JULY

2017

MONTHLY REPORT
FOOT-AND-MOUTH DISEASE SITUATION

Food and Agriculture Organization of the United Nations

European Commission

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

July 2017

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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.

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Guest Editor's comments:

It is an honour to be asked again to act as guest editor of the EuFMD monthly report. This report carries out a vital function for all those involved in FMD control by providing a carefully curated source of current information on FMD events throughout the world. The overview enables us all to stay informed of general trends, while the detailed updates on each pool help risk managers to make informed decisions about the control options they may have.

The events described this month offer a stark example of the changing nature of FMD risk. Detailed information is provided on the FMD outbreaks in Columbia; this incursion is a very disappointing turn of events but our colleagues in Columbia are to be congratulated for their hard work and commitment in bringing the outbreaks under control. There is evidence that the virus involved is related to isolates previously reported in Venezuela. Effective surveillance, timely reporting, and sharing of virus isolates through the OIE-FAO FMD reference laboratory network can mitigate the risk of virus spread in a region by raising awareness of the threats and informing contingency planning. A coordinated regional approach to FMD control is vital, as has been demonstrated by the great successes achieved in the past in South America under the coordination of PANAFTOSA.

The benefits of a coordinated international approach can be seen in the positive news contained in the report this month. Samples are being sent to the World Reference Laboratory in Pirbright and to other OIE/FAO reference centres; vaccine matching is being done by several countries on circulating viruses; and phylogenetic analysis of isolates continues to provide insight into the sources and spread of viruses across and between pools.

As encouraging as these activities are, it is clear that more must be done to support FMD control internationally and build on these efforts. Substantial FMD outbreaks in the eastern Congo are described in the report, but laboratory testing including serotyping were not carried out, highlighting the gaps in laboratory capacity which our FMD community needs support to close. I am optimistic that recent technological advances in field-based laboratory testing and methods to safely transport inactivated FMDV isolates to reference laboratories will play a role in helping to resolve these challenges, benefiting those in the affected areas and also helping risk managers in other regions.

The long-distance movements of viruses from pool 2 eastwards and westwards challenge us to uncover the mechanisms involved and the factors which can influence long distance spread. This also emphasises that the risk of FMD spread does not just threaten areas in proximity to where virus is circulating, and that regional coordination and sharing of information are essential for risk management and emergency preparedness. The EuFMD monthly report is an excellent way to disseminate relevant information in a timely way, and its wide readership is a testament to the regard in which it is held.

Eoin Ryan
August 2017

I. GENERAL OVERVIEW

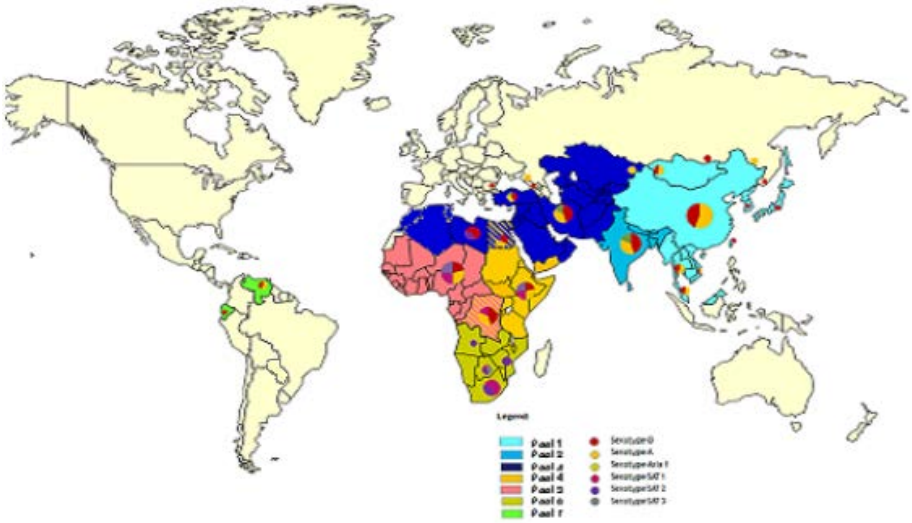
Pools represent independently circulating and evolving foot-and-mouth disease virus (FMDV) *genotypes; within the pools, cycles of emergence and spread occur that usually affect multiple countries in the region. In the absence of specific reports, it should be assumed that the serotypes indicated below 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 2011 – 2016 (source EuFMD)

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

Egypt, Libya and **Democratic Republic of Congo** (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

MAP 1: Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2011-2016 (source EUFMD)



II. HEADLINE NEWS

POOL 1- SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA

Cambodia [1] – Genotypes A/ASIA/Sea 97 and O/ME-SA/PanAsia were detected in the five samples of unknown host species origin collected in December 2016.

Lao People's Democratic Republic [1] – The FMDV serotype O field isolate detected during January 2017 employed in the vaccine matching strain differentiation (VMSD) test obtained a good matching result with O/TUR 5/09.

Mongolia [1] **–** Field isolates belonging to FMDV serotype A and O were subjected to VMSD tests and good matching results were obtained for each with at least one vaccine strain.

POOL 2 - SOUTH ASIA

India [2] – The Indian Council of Agricultural Research - Directorate of Foot and Mouth Disease (ICAR-PDFMD), Mukteswar, India detected FMDV serotype O in the bovine sample tested using antigen and/or RNA detection assays.

Nepal [1, 3] – The National Foot and Mouth Disease and TADS Laboratory reported the circulation of FMDV serotype O.
FMDV serotypes A and O were detected by the WRLFMD in the 26 bovine samples forwarded by the same laboratory. The FMDV serotype A refers to A/ASIA/G-VII – more details will be provided in the next issue of the Global Monthly Report.

POOL 3 - WEST EURASIA & MIDDLE EAST

Afghanistan [4] - The Central Veterinary Diagnostic and Research Laboratory *(*CVDRL), of Kabul Afghanistan detected FMDV serotypes A, ASIA 1 and O in the 117 samples examined during the reporting month.

Egypt [1] – FMDV serotypes A and O were detected in some of the 35 buffalo and bovine samples collected between November 2016 and April 2017.

Iran [1] – FMDV field isolates detected in 2017 and belonging to serotypes A and O that were subjected to VMSD tests obtained good matching results with various vaccine strains.

Pakistan [5]- Fourteen FMD outbreaks were reported during July 2017 in some of the territories of the country due to serotypes Asia 1 and O.

Palestine [6] – Serotyping of FMDV responsible of outbreaks reported in Gaza on the July 12th 2017 is indicative of FMDV SAT 2.

Turkey [1] – FMDV VP1 sequences of samples collected in June and July 2017 were respectively genotyped as A/ASIA/G-VII and O/ME-SA/PanAisa-2.

POOL 4 - EASTERN AFRICA

Democratic Republic of the Congo [7] – Four FMD outbreaks involving over 10,000 cattle occurred in the province of Sud-Kivu on May 20th 2017. Serotyping of the virus was not reported.

Ethiopia [1] – VMSD tests identified three vaccine strains with good matching results for the FMDV serotype O detected in field isolates collected during 2016.

Kenya [8] - FMDV serotype O was detected in the bovine samples examined by the FMD National Reference Laboratory, Embakasi.

South Sudan [5] – Seven FMD outbreaks were documented in different locations indicating that the disease is widespread and affecting a large proportion of the susceptible livestock throughout the country.

POOL 5 - WEST/CENTRAL AFRICA

No FMD outbreaks were reported for this region during July 2017.

POOL 6 - SOUTHERN AFRICA

Namibia [7] **–** Two episodes of FMD occurred in cattle during July 2017 at Katima-Mulilo, Zambezi.

POOL 7 - SOUTH AMERICA

Columbia [7]
Further to the FMD outbreak due to serotype O that occurred at La Marota, Curipao, Tame, Arauca, Columbia on the 11th of June 2017 involving beef cattle, other outbreaks were detected between June 1st of and July 20th 2017 in Cundinamarca and Norte de Santander.
Last FMD episodes in the country occurred in 2009.

Rest of Latin America [7, 9, 10] **-** Last registered circulation of FMD in Latin America before the above-mentioned events was announced during the OIE/FAO FMD Laboratory Meeting held in November 2016, where PANAFTOSA reported sequence data for historical FMD outbreaks that occurred in Venezuela in 2013.

COUNTER

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

III. DETAILED POOL ANALYSIS

A. POOL 1 – ***SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA***

Cambodia [1]

The Regional Reference Laboratory of Thailand for FMD in South East Asia forwarded five samples of unknown host species origin, collected in December 2016 that resulted positive for genotypes A/ASIA/Sea 97 and O/ME-SA/PanAsia.

Previous detection of the same genotypes was in 2015 for A/ASIA/Sea 97 and 2014 for O/ME-SA/PanAsia.

