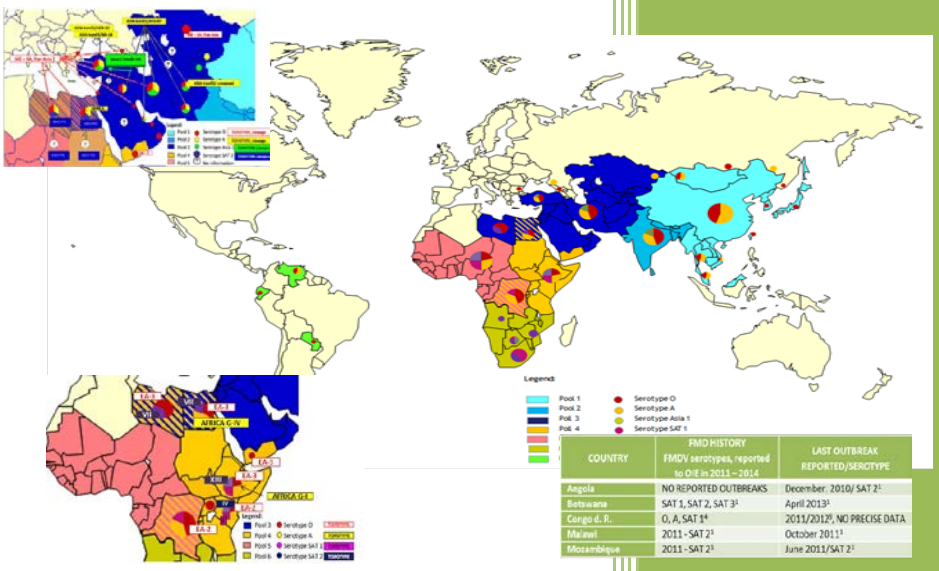
2015

Foot-and-Mouth Disease Situation
Monthly Report May 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[9], NO PRECISE DATA
Malawi	2011 - SAT 2[3]	October 2011[1]
Mozambique	2011 - SAT 2[3]	June 2011/SAT 2[3]

EuFMD

eufmd
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

May 2015

Guest Editor
Dr. Hernando Duque
Manager North American Foot-and-Mouth Disease Vaccine Bank
USDA, APHIS, VS, STAS, NVSL,FADDL

#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 Comments

It is an honour to be invited as a guest editor for this monthly report. I have been an avid reader of these reports, where I find useful and organized information about the global FMD situation.

In these comments, I want to direct your attention to the incursion of the SAT 2 virus to Oman. We have seen other incursions in recent years out of the normal South Saharan Africa range, in Egypt and Libya. SAT 2 has also been present in normal range during this month of May and has been reported in Namibia and Kenya, and in previous months this year in Mauritania, Ethiopia, and Botswana.

As two previous guest editors this year stated (Rossana Allende and Alexey Mishchenko), I want to highlight the remarkable progress that South America has made in the control of the disease. It has been forty one (41) months since the last report of an outbreak. It has not been easy for South America to get to this point. Coordinated efforts began with the creation of the Pan American Center for FMD (PANAFTOSA/PAHO/WHO) in 1951 and the South American Commission for the fight against FMD (COSALFA) in 1972. Most of the success has been achieved by a good public-private partnership that implemented vaccinations, with good quality vaccines that reached and maintained high immunization coverage over many years. The last part of the eradication is perhaps the most difficult. The interest of the farmers in the programs of vaccination after many years without outbreaks has to be maintained, as well as the interest of the governments in maintaining the funding and implementation of control programs. The surveillance needs to continue to identify residual virus activity and rapid responses need to be implemented in case of virus detection in the field. The final decision that local governments need to make is when to stop vaccinating and continue the path toward freedom of FMD without vaccination.

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).

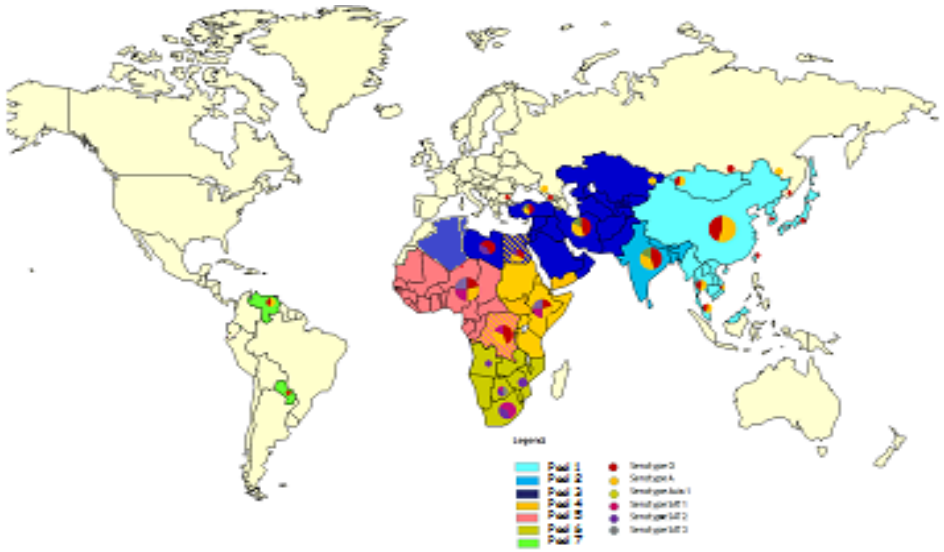
Table 1: List of countries representing each virus pool for the period 2010 – 2015

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, United Arab Emirates, 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

China (People's Rep. of) [1] – A FMD outbreak caused by serotype A was reported on a pig farm on the 10th of May 2015 in Gongan, Jingzhou, Hubei, China (People's Rep. of).

