
Yemen	2012/O 2013 – 2014/ DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	Follow –up needed

Map 7: FMD distribution by serotype and topotype for East Africa. 2011 – 2014 (EUFMD)

East Africa is known to be endemic for FMD, but currently available data are limited.



Conjectured circulating FMDV lineages in pool 4 per 2014 [16]:

- O (topotypes EA-2 (Kenya, Tanzania, DR Congo, Uganda), EA-3 (Ethiopia, Eritrea, Sudan, Egypt) and EA-4 (Ethiopia, Kenya, Uganda).
- A/AFRICA (genotypes I (Kenya, Tanzania, D.R. Congo), IV (Sudan, Eritrea, Egypt) and VII (Ethiopia, Egypt))
- A/ASIA/Iran-05 BAR-08 sub-lineage (Egypt)
- SAT 1 (topotypes I (Kenya, Tanzania)
- SAT 2 (topotypes IV (Kenya, Tanzania), VII (Sudan, Egypt), XIII (Ethiopia, Sudan))

SAT 3 (only detected in African buffalo in the south of the QENP, Uganda in 1970 & 1997)

E. POOL 5 – <u>West / Central Africa</u>

Cameroon [13]

LANAVET – Garoua is verifying the presence of FMDV by RT-PCR on 30 bovine probang (oesophago-pharyngeal) samples. FMDV antibody tests were conducted for surveillance purposes.

The laboratory personal was involved in the investigation of FMD outbreaks in the field and in providing expert advice to Government services national/local authorities and other services. The laboratory has ongoing research collaborative projects with Plum Island Animal disease Centre and Ohio state university, USA and has terminated in February the collaboration with FAO on the MTF/034/STF project.

Nigeria [9]

The National Veterinary Research Institute, Nigeria, detected FMDV serotype A in two clinical samples. The laboratory personal was involved in the investigation of FMD outbreaks in the field and in providing expert advice to Government services national/local authorities and other services and collaborates with OIE.

Senegal [10]

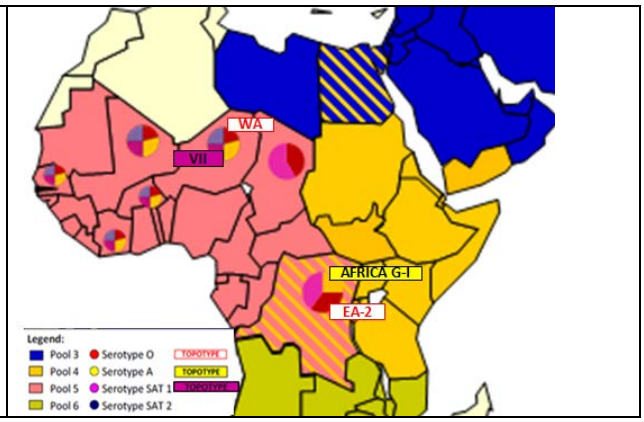
ISRA/LENVR, Senegal during February tested 12 samples and detected FMDV serotypes O and A that will be sequenced. Active surveillance for FMD is being conducted that will allow the laboratory to provide advice on which vaccine/s strains are to be used for the control of the infection. At present the vaccines used contain serotypes A, O and SAT 2. The serological surveillance will also provide information for establishing the prevalence of the different FMD serotypes circulating in Senegal. In fact, until now serum samples received for diagnostic purposes confirmed the circulation of FMDV serotypes O and A. A retrospective study is being conducted on biological samples collected from 2007 to now, consisting in 146 serum samples and 30 epithelium tissues samples taken from FMD suspect lesions. Their examination confirmed the circulation in Senegal of FMDV serotypes A, O and also of SAT 2.

The laboratory personal was involved in providing expert advice to the National Veterinary Services teams of Senegal, Bissau Guinea and Gambia respectively. The laboratory in collaboration with ANSES (France) has provided assistance to Gambia and Bissau Guinea to establish the diagnosis of FMD suspicion in these countries.

Table 8: Summary of the history of FMD Pool 5, 2012 – 2014, for geographic distribution see Map 8 below.