A summary of the genotyping results and location of where the samples were collected are respectively presented in Table 2 and Map 2.

Of note is that field sample CAM/2/2016 is positive for both genotypes and that the most closely relative viruses not pertaining to the country are from neighbouring countries such as Thailand and Vietnam as well as distant ones, as that from Mongolia, confirming the different routes of spreading that are available for FMDV.

Table 2: genotyping results of samples collected in Cambodia in December 2017. (source WRLFMD)

Sample Identification	Location origin of sample	Host species	Date of collection	Genotype	Most Closely Related Viruses not belonging to the country - Seq id %	Host species
CAM/2/2016	Domreyslab, Tree commune, Kandalsteung, Kandal	unknown	02/12/2016	**A/ASIA/Sea-97**	VIT/16/2015 (98.4%)	cattle
CAM/4/2016					TAI/15/2016 (97.9 %)	
CAM/5/2016					VIT/16/2015 (99.7%)	
CAM/1/2016				**O/ME-SA/PanAsia**	VIT/46/2013 (96.7%)	
CAM/2/2016					VIT/46/2013 (96.5%)	
CAM/3/2016					MOG/1/2017a (96.5%)	

Map 2: location of the field isolates collected in December 2016 in Cambodia, submitted for genotyping. (source - Google Fusion Maps, WRLFMD)

Lao People's Democratic Republic [1]

The bovine field isolate O/LAO/2/2017 detected during January 2017 and genotyped as O/SEA/Mya-98 used in the VMSD test obtained a good matching result with O/TUR 5/09 but not with O 3039 and O Manisa.

Reports by the WRLFMD of the circulation of this genotype go back to 2007, while other genotypes belonging to the same serotype that were previously detected in the country are represented by O/ME-SA/PanAsia, since 2006 and O/ME-SA/Ind-2001d, since 2015.

Mongolia [1]

FMDV serotype A (A/MOG/1 and 2/2016) and O (O/MOG/10/2017) field isolates detected in bovine and sheep samples collected between 2015 and 2017 which were genotyped as A/ASIA/SEA-97and O/ME-SA/PanAsia were subjected to VMSD tests with the following results:

- for A/ASIA/SEA-97 good matching results were obtained with vaccine strains A/IRN/2005 and A 22IRQ, but not with A TUR 20/06
- for O/ME-SA/PanAsia good matching results were obtained with O/TUR/5/2009 but not with O 3039 and Manisa.

Russian Federation [11]

The Russian Federation Regional Reference Laboratory for FMD (FGBI-ARRIAH) examined 4,517 serum blood samples for the detection of FMDV antibodies that were collected for serological analysis in support of the post-vaccination monitoring phase.

The FGBI-ARRIAH constantly provides support 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 by respectively supplying materials and technical advice.

Table 3: Summary of the history of FMD Pool 1, 2012 – 2017, for geographic distribution see Map 3 below. (Source – Wahis, EuFMD Global Monthly Report)

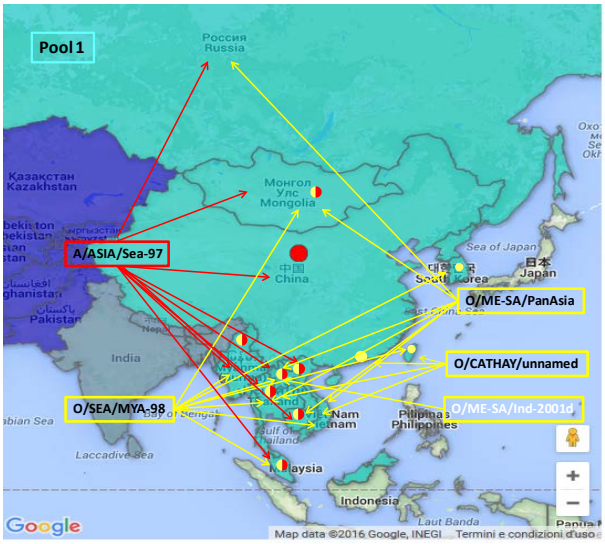
COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2016 **(1st semester 2016)	LAST OUTBREAK REPORTED/SEROTYPE # see pg. 1	Comment
Cambodia	PENDING/2013-2016 O, A/2016, NOT SAMPLED, (ASIA /2016)	Dec 2016/ A & O	**See text**
China	Data up to 1st semester 2015 2013 & 2015/A, 2012-2013/O, 2012 -2014/NOT TYPED	May 2017/A and O	Follow-up needed
China, Hong Kong, SAR	O	Aug 2016/O	Follow-up needed
Taiwan Province of China	2016/NO DISEASE PRESENT A/2015, 2012-2013/O	Jun 2015/A	Follow-up needed
Democratic People's Republic of Korea	O/2016 2012-2013/DISEASE ABSENT 2014 & 2015/ NO DATA REPORTED	May 2014/not confirmed, July 2014/O	Follow-up needed
Republic of Korea	Data up to 1st semester 2015 2014 -2015/O, 2012-2013/DISEASE ABSENT	Feb 2017/O & A	Follow-up needed
Lao People's Democratic Republic	Data up to 1st semester 2015) A, O/2015 2012/DISEASE PRESENT WITH QUANTITATIVE DATA BUT	Jan 2017/O Mar 2015/A,	**See text**

	WITH AN UNKNOWN NUMBER OF OUTBREAKS		
Malaysia	A/2016, 2012 –2016/O, 2013 & 2015/NOT TYPED	August 2016/A & O	Follow-up needed
Mongolia	Disease Absent /2016**, 2014 & 2015/O, 2013/A & NOT TYPED	April 2017/O, Sept 2017/A,	**See text**
Myanmar	2012-2016/O, 2015/A & NOT TYPED	April 2017/Asia 1 & O, July 2016/ not typed, Oct 2015/A	Follow-up needed
Russian Federation	2013 – 2016**/A, 2012, 2014 & 2015/O	Dec 2016/O, Oct 2016/Asia 1, Jan 2016/ A	Follow-up needed
Thailand	O, A NOT SAMPLED & NOT TYPED	Feb 2017 /A, Jan 2017/O June – July 2016/not typed	**See text**
Viet Nam	O, NOT SAMPLED, NOT TYPED 2013-2016/A	November 2016/A, Oct 2016/O and not typed	Follow-up needed

Map 3: FMD distribution by serotype and topotype in South East Asia, 2012 – 2016 – white script in map refers to new introduction of viral lineage in pool or country of the pool during 2016. (source – Google Fusion Maps, WRLFMD).

Conjectured circulating FMD viral lineages in Pool 1 per 2016 [1, 10]:

- Serotype O: O/SEA/Mya-98, O/ME-SA/PanAsia, O/CATHAY, O/ME-SA/Ind-2001d (new detection in Myanmar and Thailand during 2016)
- Serotype A: A/ASIA/Sea-97 and Iran-05[SIS10] sublineage
- Serotype Asia-1 – reappearance of this serotype in 2016 in Russia where the virus was closely related to a vaccine strain Shamir – previous detection in the region was in 2006 in Vietnam and in China (People's Rep. of)



B. POOL 2 – South Asia

India [2]

The ICAR-PDFMD, Mukteswar, India detected FMDV serotype O in the bovine sample tested using antigen and/or RNA detection assays. Four field isolates positive for this serotype were submitted to genotyping and vaccine matching tests.

A total of 495 serum samples were tested for FMDV antibodies. The FMD diagnostic kits used for these analyses were those developed at ICAR-DFMD, Mukteswar.

The personnel of ICAR-PDFMD continue to be involved in the field investigations of FMD outbreaks and in providing expert advice to the Government and to the National and Local authorities. The institution is continuing its research studies and collaborations with international organisations.

Nepal [1, 3]

While the National Foot and Mouth Disease and TADS Laboratory reported the circulation FMDV serotype O, FMDV serotypes A and O were detected by the WRLFMD in the 26 bovine samples collected in the country between January and May 2017. Of the total, three samples were positive for serotype A (11.53%) and seven (26.92%) for serotype O were while 11(42.31%) of the remaining samples were positive for FMDV genome without serotyping and five (19.23%) were negative.

While FMDV serotype O is continuously detected, the last detection of serotype A in the country goes back to 1997.