Mongolia [1,2] **-** A FMD outbreak caused by serotype O was reported on a small cattle farm on the 4th of June 2015 in Uulbayan, Sukhbaatar, Mongolia.
Samples collected from cattle during a previous outbreak that occurred in February 2015, sent to the WRLFMD for genotyping, were all classified as FMDV serotype O/SEA/MYA-98.

Viet Nam [2] – Samples collected in Viet Nam during 2014, positive for FMDV serotypes A and O, were subjected to FMDV vaccine matching tests and matched to some of the vaccine strains.

POOL 2

India [3] **-** The Project Directorate on Foot and Mouth Disease (PDFMD), Mukteswar, India detected FMDV serotype O in the tested clinical samples.

POOL 3

Afghanistan [2] – Fourteen samples collected from cattle in Afghanistan, between 2013 and 2014, were identified by the WRLFMD as respectively belonging to FMDV serotypes Asia 1/ASIA/ Sindh-08 and O/ME-SA/PanAsia-2 ANT-10 .

Bahrain [2] – Samples collected from cattle and sheep, in Bahrain, between February and March 2015, sent to the WRLFMD for genotyping, were all identified as FMDV serotype O/ME-SA/Ind – 2001d.

Egypt [2]**-** Nine samples collected from cattle and water buffalo species in Egypt, during 2014, were identified as FMDV serotype O/EA-3/unnamed.

Oman [2] – FMDV serotype SAT 2 was detected by the WRLFMD in cattle samples collected in 2015.

Pakistan [4] – Sixty-five FMD outbreaks were reported during May 2015, throughout Pakistan, within the Progressive Control of Foot and Mouth Disease Project, due to the circulation of three FMDV serotypes A, Asia 1 and O with the latter being the predominant serotype detected.

POOL 4

Ethiopia [5] – The National Animal Health Diagnostic and Investigation Centre (NAHDIC), Ethiopia tested 25 bovine tissue samples that were found positive for FMDV serotype O.

Kenya [6] – The Foot-and-Mouth Disease Laboratory, Embakasi, Kenya detected FMDV serotypes SAT 1 and SAT 2 respectively in 2 samples.

POOL 5

Mauritania [2]**-** The WRLFMD detected FMDV serotype SAT 2 in bovine samples collected during the last outbreak that occurred in Mauritania, in December 2014.

POOL 6

Angola [1] - A FMD outbreak for which serotyping is still pending was reported in a cattle herd, on the 14th of May 2015, in a village in Cubango, Angola.

Namibia [1] **-** Three FMD outbreaks caused by FMDV serotype SAT 2 were reported respectively in Ohangwena and Oshikoto, Namibia, between the 13th and 19th of May 2015, in cattle herds.

POOL 7

Latin America [1] - No outbreaks reported.

COUNTER

****** 41 MONTHS SINCE THE LAST OUTBREAK IN SOUTH AMERICA WAS REPORTED***
****** 129 MONTHS SINCE THE LAST SEROTYPE C OUTBREAK WAS REPORTED***

III. DETAILED POOL ANALYSIS

A. POOL 1 – Central /East Asia

China (People's Rep. of) [1]

A FMD outbreak caused by serotype A was reported on a pig farm on the 10th of May 2015 in Jingzhou, Hubei, China (People's Rep. of). The episode, which started on the 1st of May 2015, is a series of FMD outbreaks that are ongoing since June 2013. Suspect of FMD was raised on the basis of the clinical manifestations of the disease and was confirmed on the 6th of May 2015 by the Lanzhou Veterinary Research Institute (National Laboratory) (OIE's Reference Laboratory), using reverse transcription - polymerase chain reaction (RT-PCR) and virus isolation. The FMDV was identified as belonging to lineage SEA 97, G2 clade. The source of the outbreak is unknown.

Sanitary control measures applied are: stamping out, quarantine, movement control inside the country, screening, zoning and vaccination in response to the outbreaks, as reported in Table 2, disinfection of infected premises/establishments. All animals present in the outbreak were destroyed. Summary of species involved and location of outbreak are reported in Table 3 and Map 2 respectively.

Table 2: Location and species vaccinated for FMD (serotypes used for vaccination not reported).

Administrative division	Species	Total Vaccinated
HUBEI	Cattle	160
	Swine	533
	Sheep	96
TIBET	Cattle	1,779
YUNNAN	Cattle	141,955
	Sheep	37,928
Total		**182,451**

Table 3: Summary of the animals involved in the FMD outbreak, reported in Jingzhou, Hubei, China (People's Rep. of) in May 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Swine	179	25	0	179	0	13.97%	0.00%	0.00%	100.00%

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

Map 2: Location of FMD outbreak reported in Jingzhou, Hubei, China (People's Rep. of) during May 2015.

Mongolia [1,2] **–** The FMD outbreak, caused by serotype O, started on the 25th of May 2015, on a small cattle farm in Uulbayan, Sukhbaatar, Mongolia. The event was confirmed by laboratory diagnosis carried out by the State Central Veterinary Laboratory (National laboratory), using non-structural protein (NSP) ELISA and RT-PCR and by the Russian Research Institute for Animal Health (FGBI-ARRIAH) (OIE's Reference Laboratory) using complement fixation test (CFT) and RT-PCR.
Sanitary control measures applied are: quarantine, movement control inside the country, screening, zoning and vaccination in response to the outbreaks, as reported in Table 4, disinfection of infected premises/establishments. Summary of the species involved and location of outbreak are reported in Table 5 and Map 3 respectively.