Country	FMD history FMDV serotypes, reported to OIE in 2012 – 2014	Last outbreak reported/serotype[#]	Comment (Genotyping would be useful for this region)
Benin	A, O, SAT 1, SAT 2	Jun 2014/O, A, SAT 1, SAT 2	
Burkina Faso	SEROTYPES NOT REPORTED	2013/ not available	Follow –up needed
Cameroon	SEROTYPES NOT REPORTED	Apr 2014/ A, Nov 2014/O, SAT 2, May 2014/SAT 1, Jun 2014, Jan 2015/untyped	See text Genotyping required for most recent isolates
Cape Verde	NO DATA AVAILABLE	Not available	Follow –up needed
Central Afr. Rep.	DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	
Chad	2012 – 2013/SEROTYPES NOT REPORTED	Not available	
Congo D. R.	2012 – 2013/A, O, SAT 1	Jun 2013/not typed	Typing required
Congo R.	NO DATA AVAILABLE	Jun 2013/not typed	Typing required
Cote D'Ívoire	2012/A, NOT SAMPLED 2013/ SEROTYPES NOT REPORTED	Jun 2013/not typed	
Equatorial Guinea	DISEASE SUSPECTED BUT NOT CONFIRMED	Not available	Follow –up needed
Gabon	NO DATA AVAILABLE	Not available	
Gambia	NO DATA AVAILABLE	2012/O	
Ghana	2012 – 2014/SEROTYPES NOT REPORTED	2014/not available	Identification required Follow –up needed
Guinea Biss.	DISEASE ABSENT	No data available	Follow –up needed
Guinea	2012-2013/ DISEASE ABSENT	2014/not available	
Liberia	NO DATA AVAILABLE	Not available	Follow –up needed
Mali	2012/DISEASE ABSENT 2013/ SEROTYPES NOT REPORTED	2011/2012, no precise data	
Mauritania	2012-2013/NO REPORTED OUTBREAKS	Not available	
Niger	2012 – 2014/NOT SAMPLED	2014/not sampled	Identification required
Nigeria	2012 – 2014/NOT SAMPLED	Feb 2015/ A	See text Genotyping required Follow –up needed
Sao Tome Principe	2012/DISEASE ABSENT, 2013/NO DATA AVAILABLE	Not available	Follow –up needed
Senegal	2012, 2014/NO DATA AVAILABLE 2013/DISEASE ABSENT,	2014/ SAT 1 Feb 2015/ A and O	See text Follow –up needed
Sierra Leone	DISEASE ABSENT	Oct 1958	Follow –up needed
Togo	O, SAT 1, 2013/NOT TYPED	2012/O	Follow –up needed

Map 8 FMD distribution by serotype and topotypes for West Africa, 2011 – 2014 (EuFMD)

Conjectured circulating FMDV lineages in pool 5 per 2014 [16]: ▪ Serotype O (topotypes WA, EA-3 (Nigeria)) ▪ Serotype A (topotype AFRICA, genotypes IV and VI) ▪ Serotype SAT 1 ▪ Serotype SAT 2 (topotype VII)	

F. POOL 6 – SOUTHERN AFRICA

Botswana [2]

A FMD outbreak caused by serotype SAT 1 that had started on the 27th of October 2014 was reported as continuing on the 20th of February 2015, in Ngamiland, in the village of Tubu, Gumare involving cattle. The source of the outbreak/origin of infection was attributed to contact with wild species. A summary of the outbreak is reported in Table 9 with location of outbreak is presented in Map 9.

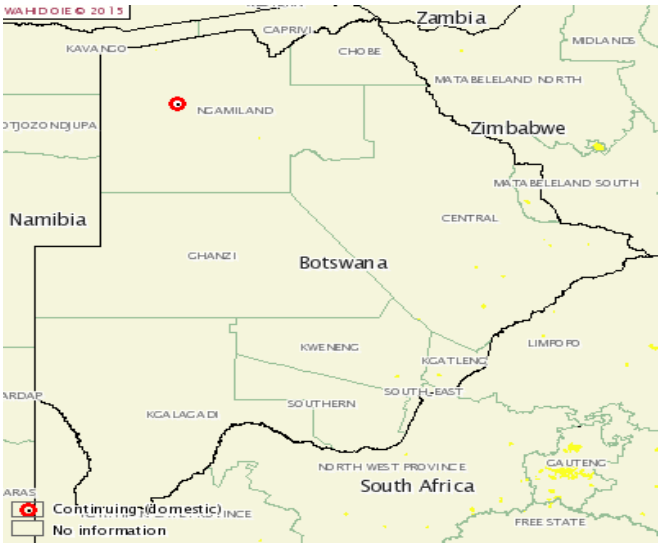
Measures applied are control of wildlife reservoirs, movement control inside the country, zoning and vaccination in response to the outbreaks with 24,116 cattle vaccinated employing a trivalent vaccine containing FMDV serotypes SAT 1, 2 and 3. No treatment of affected animals is being carried out.