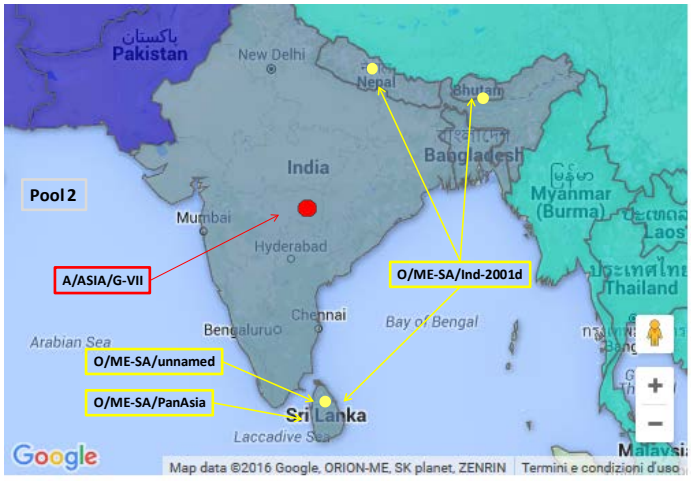
Table 4: Summary of the history of FMD Pool 2, 2012 – 2017, for geographic distribution see Map 4 below. (Source – Wahis, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2016 **(1st semester)	LAST OUTBREAK REPORTED/SEROTYPE # see pg. 1	Comment
Bangladesh	NO DATA AVAILABLE/2016, DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Dec 2016/A, ASIA 1 and O	Follow-up needed
Bhutan	2013-2016/O, NOT TYPED or NOT REPORTED 2013 & 2014/NOT SAMPLED	May 2017/Untyped, June 2016/O	Follow-up needed
India	NO DATA AVAILABLE/2016, O, A, NOT SAMPLED 2012-2014/Asia 1 2013/NOT TYPED	July2017/O, Apr 2015/A Asia 1	**See text**
Mauritius	DISEASE ABSENT	Sep 2016/0	Follow-up needed
Nepal	O, 2012-2103/Asia 1	May 2017/O, April 2017	**See text**
Sri Lanka	2015 -16/NO DATA REPORTED, 2012 – 2014/O	2016/O	Follow-up needed

Map 4: FMD distribution by serotype and topotype in South Asia, 2012 – 2016 (source – Google Fusion Maps, WRLFMD).

Conjectured circulating FMDV lineages in Pool 2 per 2016 [1, 10]:

- O/ME-SA/Ind-2001d predominates (the O/ME-SA/Ind-2011 lineage that emerged during 2011 has not been recognized during 2012-15), outbreaks of this serotype detected in Mauritius during 2016 (**not reported in Map**)
- O/ME-SA/PanAsia-2 (last detected in 2011 in Sri Lanka)
- A/ASIA/G-VII (genotype 18)
- Asia-1 (lineage C subdivided into Eastern and Western clusters) – not reported in map

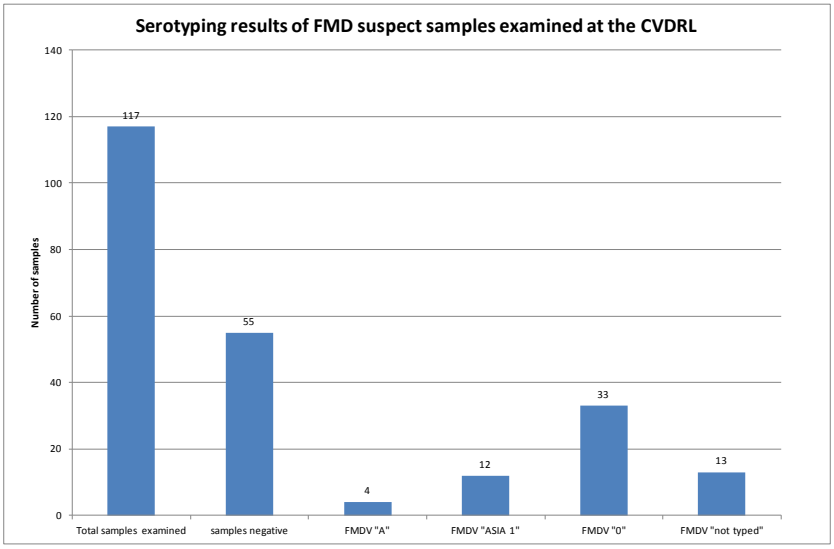


C. POOL 3 – West Eurasia & Middle East

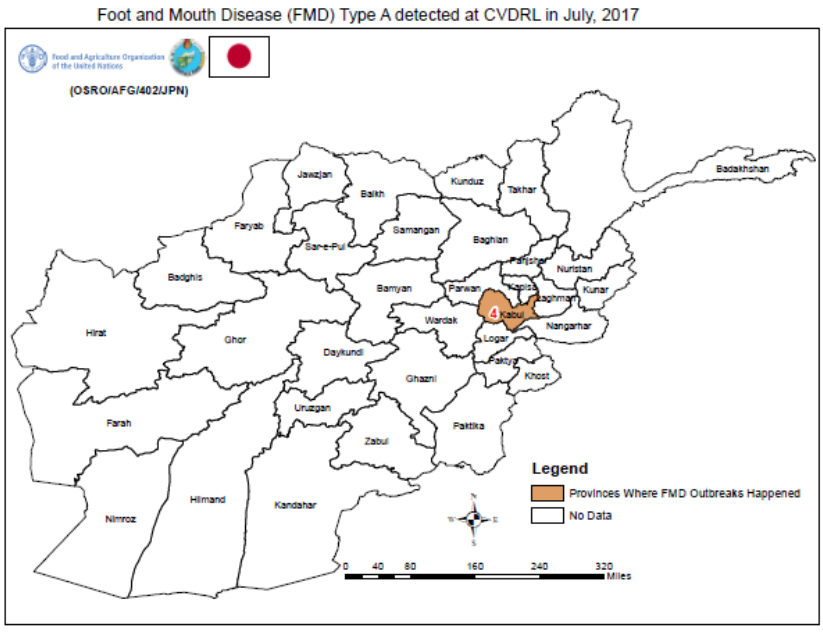
Afghanistan [4]

The CVDRL of Kabul Afghanistan detected FMDV serotypes A (4 - 8.16%), ASIA 1 (12 – 24.49%) and O (33 - 67.35%) in the 117 samples examined during July 2017. The relative distribution of the serotypes among the samples is shown in Graph 1. Location of the samples resulting positive per serotype are represented in Maps 5, 6 and 7. The laboratory also submitted a batch of 40 tissue samples to the WRLFMD for sequencing and vaccine matching tests. The laboratory is involved in providing expert advice to Government services national/local authorities and in conducting collaborations with international organizations.

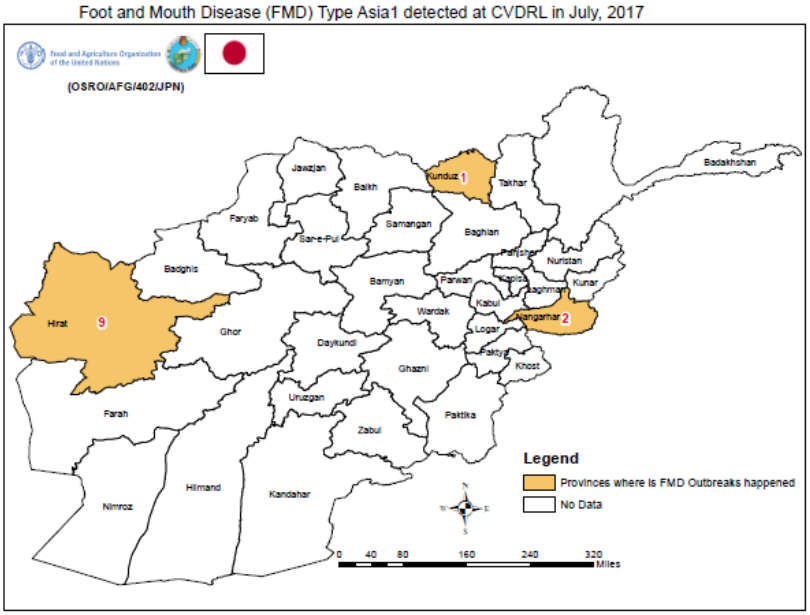
Graph 1: relative distribution of the FMDV serotypes among the samples collected in the different provinces of Afghanistan during July 2017. (Source – CVDRL, Afghanistan)