Table 4: location and species vaccinated for FMD (serotypes used for vaccination not reported).

Administrative division	Species	Total Vaccinated
KHOVD	Sheep	78,368
	Cattle	34,089
	Goats	197,772
	Camelidae	2,436
Total		**312,665**

Table 5: summary of the number of the cattle involved in the FMD outbreak, reported in Sukhbaatar, Mongolia during May 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	44	12	0	0	0	27.27%	0.00%	0.00%	0.00%

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

Map 3: Location of FMD outbreak reported in Sukhbaatar, Mongolia during May 2015.

Four bovine samples collected during FMD outbreaks occurring during February 2015, genotyped by the WRLFMD, were all classified as FMDV serotype O/SEA/MYA-98, with O/MAY/2/2014 as the most closest related field virus, having a sequence identity of 99.37% and O/MYA/7/98, as the most closely related reference virus, having a sequence identity of 92.18%.

Russian Federation [1, 8]

The Russian Research Institute for Animal Health (FGBI-ARRIAH) was involved in the provision of materials and advice to the Federal Service for Veterinary and Phytosanitary Surveillance of the Ministry of Agriculture of the Russian Federation and to the veterinary services of the Russian Federation Subjects. The laboratory is continuing its studies on the antigenic relationship between epidemic isolates and vaccine strains of FMDV serotype A. During May, 120 sera collected from not vaccinated animals, were tested for the presence of FMD antibodies.

The FMDV outbreak, caused by serotype A, that had started in January 2014, in cattle and pigs in ZABAJKAL`SKIJ KRAY, is reported as resolved. Source of the outbreak or origin of infection remains unknown or inconclusive. The control measures applied were: quarantine, movement control inside the country, screening, modified stamping out and vaccination in response to the outbreaks, as reported in Table 6, while affected animals were not treated.

Table 6: location and species vaccinated for FMD (serotypes used for vaccination not reported).

Administrative Division	Species	Total Vaccinated
ZABAJKAL`SKIJ KRAY	Cattle	11,881
	Sheep / goats	10,517
Total		**22,398**

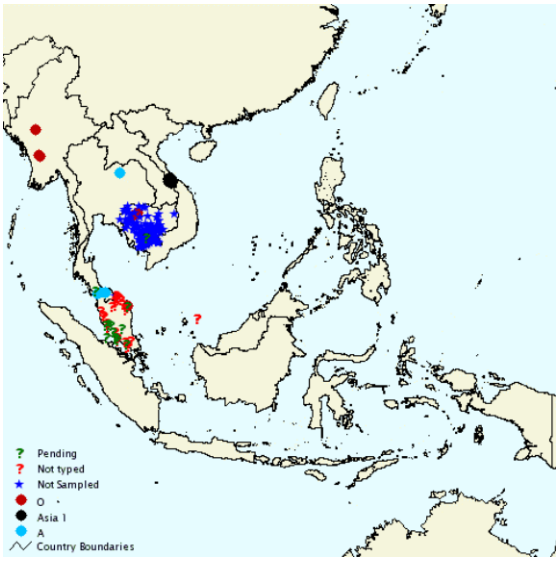
Southeast Asia [7]

There are no reports of FMD outbreaks for May 2015, in the countries listed in Table 7. The episodes ongoing from the previous months are 210, same number as registered in March and April. The last reported outbreaks were in Viet Nam, in December 2014. The circulating FMDV serotypes are A, Asia 1 and O and are distributed as shown in Table 7. Location of outbreaks is presented in Map 4.

Table 7: Summary of FMDV serotypes responsible for the outbreaks, reported as ongoing during May 2015, in the countries of the Southeast Asia area listed below.

Serotype invovled	Country	N° of outbreaks	
A	Thailand	4	
O	Cambodia	6	
	Myanmar	3	
	Malaysia	1	
Asia 1	Viet Nam	15	
Not sampled	Cambodia	135	
	Malaysia	2	
Not typed	Malaysia	31	
Pending	Cambodia	1	
	Malaysia	12	
		210	**Total**

Map 4: Location of FMD outbreaks reported as ongoing during May 2015 in the countries of the Southeast Asia area listed in Table 2 (SEAFMD).



Viet Nam [2]

Results of vaccine matching tests carried out by WRLFMD of samples respectively positive for FMDV serotypes A and O, collected from cattle in Viet Nam during 2014, are summarised in Table 8. Further details of these results will be given and discussed in the forthcoming WRLFMD Quarterly report.

Table 8: summary of vaccine matching test results for bovine samples collected during 2014 in Viet Nam.

Strain	Serotype/topotype/ genotype	Vaccine Matching Result			
		A Iran 2005	**A 22 Irq**	**A May97**	**A Tur/06**
Vit 08/14	A/Asia/Sea-97	/*	**M***	/	/
Vit 14/14		/	**M**	/	/
		O 3039	**O Mansia**	**O Skr 7/10**	**O Tur 5/09**
Vit 11/14	O/ME-SA/PanAsia	**M**	/	**M**	**M**
Vit 26/14	O/SEA/Mya-98	**M**	/	**M**	**M**

*M - suggests close relationship between field isolates and vaccine strain.
A potent vaccine containing the vaccine strain is likely to confer protection
/ - little or no close relationship