Table 9: summary of the number of species involved in the outbreak reported in Ngamiland, Botswana during February 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	17775	1	0	0	0	0.01%	0.00%	0.00%	0.00%

*Removed from the susceptible population through death, destruction and/or slaughter

Map 9: Location of FMD outbreak reported in Ngamiland, Botswana during February 2015.



RSA [2]

A FMD outbreak in cattle, caused by serotype SAT 2, that had started on the 6th of August 2013 in the village of Mpumalanga was reported as resolved on the 10th of February 2015. Source of the outbreak/origin of infection was attributed to contact with wild species. Measures applied were control of wildlife reservoirs, quarantine, movement control inside the country. Vaccination was prohibited and treatment of affected animals was not carried out. Measures to be applied are vaccination in response to the outbreak (s). The outbreaks occurred within South Africa's FMD protection zone where vaccination for FMD is carried out by State Veterinary Services. Vaccination is only allowed within this zone and may only be done by State Veterinary Services.

Zimbabwe [2]

Twelve FMD outbreaks caused by serotype SAT 2 were reported between the 28th of January and the 11th of February 2015, in cattle in the villages of Midlands, Matabeleland South And Masvingo. All outbreaks, except for one occurred in dip tanks. The present outbreaks are a continuation of a series of episodes that had started in the area in April 2014. The outbreaks involve cattle of all ages that share grazing and watering points with communal cattle.

Weekly inspection of the affected premises and of all properties within a 20-km-radius zone is ongoing. New outbreaks have been attributed to the illegal movement of cattle from infected areas. The present event, first notified as due to FMDV serotype SAT 1, has now been confirmed as SAT 2 by the Botswana Vaccine Institute. Control measures applied are quarantine, control of wildlife reservoirs, movement control inside the country, zoning, disinfection of infected premises/establishment(s) and vaccination in response to the outbreak (s). In Masvingo, 26,992 cattle have been administered with the first booster vaccination, 28 days after the initial vaccination, of all properties within a 20-km-radius zone around the infected outbreaks. A turnout of 78% was recorded. Affected animals are not being treated. Location of outbreaks is presented in Map 10 and a summary of the outbreaks is reported in Table 10.

Map 10: Location of FMD outbreaks reported in Midlands, Matabeleland South And Masvingo, Zimbabwe during February 2015.

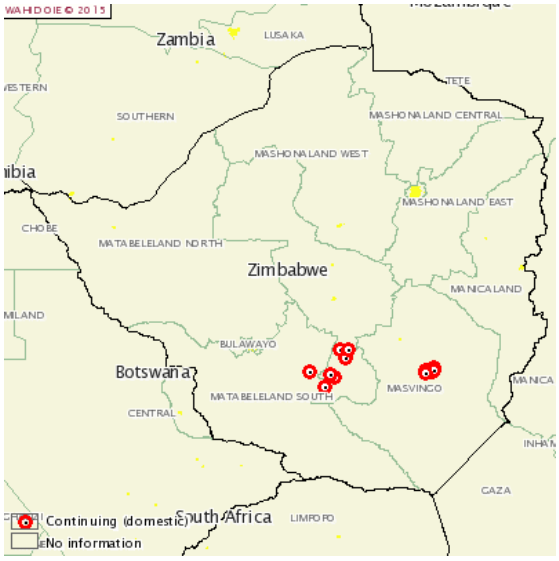


Table 10: summary of the number of species involved in the outbreak reported in Midlands, Matabeleland South and Masvingo, Zimbabwe during February 2015.

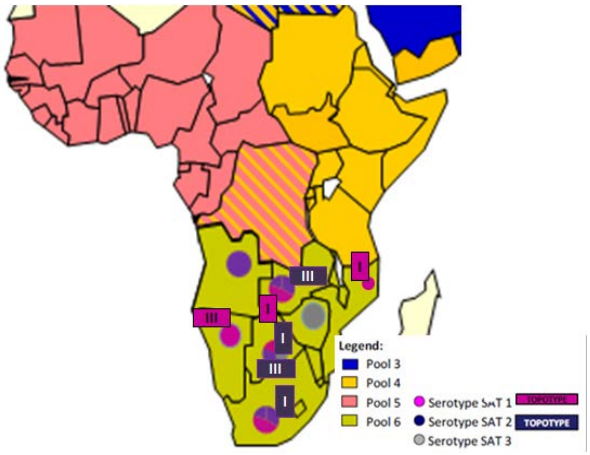
Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	18871	977	0	0	0	5.18%	0.00%	0.00%	0.00%