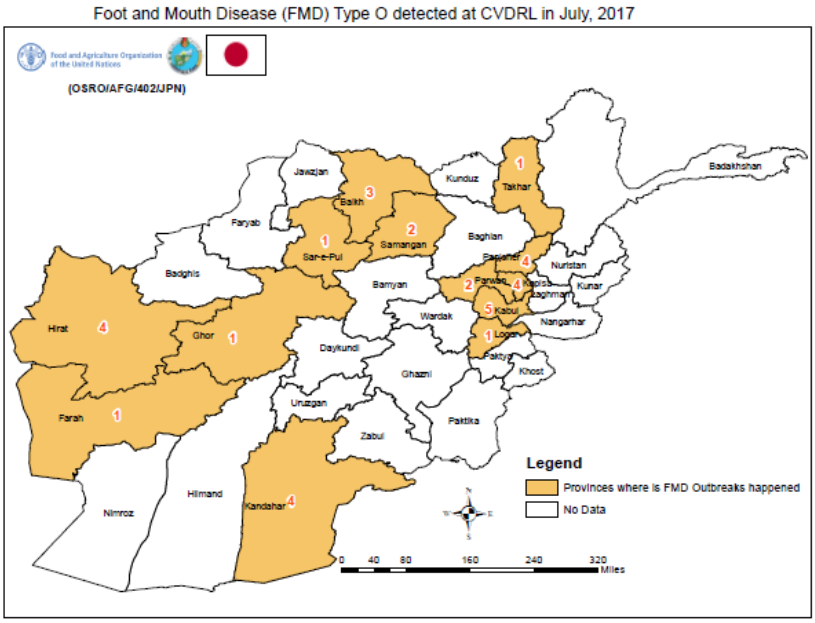
Map 5: location of samples positive for FMDV serotype A that were detected by CVDRL, Afghanistan during July 2017. (Source – CVDRL, Afghanistan)



Map 6: location of samples positive for FMDV serotype ASIA 1 that were detected by CVDRL, Afghanistan during July 2017. (Source – CVDRL, Afghanistan)



Map 7: location of samples positive for FMDV serotype O that were detected by CVDRL, Afghanistan during July 2017. (Source – CVDRL, Afghanistan)



Egypt [1]

A batch of 35 biological samples (4 from buffaloes and 31 from cattle) collected between November 2016 and April 2017 were positive for FMDV serotypes A (1 – 2.86%) and O (21 – 60%), while the remaining samples were either positive for the FMDV genome without serotyping (10 – 28.57%) or negative (3 – 8.57%).

Iran [1]

Five field isolates each belonging to a different viral lineage/sublineage of FMDV serotypes A and O detected in 2017, were subjected to VMSD tests. The relative results are presented in Table 5

Table 5: results of VMSD tests for FMDV serotypes A and O field isolates detected in Iran during January and February 2017. (Source – WRLFMD)

		Vaccine strains employed in VMSD tests and relative results				
Sample Identification	**Genotype**	**A Iran 2005**	**A TUR 20/06**	**A Tur11 VV**	**A Tur14 VV**	**A22IRQ**
IRN/2/2017	**A/ASIA/Iran-05^{FAR-09}**	N		**G**	N	**G**
RN/4/2017	**A/ASIA/G-VII**	N				
IRN/7/2017	**A/ASIA/Iran-05^{FAR-11}**	N	**G**	N	**G**	**G**
		O 3039	**O Manisa**	**O Tur 5/09**		
IRN/8/2017	**O/ME-SA/PanAsia-2^{Ant-10}**	**G**	N	**G**		
IRN/12/2017	**O/ME-SA/PanAsia-2^{QOM-15}**	**G**	N	**G**		

G - good matching result

N - not good matching result

Israel [7]

The most recent outbreaks that occurred in the country in May and June 2017, respectively due to A/Asia/G-VII and O/EA-3/unnamed are respectively considered resolved on June 1st and 13th 2017.

Therefore no more reports will be submitted even if the following control measures are still active: movement control inside the country, vaccination, screening, quarantine and zoning.

Pakistan [5]

Fourteen FMD outbreaks due to serotypes Asia 1 and O were reported in some of the territories of the country.

The distribution of FMDV serotypes relative to the outbreaks and location of these in the different provinces is reported in Table 6 and Map 8.

Emergency vaccination was also carried out in two of the provinces registering outbreaks, i.e. in Azad Kashmir and in Islamabad Capital Territory with the respective administration of 250 and 1000 doses.

Map 6: location of the FMD outbreaks reported in Pakistan during July 2017.
(source – Google Fusion Maps, Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

Table 8: summary of the FMD outbreaks reported in Pakistan during July 2017. (source – Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

Province	District	Total N° of Outbreaks	N° of outbreaks per serotype		
			'O'	'Asia-1'	Un-Typed
Azad Kashmir	Mirpur	8	6	--	2
Punjab	Sahiwal	1	--	1	--
	Gujrat	1	1	--	--
Islamabad Capital Territory	Islamabad	4	--	4	--
Total		**14**	**7**	**5**	**2**

Palestinian Auton. Territories [6, 7]

[7]Relative to the outbreaks that occurred in small ruminants on the 29th of May at Hebron, Alberig, Dora, and on the 5th of June 2017 at West Bank, Salem, Nablus, West Bank the events are reported as resolved even if serotyping of the FMDV responsible for the outbreaks has not yet been established. Control measures still in place in relation to these outbreaks are movement control inside the country, vaccination in response to the outbreaks, surveillance within and outside containment and/or protection zone, screening, traceability, quarantine, zoning and disinfection.

[6]An alert was released by the CVO of Israel reporting that the results of the samples collected from sick calves of two farms situated in Rafah on July 13th 2017 and examined by the Kimron Veterinary Institute, Beit-Dagan on the 17th of July are indicative of FMDV SAT 2.

As all the sick calves were slaughtered and no new outbreaks were reported, further sampling from the outbreaks was not possible.

FMDV SAT 2 was recorded for the first and only time in the Gaza strip in 2012, while in Israel this serotype was never reported.

The closest country to the former two that detected FMDV SAT 2 is Egypt with reports of circulation of this virus between May and June of 2016, while genotyping is of an isolate collected in 2015 that was identified as SAT2/VII/Alx-12.

Turkey [1]

FMDV VP1 sequences of samples of unknown species origin collected in June and July 2017 and forwarded by the country to the WRLFMD were respectively genotyped as A/ASIA/G-VII and O/ME-SA/PanAisa-2 $^{QOM-15}$.

For A/ASIA/G-VII, the closest related virus not pertaining to the country is represented by ARM/2/2015 with a sequence identity (seq id) of 97.5 % while for O/ME-SA/PanAisa-2^{QOM-15}, this is represented by KUW/4/2016 with a seq id of 97.9%.

Location of where the field isolates were collected is presented in Map 7.

Map 7: location of where the field samples were collected in Turkey during June and July 2017. (source – Google Fusion Maps, WRLFMD)
Green dot – A/ASIA/G-VII
Yellow dot - O/ME-SA/PanAisa-2^{QOM-15}

Table 9: Summary of the history of FMD Pool 3, 2012 – 2017, for geographic distribution see Map 8 below. (Source – Wahis, EuFMD Global Monthly Report)

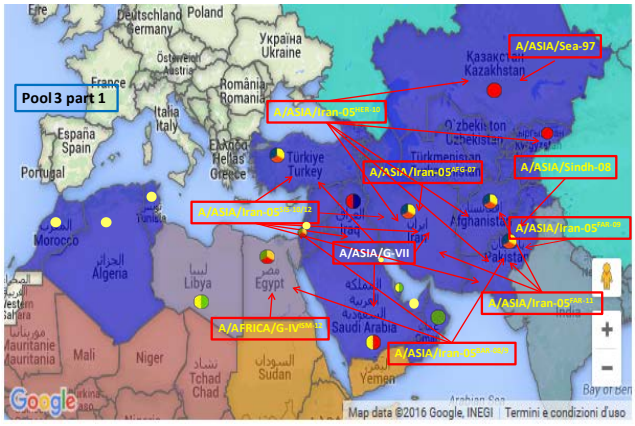
COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1st semester)	LAST OUTBREAK REPORTED/SEROTYPE # see pg. 1	Comment
Afghanistan	2013-2016**/O, A, Asia 1, NOT TYPED 2012/SEROTYPE NOT REPORTED	July 2017/A, Asia 1 & O	**See text**
Algeria	Data available up to 1st semester 2015 2014 -2015/O	Apr 2017/A, Apr 2015/O	Follow –up needed
Armenia	2015 -2016**/A , 2012-2014/DISEASE ABSENT	Dec 2015/A	Follow –up needed
Azerbaijan	DISEASE ABSENT	2007/0	Follow –up needed
Bahrain	DISEASE ABSENT/2016, 2012, 2014 &2015 /O	Mar 2015/O	Follow –up needed
Egypt	2012, 2014, 2016**/SAT 2 2012 – 2016**/O, A	May-Jun 2016/ O & Sat 2, March 2016/A, Aug 2016/typing pending	Follow –up needed
Georgia	DISEASE ABSENT	2001/ASIA 1	Follow –up needed
Iran (Islamic Republic of)	2012-2016/A, Asia 1 & O	Feb 2017/A & O, 2013/Asia 1	**See text**
Iraq	2015-16/O, 2012-2016/A 2015/ SEROTYPE NOT REPORTED, 2012-13	Dec 2013/A, ASIA 1	Follow –up needed
Israel	2012-2015**/O	May 2017/A & O	**See text**
Jordan	DISEASE ABSENT	Mar 2017/O, 2006/A	Follow –up needed
Kazakhstan	2014-2016**/ DISEASE ABSENT, 2012/O,2012 –2013/A	Jun 2013/ A & Aug 2012/O	Follow –up needed
Kuwait	O/2016 2013 – 2014/ DISEASE ABSENT, 2012/O	April 2016/O	Follow –up needed
Kyrgyzstan	2015 -16/ DISEASE ABSENT, 2012-2014/O, A	Aug 2014/not typed & Apr 2013 /O, A,	Follow –up needed
Lebanon	DISEASE ABSENT/2016**, 2015/ NO DATA REPORTED	2010/not typed	Follow –up needed
Libya	NO DATA REPORTED	Oct 2013/O	Follow –up needed
Morocco	2012-14,2016**/DISEASE ABSENT, O/2015	Oct 2015/O	Follow –up needed
Oman	2016/ NO DATA REPORTED, 2012-2015/O	May 2015/SAT 2	Follow –up needed
Pakistan	2012 & 2015-16/ NO DATA REPORTED 2013-2014/A, ASIA 1 & O	July 2017/ Asia 1 & O, May 2017/ A	**See text**
Palestine	O, 2012-2013/SAT 2	Jun 2017/serotying pending May 2017/O, Mar 2013/Sat 2	**See text**
Qatar	NO DATA AVAILABLE/2016 2012-2015/O	Dec 2013/O	Follow –up needed
Saudi Arabia	2012-2014, 2016**/O	Oct 2016/A & April 2016/O	See text