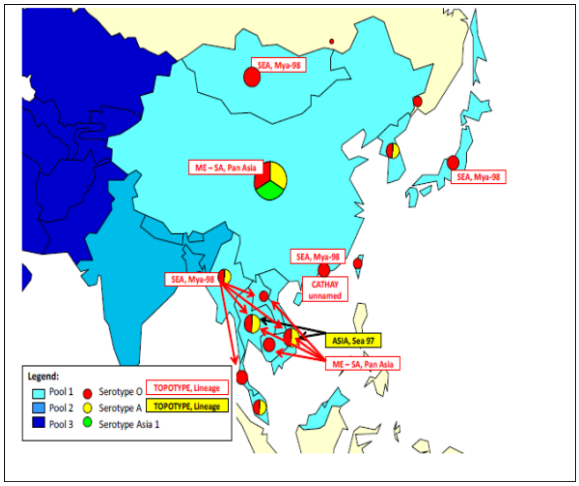
Table 9: Summary of the history of FMD Pool 1, 2012 – 2014, for geographic distribution see Map 5 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2014	LAST OUTBREAK REPORTED/SEROTYPE#	Comment
Cambodia	O, 2013-2014/NOT SAMPLED	Apr 2015/O, Aug 2014/ not typed	See text Typing required
China (People's Rep. of)	2012-2013/O, 2013/A,	Apr 2015/O, May 2015/A	See text Genotyping available
China (Hong Kong, Sar)	O	Oct 2014/O	See text Genotyping available
China (Taiwan Province)	2012-2013/O,	Apr 2015/O	See text
Korea (DPR)	2012-2013/DISEASE ABSENT	May 2014/not confirmed, July 2014/O	
Korea (Rep. of)	2012-2013/DISEASE ABSENT	March 2015/O	
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	Apr 2015/O	See text Typing required
Mongolia	2013/A	Sept 2013/A, May2015/O	See text Typing required
Myanmar	2012-2013/O	Apr 2015/O, July 2014/ not typed	See text Typing required
Russian Federation	2012/O, 2013/A	March 2015/O and A	See text
Thailand	O, A and NOT TYPED	Jun 2014 /A, Oct 2012/O, Sept 2014/not typed	See text Typing required
Vietnam	O, NOT SAMPLED 2013- 2014/A,	Apr 2015/A and Asia 1 Jun 2014/O, July 2014/not typed	See text Typing required

Map 5: FMD distribution by serotype and topotype in South East Asia, 2010 – 2014 (EuFMD).

Conjectured circulating FMD viral lineages in pool 1 per 2014 [19]:

- 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 (P.R. China)



B. POOL 2 – South Asia

India [3]

PDFMD, Mukteswar detected FMDV serotype O among the 11 clinical samples when tested by FMDV antigen and/or RNA detection methods. The laboratory also carried out genotyping of 4 clinical isolates positive for FMDV serotype O, while 5 field isolates, again positive for serotype O, were subjected to vaccine matching tests.

A total of 17,235 serum samples were tested for FMDV antibodies for epidemiological studies. FMD diagnosis was carried out using indigenous diagnostic kits developed at PDFMD, Mukteswar.

The laboratory personnel are continuously 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.

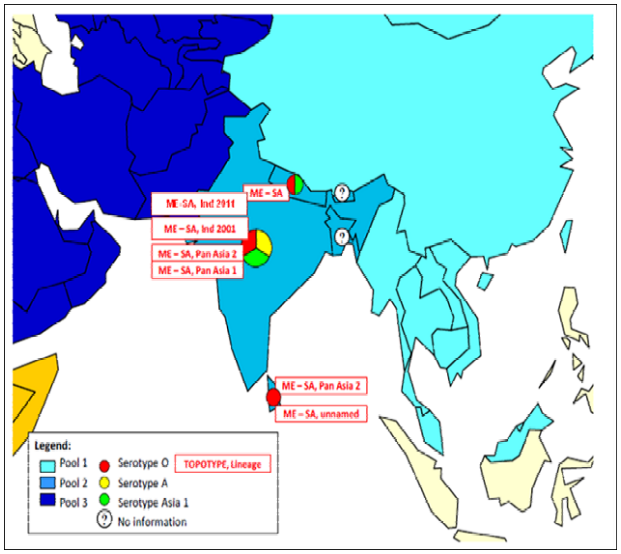
Table 10: Summary of the history of FMD Pool 2, 2012 – 2014, for geographic distribution see Map 6 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2014	LAST 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	Apr 2015/Asia 1 and O	See text
Nepal	O, 2012-2103/Asia 1	Apr 2014/O	
Sri Lanka	2012 – 2013/O	Sept 2014/O	

Map 6: FMD distribution by serotype and topotype in South Asia, 2011 – 2014 (EuFMD).

Conjectured circulating FMDV lineages in pool 2 per 2014 [19]:

- 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

Afghanistan [2]

Of the 14 samples collected from cattle, between 2013 and 2014 sent to the WRLFMD for genotyping, 3 were identified as FMDV serotypes Asia 1/ASIA/ Sindh-08, with Asia1/AFG/27/2013 as the most closely related field virus, having a sequence identity between 99.53% and 100% and Asia1/PAK/8/2008, as the most closely related reference virus with a sequence identity between 94.31 %and 94.47%.

The remaining 11 were identified as O/ME-SA/PanAsia-2^{ANT-10}, with isolates collected from Afghanistan and Pakistan during 2014, as the most closely related field viruses, having a sequence identity between 99.37% and 100%, and O/IRN/88/2009 as the most closely related reference virus with a sequence identity between 94.81% and 95.31%.

Bahrain [2]

The 9 samples collected from cattle (7) and sheep (2), between February and March 2015, identified as FMDV serotype O/ME-SA/Ind – 2001d by the WRLFMD clustered into 2 groups, with the sheep isolates being represented in both groups. The most closely related field virus was O/Ind205/2013 having a sequence identity between 98.90% and 99.53%, and O/BHU/3/2009 as the most closely related reference virus with a sequence identity between 95.62% and 96.40%.