*Removed from the susceptible population through death, destruction and/or slaughter

Table 11: Summary of the history of FMD Pool 6, 2012 – 2014, for geographic distribution see Map 11 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2014	LAST OUTBREAK REPORTED/SEROTYPE#	Comment
Angola	2012/DISEASE SUSPECTED BUT NOT CONFIRMED 2013/DISEASE ABSENT 2014/NO DATA AVAILABLE	Dec 2010/ SAT 2	Follow –up needed
Botswana	2012-2014/SAT 2 2014/SAT 1	May 2014/SAT 2, Oct 2014/SAT 1	See text Follow –up needed
Congo D. R.	2012 – 2013/A, O, SAT 1	Jun 2013/not typed	Follow –up needed
Malawi	2012 -2013/NO REPORTED OUTBREAKS	Oct 2011	Follow –up needed
Mozambique	2012 -2013/DISEASE ABSENT, 2014/NO DATA AVAILABLE	Oct 2014/SAT 2	Genotyping required
Namibia	2012-2013/SAT 1	Dec 2014/SAT 2, Jan 2015/typing pending	Serotyping required
South Africa	2012/SAT 2 2013/SAT 1	Aug 2013/SAT 1, Nov 2014/ SAT 2	See text Genotyping required
Zambia	2012/SAT 1, SAT 2	Jan 2013/SAT 1, SAT 2	Follow –up needed
Zimbabwe	2012-2013/SAT 2 2013/SAT 3 2014/SAT 1	Jun 2013/SAT 3, Sept 2014/SAT 1, Feb 2015/SAT 2	See text Follow –up needed

Map 11: FMD distribution by serotype and topotype for southern Africa, 2011 – 2014 (EuFMD)



Swaziland and Lesotho are free from FMD without vaccination. There is a zone in both Botswana and Namibia, which has been FMD free without vaccination, since 2010 and 1997 respectively.

Conjectured circulating FMDV lineages in pool 6 per 2014 [16]:

- Serotype SAT 1 (topotypes I, II and III)
- Serotype SAT 2 (topotypes I, II and III)
- Serotype SAT 3 (topotypes I, II and III)

G. POOL 7 – South America

Ecuador [11]

In May 2015, the OIE Scientific Commission will propose to the World Assembly of Delegates, Ecuador (mainland) as FMD free with vaccination and Galapagos Island as FMD free without vaccination. The disease has existed in Ecuador since 1943, imposing export ban of Ecuadorian beef and dairy products that can now be lifted.
Prior to 2011, approximately half of Ecuador's 4.65 million cattle were vaccinated, while today, 98 percent of them have been vaccinated. Ecuador has set the goal of reaching infection-free status without vaccination by 2018.

South America [2]

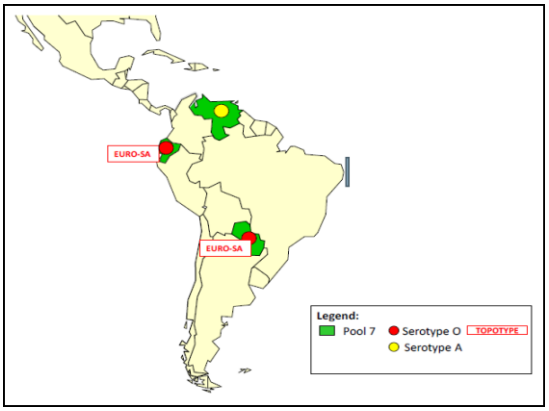
No new outbreaks have been reported during December and it is now more than three years since the last FMD outbreak in South America was reported.

Most South American countries are FMD free with vaccination (Uruguay) or without vaccination (Chile, Guyana) or with free zones with vaccination (Argentina, Bolivia, Brazil, Colombia, Peru) or without vaccination (Argentina, Bolivia, Brazil, Colombia, Peru) described by the OIE maps (see: http://www.oie.int/en/animal-health-in-the-world/official-disease-status/fmd/en-fmd-carte/). Small areas of the continent may still be considered as endemic but clinical cases are rare (Table 12 and Map 12). The FMD history between 2011 –2013 given in Table 12.

Table 12: Summary of the history of FMD Pool 7, 2012 – 2014, for geographic distribution see Map 12 below

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 2014	LAST OUTBREAK REPORTED/SEROTYPE	Comment
Ecuador	DISEASE ABSENT	Aug 2011/O	See text
Paraguay	DISEASE ABSENT	Dec 2011/O	
Venezuela	DISEASE ABSENT	2011/O, A	National situation needs verification

Map 12: FMD distribution by serotype and topotype for South America, 2011 – 2013 [16] (EuFMD).