	A/2015		Follow –up needed
Syrian Arab Republic	DISEASE ABSENT**	2002/ A & O	Follow –up needed
Tajikistan	2016/ NO DATA REPORTED 2014-2015**/DISEASE ABSENT 2012- 2013/NOT TYPED	Nov 2012/ not typed & Nov 2011/Asia 1,	Follow –up needed
Tunisia	2015-16**/ DISEASE ABSENT, 2014/O	April 2017/A, Oct 2014/O	Follow –up needed
Turkey	A & O, NOT TYPED Asia 1/2012-15	Oct 2015/ A May, 2014-2015/ Asia 1 and O	**See text**
Turkmenistan	2013-2016**/DISEASE ABSENT, 2012/NO DATA REPORTED	Not available	Follow –up needed
United Arab Emirates	O/2016 2012, 2015/DISEASE ABSENT 2013-2014/O	Sep 2016/O	Follow –up needed

Map 8: FMD distribution by serotype and topotype for West Eurasia and Middle East, 2012 – 2016 - white script in map refers to new introduction of viral lineage in pool or country of the pool during 2016. (source – Google Fusion Maps, WRLFMD).

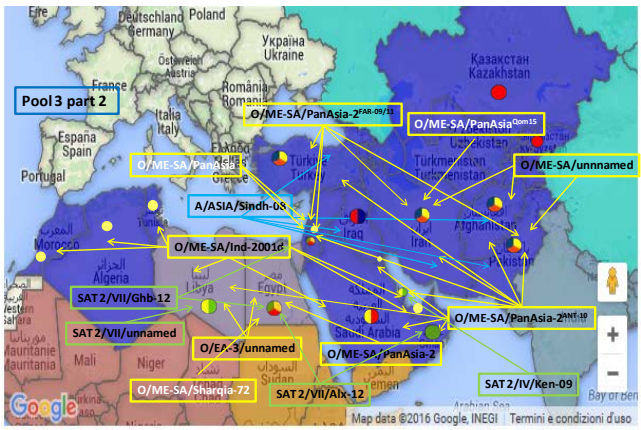
Conjectured circulating FMDV serotype A lineages in Pool 3 per 2016 [1, 10]:

- A/ASIA/Iran-05 (from AFG-07, HER 10, SIS-10/12, FAR-09/11 and BAR-08 sub-lineages)
- A/Asia/G-VII (recent incursion from South Asia - detected also in Iran in 2016)
- A/ASIA/Sea-97
- A/ASIA/Sindh-08
- A/AFRICA/G-IV
- Asia-1 (Sindh-08 lineage).



Conjectured circulating FMDV serotype O and SAT 2 lineages in Pool 3 **(cont'd)**

- O/ME-SA/PanAsia-2 (predominantly from ANT-10 and FAR-09 /11 sub-lineages)
- O/ME-SA/Ind-2001 (recent incursions per 2013/14 from the Indian sub-continent)
- New detection during 2016 of O/ME-SA/Sharqia-72 in Egypt and of O/ME-SA/PanAsia-2QOM-15 in Iran
- O/EA-3/unnamed in Egypt and Lybia
- SAT 2/IV/Ken-09
- SAT 2/VII/Alx-12 and Ghb-12 sublineages



D. POOL 4 – Eastern Africa

Democratic Republic of Congo [7]

Four FMD outbreaks were confirmed on July 6th 2017 that took place on May 20th 2017 involving four different big cattle holdings of the province of Sud-Kivu. While FMD was already reported in the province of Sud-Kivu, this is its first appearance in the territory of Uvira.
Serotyping of the FMDV responsible for the outbreaks was not established.
The source of the outbreaks was attributed to the illegal introduction of new live animals. The disease affected different age categories especially those of improved breeds.
A summary of the animals involved in the outbreaks and location of these is presented in Table 10 and Map 9.
Containment of the outbreaks is based on the following control measures: movement control inside the country, surveillance within containment and/or protection zone, quarantine, zoning, vaccination if a suitable vaccine is available and treatment of affected animals.

Map 9: location of FMD outbreaks that occurred on May 20th 2017 in the province of Sud-Kivu, Democratic Republic of Congo (source – WAHIS)

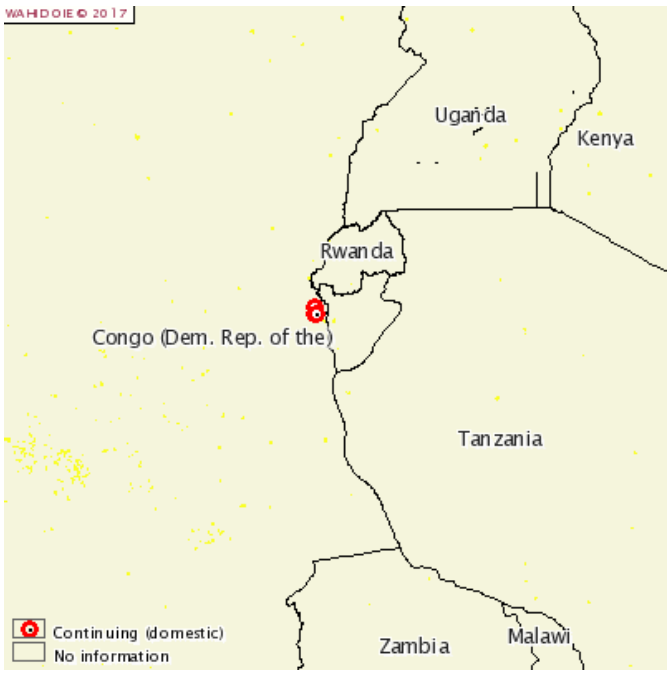


Table 10: summary of animals involved in the four FMD outbreaks that occurred on the 20th May 2017 in the province of Sud-Kivu, Democratic Republic of Congo. (source – WAHIS)

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	10,179	816	36	0	17	8.02%	0.35%	4.41%	0.52%

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

Ethiopia [1, 18]

The VMSD tests conducted on two field isolates (O/ETH/30 and 50/2016) both genotyped as O/EA-4/unnamed identified all three vaccine strains used, O 3039, O Manisa and O/Tur 5/09, as having good matching results.
The National Animal Health Diagnostic and Investigation Center (NAHDIC) serologically examined 6,898 caprine and ovine samples for FMD certification and 394 (5.71%) were found positive.
The laboratory participated in the preparation of a FMD control strategy design and control according to the Progressive Control Pathway scheme and is now in the final stages for its official endorsement.

Kenya [8]

FMDV serotype O was detected in two of the four bovine samples examined by the FMD National Reference Laboratory, Embakasi.
The laboratory has ongoing collaborations with Sandia National Laboratories, USA.
The last samples last forwarded by the country to the WRLFMD for genotyping was in 2013. Past genotypes detected in relation to the serotypes reported this month were O/EA-1/unnamed, O/EA-2/unnamed and O/EA-4/unnamed collected between 2009 and 2011.