Egypt [2]

Nine samples collected between April and October 2014, from cattle (8) and water buffaloes (1) were identified as FMDV serotype O EA-3/unnamed with the most closely related field viruses represented by other isolates from the same country collected during 2013, with a sequence identity of between 96.4% and 99.87% and O/SUD/2/86 as the most closely related reference virus, with a sequence identity between 89.36% and 90.92%.

Oman [2, 9]

In 3 of the 4 epithelium samples collected from mouth lesions of cattle in May 2015, FMDV serotype SAT 2 was detected.

No previous reports on the circulation of this serotype are available. In a paper, published by Rashid M. Al-Busaidi et al. (2013[9]), relative to a serological study on FMD in cattle from the Dhofar Governorate of Oman, when testing the sera of the animals for all FMDV serotypes, these were found positive only for FMDV serotypes A and O.

Pakistan [4]

Within the FMD Project, GCP/PAK/123/USA, for the Development of a Technical Framework for the Progressive Control of the disease in Pakistan, field veterinarians attended 66 FMD outbreaks, 56 of which occurred in Sindh, while the remaining were reported in FATA, Azad Kashmir, Balochistan and Khyber Pakhtunkhwa. The outbreaks were caused by FMDV serotypes A, Asia 1 and O, with the latter being the predominant circulating serotype. Fourteen of the total outbreaks registered the presence of more than one FMDV serotypes. Vaccination was carried out in 25,464 animals and a summary of this is presented in Table 11.

Eleven Awareness Seminars were organized in different provinces with 362 farmers, of which 94 were females, educated in the areas of prevention and control of FMD. Twelve Capacity Building Seminars were organized for 189 Veterinary Officers and 160 Field Assistants to which 311 sample collection kits were distributed.

Table 11: summary of the animals vaccinated in the different livestock production units, during May 2015, in Pakistan

Ring Vaccination	Dairy Colonies	Rural dairy production system	Cost sharing basis*
550	11,703	10,400	7,939

***** Farmers of dairy colonies are actively participating in the cost-sharing vaccination program.

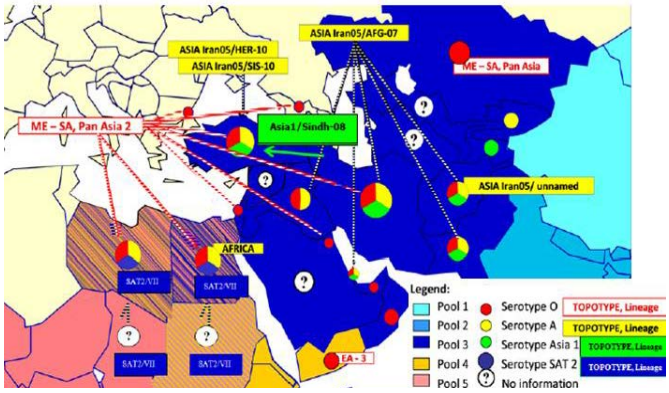
Table 12: Summary of the history of FMD Pool 3, 2012 – 2014, for geographic distribution see Map 7 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2014	LAST 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	Apr 2015/O	See text
Armenia	2012-2013/DISEASE ABSENT	Not available	Follow –up needed
Azerbaijan	DISEASE ABSENT	Jun 2001	Follow –up needed
Bahrain	2012 /O	Oct 2014/O	
Egypt	2012, 2014/SAT 2 2012 - 2014/O, A	April 2014/Sat 2, Jan-Mar 2015/A & O	See text Genotyping available
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	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	May 2015 / A, Asia 1, O	See text - genotyping required for most recent isolates
Autonomous Territories Palestine	O, 2012-2013 - SAT 2	Mar 2013/Sat 2, Nov 2014/O	
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	
Turkmenistan	NO DATA AVAILABLE	Not available	Follow –up needed
United Arab Emirates	2012/DISEASE ABSENT 2013-2014/O	Jan 2014/O	Follow –up needed
Uzbekistan	NO DATA AVAILABLE	Not available	

Map 7: FMD distribution by serotype and topotype for West Eurasia and Middle East, 201 – 2014 (EuFMD).

Conjectured circulating FMDV lineages in pool 3 per 2014 [19]:

- 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 [5]

The NAHDIC, Ethiopia tested 25 bovine tissue samples, by FMD antigen (Ag) detection ELISA, that were found positive for FMDV serotype O.

A total of 1092 sera samples collected from caprine and ovine species were screened for export, for FMD antibody detection, by 3ABCE Check kit and 14 samples were found positive.

The laboratory personnel are also involved in the investigation of FMD field outbreaks and in providing expert advice to Government, national/local authorities or to other services.

Kenya [6]

The Foot-and-Mouth Disease Laboratory, Embakasi, Kenya detected FMDV serotypes SAT 1 and SAT 2 respectively in two samples using FMD Ag detection ELISA and/or RT-PCR. The laboratory also carried out post vaccination monitoring for FMD.

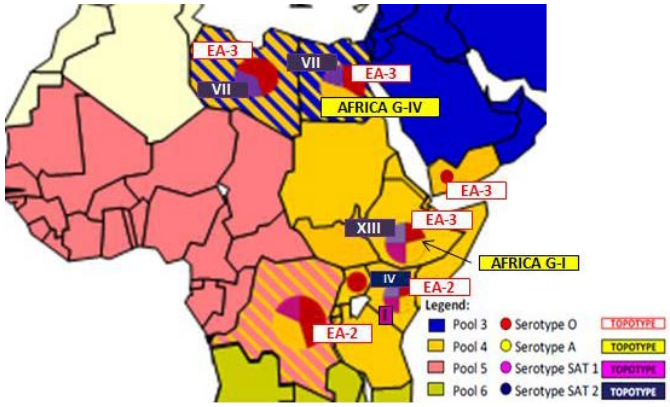
Table 13: Summary of the history of FMD Pool 4, 2012 – 2014, for geographic distribution see Map 8 below.