IV. OTHER NEWS:

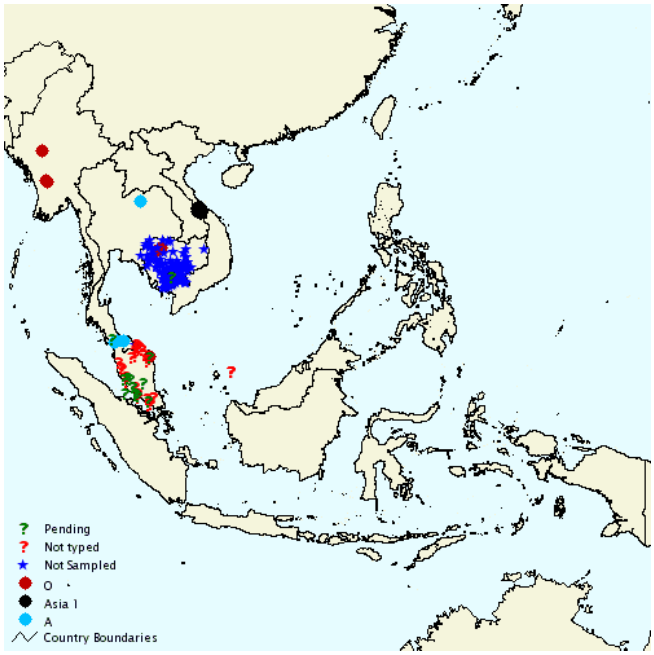
Southeast Asia [14]

No reports of FMD outbreaks have been recorded in February 2015 in the countries reported in Table 13. The ones ongoing from previous months add to a total of 233, same number as reported in January. Location of outbreaks is presented in Map 13.

Table 13: FMD outbreaks reported as ongoing during February 2015 in the countries of the Southeast Asia area, below listed.

Country	Ongoing Outbreaks
Cambodia	142
Myanmar	3
Malaysia	46
Thailand	4
Viet Nam	38
Total	**233**

Map 13: Location of FMD outbreaks reported as ongoing during February 2015 in the countries of the Southeast Asia area listed in Table 15 (SEAFMD).



Ghana [15]

The ACCRA Veterinary Laboratory is at present actively involving neighbouring countries in providing information of their respective FMD epidemiological situation.

V. REFERENCES - Superscripts

1. FAO EMPRES-AH, http://www.fao.org/ag/againfo/programmes/en/empres/home.asp
2. WAHID Interface – OIE World Animal Health Information Database http://web.oie.int/wahis/public.php?page=home
3. Project Directorate on Foot and Mouth Disease (PD-FMD), Indian Council of Agricultural Research, Mukteswar, India (*Dr B. B. Dash*) FAO
4. Progressive Control of Foot and Mouth Disease in Pakistan, GCP/PAK/123/USA - (*Dr. Manzoor Hussain*, National Project Director and *Dr. Muhammad Afzal*, Project Coordinator)
5. WELLNET Laboratory, Sap Institute, Turkey - (*Dr. Naci Bulut*)
6. National animal health diagnostic and investigation center (NAHDIC), Ethiopia - (*Dr. Daniel Gizaw*)
7. National FMD Reference Laboratory, Embakasi, Kenya - (*Dr. Abraham Sangula*)
8. Uganda Country Presentation: Progress Towards Progressive Control Pathway of Foot-and-mouth disease (Dr. Ayebazibwe Chrisostom, PhD - Presentation on behalf of the Director for Animal Resources, Rep. of Uganda)
9. FMD Research Centre, Virology Research Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria - (Dr. Ularamu Hussaini)
10. Laboratoire National de l'Elevage et de Recherches Vétérinaires (LNERV, Senegal) – (Dr Modou Moustapha – Miss Mariame Diop)
11. World Organization for Animal Health - Dr. Gregorio Torres Chargé de mission Scientific and Technical Department, Paris, France.
12. Regional Reference Laboratory for FMD (ARRIAH, Russia) - (*Dr. Svetlana Fomina)*
13. Laboratoire National Vétérinaire (LANAVET) -Garoua, Cameroon - (*Dr. Simon Dickmu Jumbo*)
14. SEAFMD, http://www.arahis.oie.int/reports.php?site=seafmd
15. ACCRA Veterinary Laboratory, Ghana - (*Dr. Joseph Adongo Awuni)*
16. OIE/FAO FMD Reference Laboratory Network, Annual Report 2013