Table 11: Summary of the history of FMD Pool 4, 2012 – 2017, for geographic distribution see Map 10 below. (Source – Wahis, EuFMD Global Monthly Report)

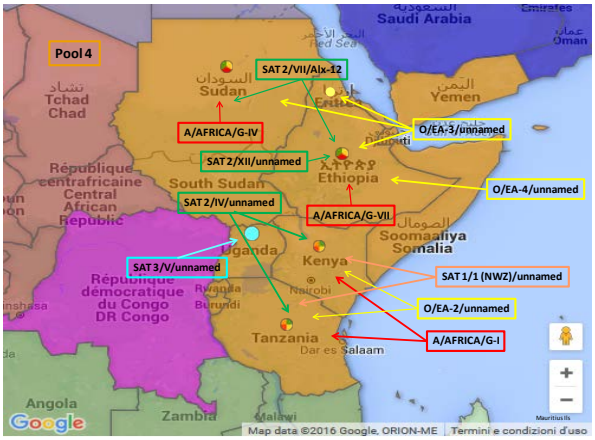
COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1st semester)	LAST OUTBREAK REPORTED/SEROTYPE #see pg. 1	Comment
Burundi	DISEASE PRESENT	Aug 2013 / not available	Typing required
Comoros	NO DATA AVAILABLE	2010	Follow –up needed
Democratic Republic of Congo	2012 – 2016**/A, O, SAT 1	May 2017/not typed	**See text**
Djibouti	DISEASE ABSENT	Not available	Follow –up needed
Egypt	2012, 2014, 2016**/SAT 2 2012 – 2016**/O, A	May-Jun 2016/ O & Sat 2, March 2016/A, Aug 2016/typing pending	Follow –up needed
Eritrea	2014, 16/ DISEASE PRESENT 2015/ NO DATA REPORTED 2013/ DISEASE ABSENT, 2012/O	Nov 2016/not reported, Jan 2012/O	Follow –up needed
Ethiopia	O, 2015-16/SAT 1 2012 & 2105/SAT 2, 2012/A	Jun 2017/A, March 2017/O & SAT 1, May 2016/SAT 2	**See text**
Kenya	2012 – 2016 /NOT TYPED, A, O, SAT1, SAT2	July 2017/ O, Jun 2017/SAT 1 & SAT 2, Jan 2016/ A	**See text**
Libya	NO DATA REPORTED	Oct 2013/ O, Sat 2/Apr 2012	Follow-up needed
Rwanda	2015-16/NO DATA AVAILABLE 2012-2013/A, O, SAT1, SAT 2	Nov 2012/not typed	Typing required
Somalia	2012-13, 2015-16/DISEASE PRESENT, 2014/PENDING	June 2016/not reported	Follow –up needed
Sudan	2015-16 -16/A, SAT 1 & NOT SAMPLED, 2012-2014/O & NOT TYPED 2013/SAT 2,	Dec 2016/ not sampled, Oct 2016/O, Dec 2013/A, Jan 2014/SAT 2	Follow –up needed
South Sudan	2015/DISEASE PRESENT 2014/A, O SAT 1, SAT 2, SAT 3 2012-2013 & 2016 NO DATA REPORTED	2011	Follow –up needed
United Republic of Tanzania	2012-2016/A, O, SAT 1, SAT 2	Oct 2016/SAT 1, Aug 2016/O & SAT 2, Jun 2016/ A	Follow –up needed

Uganda	2016/NO DATA REPORTED 2013-16/NOT TYPED or NOT SAMPLED, 2012, 2015/ SAT 1,2012, 2014-15/O	May 2014/O Nov 2014/SAT1, Jan 2015/A and SAT 3, July 2015/ SAT 2 and untyped	Follow –up needed
Yemen	2015-16/NO DATA REPORTED 2013 – 2014/ DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA, 2012/O	2009/O	Follow –up needed

Map 10: FMD distribution by serotype and topotype for East Africa. 2011 – 2016. (source – Google Fusion Maps, WRLFMD).

East Africa is known to be endemic for FMD, but available data is at present limited.
Conjectured circulating FMDV lineages in Pool 4 per 2015 2 [1, 10]:

- O (topotypes EA-2 (Kenya, Tanzania, DR Congo & Uganda), EA-3 (Egypt, Ethiopia, Eritrea, Kenya & Sudan) 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), IX (Ethiopia))
- SAT 2 (topotypes IV (Kenya, Tanzania), VII (Sudan, Egypt, Ethiopia), XII (Ethiopia, Sudan))
- SAT 3 (only detected in African buffalo in the south of the QENP, Uganda in 1970 & 1997 and recently in 2013)



E. POOL 5 – West / Central Africa

Cameroon [12], Ghana [13], Nigeria [14] and Senegal [15]

The Laboratoire National Vétérinaire (LANAVET), Garoua, Cameroon, the ACCRA Veterinary Laboratory, Ghana, the National Veterinary Research Institute Vom, Nigeria and the Laboratoire National de l'Elevage et de Recherches Vétérinaires of Senegal reported that there were no notifications or diagnostic confirmation of FMD outbreaks in the respective countries.
The LANAVET), Garoua, Cameroon reported the serological testing of 184 samples of which 51 (27.1%) resulted positive. The laboratory is also continuing its collaborative research project with the Ohio State University and Plum Island of the USA.

Guinea-Bissau [7]
Following the FMD outbreaks reported in the country December 2016 due to FMDV SAT 1 and SAT 2, serum samples and vesicular fluids were respectively examined by the French Agency for Food, Environmental and Occupational Health & Safety (ANSES), France (OIE Reference Laboratory) for the presence of FMD antibodies and antigens with the following results:

- Of the 92 sera, 11 animals were positive for antibodies against non-structural proteins of serotypes A and O, six animals were positive for only serotype O, one subject for serotype A.
- FMDV SAT 1 and SAT 2 antigens were detected in the pool of six vesicular fluids where it was not possible to define the number animals positive for each serotype.

Vaccination in response to the outbreaks against FMDV serotypes O, A and SAT2 was carried out in 1,500 cattle in Santanto and Cadjito.

Table 12: Summary of the history of FMD Pool 5, 2012 – 2017, for geographic distribution see Map 11 below. (Source – Wahis, EuFMD Global Monthly Report)

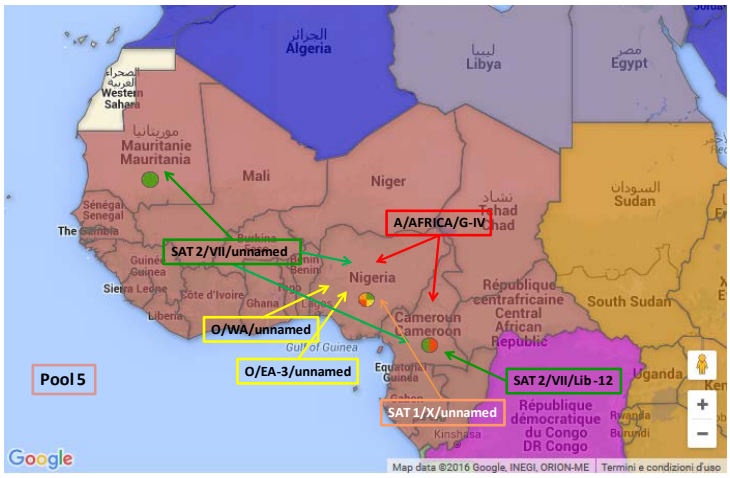
Country	**FMD history FMDV serotypes, reported to OIE in 2012 – 2016 **(1st semester)**	**Last outbreak reported/serotype** #see pg. 1	**Comment** (Genotyping would be useful for this region)
Benin	2016/NO DATA REPORTED A, O, SAT 1, SAT 2/2012-2015	Jun 2014/O, A, SAT 1, SAT 2	Follow –up needed
Burkina Faso	DISEASE PRESENT	Dec 2016/ not available	Follow –up needed
Cameroon	2016/NO DATA REPORTED DISEASE PRESENT	April 2017/untyped, Nov 2014/O, SAT 2, May 2014/SAT 1, Apr 2014/ A	**See text**
Cabo Verde	DISEASE ABSENT	Not available	Follow –up needed
Central African Republic	DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	Follow –up needed
Chad	2016/DISEASE PRESENT 2014-15/ DISEASE ABSENT 2012 – 2013/ DISEASE PRESENT	Aug 2016/Not reported	Follow –up needed
Democratic Republic of the Congo	2012 – 2016/A, O, SAT 1	Dec 2016/A, O & Sat 1	Typing required
Congo	NO DATA AVAILABLE	Jun 2013/not typed	Typing required
Côte d'Ivoire	2013-16/ not sampled or not reported, 2012/A,	Jul 2016/not reported	Follow –up needed
Equatorial Guinea	2014 – 2016/ NO DATA AVAILABLE 2012 – 2013/DISEASE SUSPECTED	Not available	Follow –up needed
Gabon	2012, 2014-16/DISEASE ABSENT 2013/NO DATA AVAILABLE	Not available	Follow –up needed
Gambia	NO DATA AVAILABLE	2012/O	Follow –up needed
Ghana	2016/NO DATA AVAILABLE 2012 – 2015/DISEASE PRESENT	Dec 2016/ O & SAT 2 2014/not available	**See text**
Guinea-Bissau	2015-16**/DISEASE SUSPECTED 2014/ DISEASE PRESENT 2012-2013/DISEASE ABSENT	Oct 2016/O Dec 2016/SAT1 & SAT 2	**See text**