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 - 2014	LAST OUTBREAK REPORTED/SEROTYPE#	Comment
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	April 2014/Sat 2, May 2014/A, Oct 2014/O	See text
Eritrea	2012/O	Jan 2012/O	Follow –up needed
Ethiopia	O, 2012/A, SAT 2	Jun 2014/A, May 2015/O, Jan 2015/confirmation pending, March 2015/SAT 2,	See text Genotyping required for most recent isolates
Kenya	O, SAT1, SAT2, 2012 – 2013/A, 2012/NOT TYPED	Mar 2015/ A, Apr 2015/O May 2015/ SAT1 and 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	2011	Follow –up needed

	AVAILABLE		
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	Genotyping required
Yemen	2012/O 2013 – 2014/ DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	Follow –up needed

Map 8: 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 [19]:

- 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 – West / Central Africa

Cameroon [10]

While serological diagnosis is at the present on hold at the LANAVET, as the laboratory is out of stock for serological kits for FMD, it is continuing its research collaborative projects with Plum Island Animal disease Centre and Ohio State University, USA by collecting samples to send to them.

Ghana [11]

The ACCRA Veterinary Laboratory tested 100 serum bovine samples by an NSP ELISA of which with 96 of them resulting positive for antibodies for FMDV serotypes A and O. The samples were collected from a FMD suspected herd in Niger immediately after the outbreak had occurred.

Mauritania[2]

In 3 of the 5 epithelium samples collected from cattle in December 2014, FMDV serotype SAT 2 was detected. The last report on the circulation of this serotype was in 1976.

Nigeria [12]

No FMD outbreaks were reported in May 2015, in Nigeria by the National Veterinary Research Institute, Nigeria. 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 [13]

No FMD outbreaks were reported in May 2015, in Senegal by the Laboratoire National de l'Elevage et de Recherches Vétérinaires, Senegal. The personal was involved in giving training for FMD laboratory methods.

Table 14: Summary of the history of FMD Pool 5, 2012 – 2014, for geographic distribution see Map 9 below.

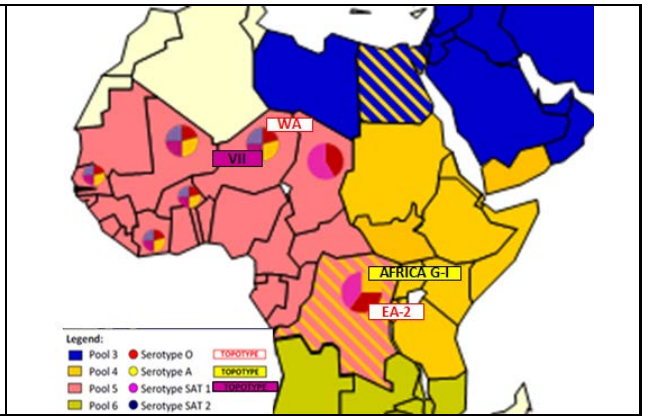
Country	FMD history FMDV serotypes, reported to OIE in 2012 – 2014	Last outbreak reported/serotype[#]	Comment (Genotyping would be useful for this region)
Benin	A, O, SAT 1, SAT 2	Jun 2014/O, A, SAT 1, SAT 2	
Burkina Faso	SEROTYPES NOT REPORTED	2013/ not available	Follow –up needed
Cameroon	SEROTYPES 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	See text 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	Dec 2014/SAT 2	See text
Niger	2012 – 2014/NOT SAMPLED	2014/not sampled	Identification required
Nigeria	2012 – 2014/NOT SAMPLED	Sept 2014/0, SAT 1 and SAT 2, Feb 2015/ A	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 9: FMD distribution by serotype and topotypes for West Africa, 2011 – 2014 (EuFMD)

Conjectured circulating FMDV lineages in pool 5 per 2014 [19]:

- 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

Angola [1]

A FMD outbreak was reported in a cattle herd on the 14th of May 2015 in Cubango, Angola, close to the Namibia border where a FMD outbreak also occurred on the 11th of May 2015. The village in Angola is located in an area of extensive transhumance along the border with Namibia. The source of the outbreak is however unknown. The event started on the 11th of May 2015 and was detected during routine surveillance in a population of 2,650 animals in which 5 in a pen including other 70 animals were found with signs and lesions consistent with foot and mouth disease.

Laboratory diagnosis is being carried out by the Namibian Central Laboratory, Regional Reference Laboratory, using NSP ELISA and RT-PCR.

The last FMD suspect that occurred in the country was in 2012, while the last FMDV serotype detected, SAT 2, was in 2010.

Sanitary control measures applied are: stamping out, quarantine, movement control inside the country, screening, zoning, disinfection of infected premises/establishment(s). No vaccination in response to the outbreak and treatment of the affected animals is being carried out. Summary of species involved and location of outbreak are reported in Table 15 and Map 10 respectively.

Table 15: summary of the number of cattle involved in the FMD outbreak reported in Cunado, Cubango, Angola during May 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	2650	5	0	0	0	0.19%	0.00%	0.00%	0.00%

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

Map 10: Location of FMD outbreak reported in Cubango, Angola during May 2015.