Guinea	2012-2013, 2015-16**/ DISEASE ABSENT 2014/ DISEASE PRESENT	2014/not available	Follow –up needed
Liberia	NO DATA AVAILABLE	Not available	Follow –up needed
Mali	2013, 2016/DISEASE PRESENT 2015/A, SAT 1 2014-2015/SAT 2 2012/ NO DATA AVAILABLE	Oct 2016/not reported	Follow –up needed
Mauritania	2016/DISEASE SUSPECTED, 2014-2015**/SAT 2, 2012-2013/NO REPORTED OUTBREAKS	Dec 2014/SAT 2	Follow –up needed
Niger	2016**/DISEASE PRESENT BUT WITH NO QUALITATIVE DATA, 2015/O 2012 – 2014/NOT SAMPLED	2014/not sampled, May 2015/O	Follow –up needed
Nigeria	2015-16/DISEASE PRESENT 2012-2014/O	Feb 2017/not typed Sept 2016/ O & SAT 1 Nov 2015/A, Sept 2014/ SAT 2	**See text**
Sao Tome Principe	2013-16/NO DATA AVAILABLE 2012/DISEASE ABSENT	Not available	Follow –up needed
Senegal	2015-16/DISEASE PRESENT 2012, 2014/NOT SAMPLED 2013/NO DATA AVAILABLE	Feb 2015/ A and O, 2014/ SAT 2	**See text**
Sierra Leone	DISEASE ABSENT**	Oct 1958	Follow –up needed
Togo	O, SAT 1	2012/O	Follow –up needed

Map 11: FMD distribution by serotype and topotypes for West Africa, 2012 – 2016 - white script in map refers to new introduction of viral lineage in pool or country of the pool during 2016. (source – Google Fusion Maps, WRLFMD).

Conjectured circulating FMDV lineages in Pool 5 per 2016 [1, 10]:

- Serotype O (topotypes WA, EA-3 (Nigeria))
- Serotype A (topotypes AFRICA IV & VI)
- Serotype SAT 1 - detection of a new viral lineage, SAT 1/X/unnamed in Nigeria
- Serotype SAT 2 (topotype VII/Lib-12 (Mauritania), and unnamed genotypes)



F. POOL 6 – Southern Africa

Mozambique [7]

No clinical cases of FMD were reported following the outbreaks due to FMDV SAT 2 that last occurred in December 2016.
Control measures in place are the re-vaccination of 21,040 cattle heads (6,530 in Gaza and 14,510 in Maputo) using Aftovax SAT 1 and 2 and intensive awareness campaign and clinical surveillance in the containment and protection zone. Other control measures in place are traceability and quarantine.

Namibia[7]

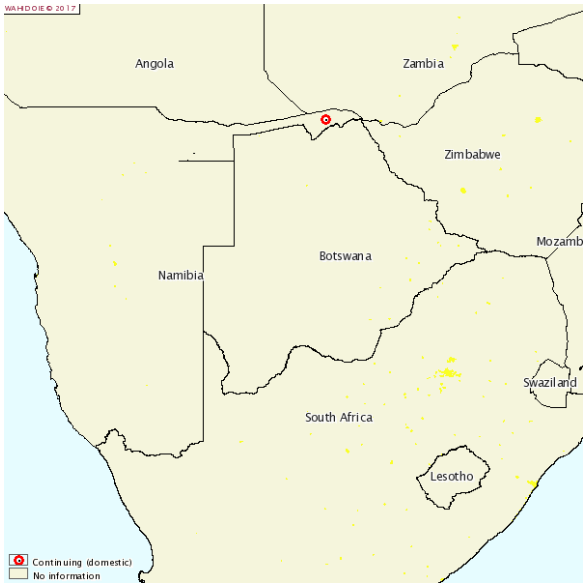
Two episodes of FMD occurred on July 12th and 27th 2017 in cattle at the village of Musele Island-Kasika Crushpen, Katima-Mulilo, Zambezi. While serotyping is not yet available, the Central Veterinary Laboratory of Namibia confirmed the diagnosis using non-structural protein ELISA and real-time PCR.
Source of outbreaks is due to contact with wild animals and control measures in place are movement, control inside the country, surveillance within containment and/or protection zone, traceability, quarantine, disinfection and vaccination if a suitable vaccine is available.
Summary of the animals involved and location of outbreaks are reported in Table 13 and Map 12.

Table 13: summary of the animals involved in the FMD outbreaks of May 17th 2017 in cattle of the village of Nemangwe, Gokwe South, Midlands. (source – WAHIS)

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	900	24	0	0	0	2.67%	0.00%	0.00%	0.00%

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

Map 12: location of the FMD outbreaks of May 17th 2017 in cattle of the village of Nemangwe, Gokwe South, Midlands. (source – WAHIS)



Republic of South Africa [16]

The four FMD suspect samples examined by PCR by the ARC- Onderstepoort Veterinary Institute resulted negative.
The laboratory also examined 3,828 serum samples using liquid-phase blocking ELISA for the detection of FMDV serotypes SAT 1, SAT 2 and SAT 3 and 414 sera using FMD NSP ELISA. The ARC-Onderstepoort Veterinary Institute is continuing its collaboration with international organisations on research projects.

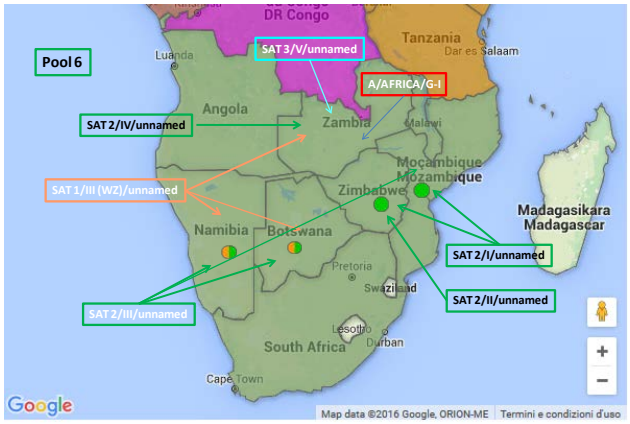
Table 14: Summary of the history of FMD Pool 6, 2012 – 2017, for geographic distribution see Map 13 below. (Source – Wahis, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1st semester)	LAST OUTBREAK REPORTED/SEROTYPE #see pg. 1	Comment
Angola	2015-2016**/ DISEASE PRESENT 2013-2014/DISEASE ABSENT 2012/DISEASE SUSPECTED BUT NOT CONFIRMED	April 2016/SAT 2, July 2015/ SAT 2	Follow –up needed
Botswana	2012-2016**/SAT 2 2014-2015/SAT 1	Jun 2015/typing pending July 2015/SAT 2, June 2015/SAT 1	Follow –up needed
Democratic Republic of the Congo	2012 – 2016/A, O, SAT 1	Dec 2016/A, O & Sat 1	Typing required
Malawi	2012/NO OUTBREAKS REPORTED 2013-2015/ NO DATA AVAILABLE	Oct 2011, Sep 2015/serotyping pending	Follow –up needed
Mozambique	2016**/ NO DATA AVAILABLE 2012 -2015/DISEASE ABSENT	Dec 2016/SAT 2, Sep 2016/ Typing pending, May 2015/ SAT 1	**See text**
Namibia	2014-2016**/SAT 22012-2014/SAT 1	July 2017/typing pending May 2015/SAT 1, Jun 2015/SAT 2,	**See text**
South Africa	2015-16**/SAT 3 2012-2015/SAT 2 2013/SAT 1	Feb 2017/SAT 2 Dec 2015/SAT 3, Aug 2013/SAT 1	**See text**
Zambia	2016/SAT 3 & NOT TYPEC 2013-2014/ NO DATA AVAILABLE 2012/SAT 1, SAT 2	Mar 2017/SAT 2, Jan 2013/SAT 1, Feb 2015/A, Mar 2016/SAT 3	Follow –up needed
Zimbabwe	2012-2016/SAT 2 2014-15SAT 1 2013/SAT 3	May 2017/SAT 2, Aug 2015/ SAT 1, Jun 2013/SAT 3	Follow –up needed

Map 13: FMD distribution by serotype and topotype for Southern Africa, 2012 – 2016. (source – Google Fusion Maps, WRLFMD).