Botswana [1]

Following the FMD outbreaks that occurred during March and April 2015, a booster vaccination campaign in areas with low coverage is being conducted, together with passive and active clinical surveillance. The outbreak was limited to 10 out of 80 crushes in the outbreak area. Since the last outbreak, surveillance has revealed no clinical cases of FMD. Other control measures being applied are: control of wildlife reservoirs, movement control inside the country, zoning, vaccination in response to the outbreak (s) as reported in Table 16. No treatment of affected animals is being carried out. Epidemiological investigations are continuing and weekly reports are being forwarded.

Table 16: location and species vaccinated for FMD

Administrative division	Species	Total Vaccinated	Details
NGAMILAND	Cattle	51,821	Mass booster vaccination with trivalent SAT 1, 2 and 3 vaccine of all cattle in zone 2

Namibia [1]

Three FMD outbreaks in cattle herds started on the 11th of May, one in Ohangwena, which is close to the border of Angola where an outbreak was, also, reported on the same day, and the other two in Oshikoto, Namibia. In the first outbreak, oral and hoof lesions, compatible with FMD were observed. Diagnosis is being carried out by the Central Veterinary Laboratory (National laboratory) using NSP ELISA and RT-PCR and by the Onderstepoort Veterinary Institute (OIE's Reference Laboratory) that has confirmed on serological basis, the outbreaks to be caused by FMDV serotype SAT 2, by testing samples using liquid-phase blocking ELISA.

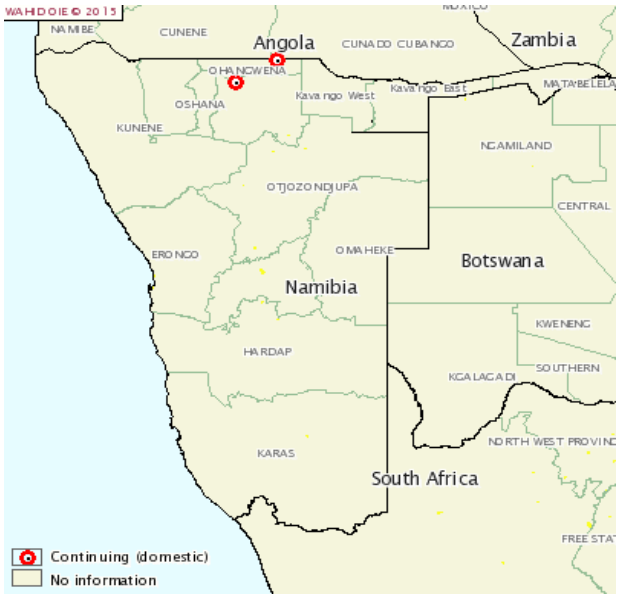
Source of the outbreaks is unknown. Sanitary control measures applied are: stamping out, quarantine, movement control inside the country, screening, zoning, disinfection of infected premises/establishment(s). No treatment of affected animals is being carried out. Summary of species involved and location of outbreaks are reported in Table 17 and Map 11 respectively.

Table 17: summary of the number of cattle involved in the FMD outbreak reported in Ohangwena and Oshikoto, Namibia during May 2015.

Species	Susceptible	Cases	Deaths	Destroyed	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	9454	28	0	0	0	0.30%	0.00%	0.00%	0.00%

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

Map 11: Location of FMD outbreak reported in Ohangwena and Oshikoto, Namibia during May 2015.



RSA [14]

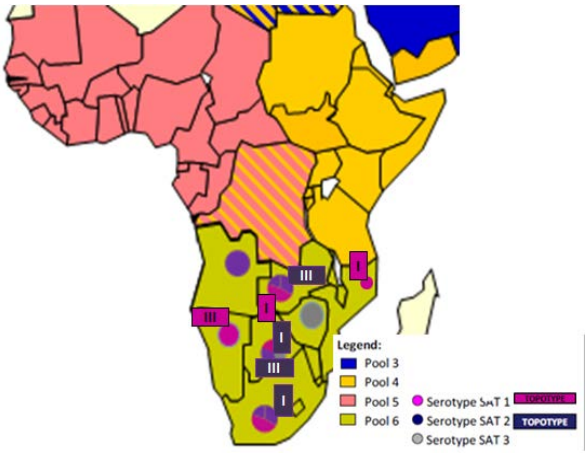
The ARC-Onderstepoort Veterinary Institute did not report any outbreaks of FMD for May 2015. Liquid-phase blocking ELISA was used to test 3,722 samples for antibodies against FMDV serotypes SAT 1, SAT 2 and SAT 3.
The laboratory personnel are continuously involved in the investigation of FMD field outbreaks 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 18: Summary of the history of FMD Pool 6, 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
Angola	2012/DISEASE SUSPECTED BUT NOT CONFIRMED 2013/DISEASE ABSENT 2014/NO DATA AVAILABLE	May 2015/ SAT 2	Follow –up needed
Botswana	2012-2014/SAT 2 2014/SAT 1	Mar 2015/SAT 2, Apr 2015/typing pending Oct 2014/SAT 1	See text Typing required

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	May 2015/SAT 2, Jan 2015/typing pending	Typing 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, Apr 2015/Typing pending	See Text Typing required

Map 12: 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 [19]:

- 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

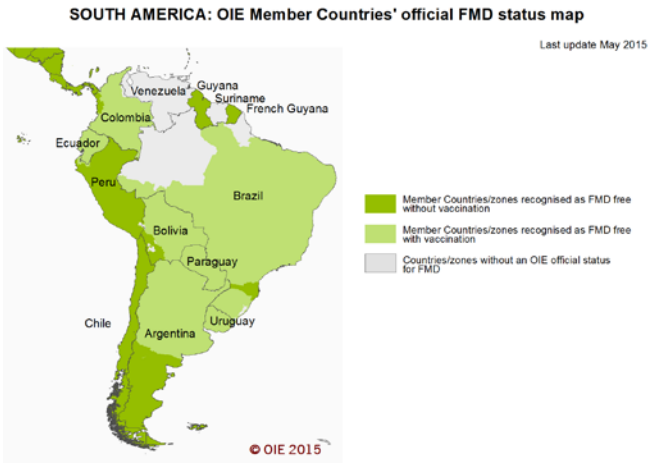
South America [1,15]

The OIE FMD status of the countries in South America as in April 2015 is presented in Map 13. 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 and continental Ecuador) or without vaccination (Argentina, Bolivia, Brazil, Colombia, Peru) as 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 19 and Map 13). The FMD history between 2011 –2013 given in Table 19.

Table 19: Summary of the history of FMD Pool 7, 2012 – 2014, for geographic distribution see Map 13 below

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

Map 13: FMD distribution by serotype and topotype for South America, 2011 – 2013 [1].



IV. OTHER NEWS:

[16]During the 83rd OIE General Session, the ANSES - Laboratoire de Santé Animale was designated as OIE Reference Laboratory for FMD.

[17, 18]Under the GF-TADS umbrella, the 6th Annual West Eurasia Roadmap Meeting for FMD control, was held in Almaty, Kazakhstan, 28-30 April 2015. The West Eurasia Regional Roadmap meeting was first held in Shiraz, Iran, 2008. Following the FMD Global Strategy, the targeted region has been divided into two different clusters of countries: the first cluster included at that time: Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Iran, Iraq, Pakistan, Syria, Tajikistan, Turkey, Turkmenistan and Uzbekistan. The second cluster is made of countries of the Arabian Peninsula. Countries of both clusters belong to FMD virus pool 3. This meeting was the 6th Regional Roadmap meeting of countries belonging to cluster 1. As epidemiological data confirm on how FMDV can spread from countries close to South Asia, namely Afghanistan and Pakistan, to those more westward, such as is the case of Iran and Turkey, it is essential to assess where countries in this area are in their Progressive Control Pathway FMD stages progress and encourage the development and implementation of harmonized control programmes at national and regional level. The FMD roadmap meetings have the objective of sharing information on FMD virus circulation in the region, assess the progress of each country along the Regional Roadmap and work with them on preparing their national control programmes, project proposals and submissions to OIE for programme endorsement.

The West Eurasian countries are advancing in their PCP-FMD stages as follows: Afghanistan, Tajikistan, Turkmenistan and Uzbekistan currently are in stage 1 (understanding FMD epidemiology and preparing a risk-based strategic plan (RBSP) to progress to stage 2); Iran and Turkey are in PCP-FMD stage 2, (implementing a RBSP to reduce the risk of FMD); Georgia and Pakistan advanced this year to stage 2 and will be implementing the established Risk-Based Surveillance Plan (RBSP); Armenia and Azerbaijan in provisional stage 2, pending submission of their revised RBSP plans before the end of 2015. The northern and western regions of Kazakhstan gained an OIE status of free without vaccination.

During the Meeting presentations of the following countries were given: Afghanistan, Armenia, Azerbaijan, Georgia, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Syria, Tajikistan, Turkey, Turkmenistan and also on the topics of Sample transportation (Dr. Naci Bulut WELLNET Laboratory, Sap Institute, Turkey) and Vaccine potency requirements (Dr. Don King - WRLFMD).

V. REFERENCES - Superscripts

1. WAHID Interface – OIE World Animal Health Information Database http://web.oie.int/wahis/public.php?page=home
2. World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD), www.wrlfmd.org
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. National animal health diagnostic and investigation center (NAHDIC), Ethiopia - (*Dr. Daniel Gizaw*)
6. National FMD Reference Laboratory, Embakasi, Kenya - (*Dr. Abraham Sangula*)
7. Regional Reference Laboratory for FMD (ARRIAH, Russia) - (Dr. Svetlana Fomina)
8. SEAFMD, http://www.arahis.oie.int/reports.php?site=seafmd
9. Rashid M. Al-Busaidi et al., (2013) A Serological Study on Foot and Mouth Disease in Cattle from the Dhofar Governorate of Oman. Agricultural and Marine Sciences, 18:31-35
10. Laboratoire National Vétérinaire (LANAVET) -Garoua, Cameroon - (*Dr. Simon Dickmu Jumbo*)
11. ACCRA Veterinary Laboratory, Ghana - (*Dr. Joseph Adongo Awuni)*
12. FMD Research Centre, Virology Research Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria - (Dr. Ularamu Hussaini)
13. Laboratoire National de l'Elevage et de Recherches Vétérinaires (LNERV, Senegal) – (Dr Modou Moustapha Lô – Miss Mariame Diop)
14. ARC-Onderstepoort Veterinary Institute, Republic of South Africa - (*Dr LE Heath/Ms E Kirkbride*)
15. 42a Reunión Ordinaria de la Comisión Sudamericana para la Lucha contra la Fiebre Aftosa held in Quito, Ecuador, 16-17 April, 201.http: //ww2.panaftosa.org.br/cosalfa42/
16. http://www.oie.int/eng/Session2015/information.html
17. http://www.fao.org/ag/againfo/programmes/en/empres/news_110615.html
18. http://www.fao.org/ag/againfo/commissions/eufmd/commissions/eufmd-home/reports/regional-fmd-meetings/en/
19. OIE/FAO FMD Reference Laboratory Network, Annual Report 2013