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 2015 [1, 10]:

- Serotype SAT 1 (topotypes I, II and III) – new detection of SAT 1/III (WZ)/unnamed in Botswana during 2016
- Serotype SAT 2 (topotypes I, II, III and IV) - new detection of SAT 2/III/unnamed in Namibia
- Serotype SAT 3 (?) (topotypes I, II and III) – new detection of SAT 3/V/unnamed in Zambia during 2016



G. POOL 7 – South America

Columbia [7, 17]

Following investigations led by the official veterinary services of the Instituto Colombiano Agropecurio, (ICA), the outbreaks from the department of Cundinamarca, first notified on July 10th 2017, were declared as not epidemiologically correlated to the outbreak in the Department of Arauca. For this, ICA immediately created an independent notification on July 19th, 2017 through which these two outbreaks were reported.
Following is a brief description of the four outbreaks involving four cattle farms that occurred between June 1st and July 4th 2017 at Yacopi (three outbreaks) and Tibacuy (one outbreak) Cundinamarca. The Tibacuy outbreak is epidemiologically related to those of Yacopi. An epidemiological investigation is on-going to determine the origin of the events. Clinical visits were conducted in more than 156 farms located in the affected municipalities, consisting of a population of 6,967 cattle, 170 swine and 130 sheep. A summary of the number of animals involved and location of the outbreaks at Tibacuy and Yacopi is reported in Table 15 and Map 14.

Table 15: animals involved in the FMD outbreaks that occurred between June 1st and July 4th 2017 in cattle at Tibacuy and Yacopi, Cundinamarca, Columbia. (source – WAHIS)

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	283	57	3	280	0	20.14%	1.06%	5.26%	100.00%

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

Another outbreak was reported in another town of Cundinamarca, on July 20th 2017 at Caparrapí, where 1,180 animals considered exposed to the infection were disposed of. More than 319 farms with 13,047 cattle, 214 swine and 197 sheep were visited and investigations on the source of introduction of the virus are on-going. A summary of the number of animals involved and location of the outbreaks at Caparrapí is reported in Table 16 and Map 14.

Table 16: animals involved in the FMD outbreak of July 20th 2017 in cattle at Caparrapí Cundinamarca, Columbia. (source – WAHIS)

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	195	5	0	192	0	2.56%	0.00%	0.00%	100.00%

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

Another three outbreaks that occurred between July 14th and 19th 2017 were reported in a different area of the country, i.e. at Cucuta, Norte De Santander.
Clinical visits in the first outbreak were carried out in more than 91 farms of the affected zone, with the individual examination of 7,327 bovines, 511 swine and 16 sheep. The third identified outbreak is located between the first outbreak notified on July 19th and the second one notified on July 28th. Subsequently to this outbreak, visits were conducted on 176 farms in the affected zone, were 13,221 bovines, 1,759 swine, 24 buffalos, 80 sheep and four goats were examined.
A summary of the number of animals involved and location of the outbreaks at Cucuta, Norte De Santander is reported in Table 17 and Map 14.

Table 17: animals involved in the FMD outbreaks that occurred between July 14th and 19th 2017 were reported at Cucuta, Norte De Santander. (source – WAHIS)

Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	330	10	0	330	0	3.03%	0.00%	0.00%	100.00%

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

Map 14: location of the FMD outbreaks that occurred between June 1st and July 19th 2017 in cattle at Caparrapí, Tibacuy and Yacopi, Cundinamarca and Cucuta, Norte De Santander Columbia. (Google Fusion Maps, WAHIS)

Control measures in place in all the affected areas are the same as those described below for the outbreak of Arauca.

Subsequently to the first FMD outbreak notification in the country that occurred on June 11th 2017, at La Marota, Curipao, Tame, Arauca, after four years of absence of the detection of the virus in the country, the outbreak was declared as resolved on the 29th of June.
Control measures still in force in the area are as following, surveillance within and outside containment and/or protection zone, quarantine, disinfection and vaccination if available for the serotype responsible of the outbreak. Other measures to be adopted are movement control inside the country, traceability, official destruction of animal products and carcasses, by-products and waste, stamping out and zoning.
A summary of the ongoing investigation is here reported: the origin of the outbreak is still unknown. The area where the farm presented the outbreak has high vaccination coverage. To minimize the risk of spreading of the virus, 161 cattle were killed and buried in the four farms that are around the affected farm, even if none of the animals presented clinical signs.
The epidemiological surveillance established for the zone continues and 430 farms were visited, for a total population of 61,139 bovines, 1,512 swine and 228 sheep. Three follow-up visits for the detection of clinical signs

compatible with the disease were conducted in the farms of the zone. The quarantine measures are kept in place and an investigation is ongoing to determine the origin of introduction of the infection.

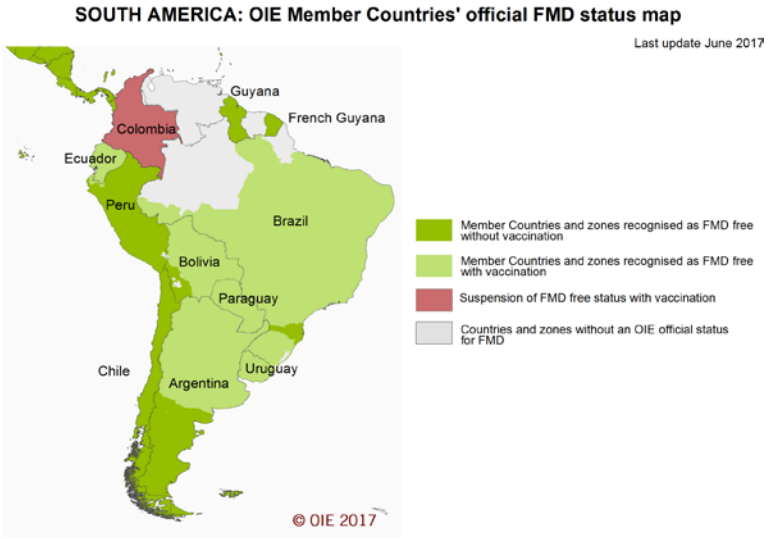
[14] A statement was released by the ICA on July 18th 2017 relative to the general FMD situation in the country. This also reported that the results of the phylogenetic analyses submitted by the Pan American Foot-and-Mouth Disease Center (PANAFTOSA) that were carried out on the FMDV detected in Arauca, indicated that this is similar to the FMDV of Venezuelan origin.
In the same report, the ICA Technical Director of Epidemiology stated that 9,500 samples collected in the country between October and November 2016 confirmed the absence of FMDV in Colombian territory. Another batch of 2,500 samples that were specifically collected in the 29 municipalities that are part of the protection zone, which includes the municipality of Cúcuta, where the most recent outbreak of FMD occurred and the 7,000 samples collected in the rest of the country were also negative for FMDV.
The OIE FMD free status with vaccination was suspended for the country. Last FMD episodes in the country occurred in 2009 due to the serotype O.

Rest of Latin America [7, 9, 10]
The OIE FMD status of the countries in South America as reported in June 2017 is presented in Map 15.
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 (Map 15). In fact, before the outbreak reported in Columbia, during the OIE/FAO FMD Laboratory Meeting held in November 2016, PANAFTOSA reported data for historical FMD outbreaks that occurred in Venezuela in 2013. The FMD history relative to the Region for 2012 –2017 is reported in Table 18.

Table 18: Summary of the history of FMD Pool 16, 2012 – 2017, for geographic distribution see Map 15 below. (Source – WAHIS, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 2016**(1st semester)	LAST OUTBREAK REPORTED/SEROTYPE #see pg. 1	Comment
Columbia	DISEASE ABSENT	July 2017/O	**See text**
Paraguay	DISEASE ABSENT	Dec 2011/O	Follow –up needed
Venezuela (Bolivarian Republic of)	DISEASE ABSENT**	2011/O, 2013/ A	National situation needs verification

Map 15: FMD status for South America [7] (Source – OIE)



IV. OTHER NEWS:

POOL 4 – Eastern Africa

South Sudan [6]

Officials reported that over four million heads of the twelve million cattle population of the country are said to be affected by FMD.

Seven FMD outbreaks were documented in different locations indicating that the disease is widespread and affecting a large proportion of the susceptible livestock throughout the country.

The Minister of Livestock and Fisheries declared that the country is working on ways to establish control measures at the country borders alongside neighbouring countries to curb further spread.

While FAO Livestock Officer Nemaya Moga confirmed an outbreak of the FMD, and that further tests are being conducted in the laboratory he stated that it is the government that has to make an official declaration.

[1]The 2nd WRLFMD Quarterly Report for the period April – June 2017 contains a list of recommended FMDV strains for antigen banks of FMD-Free countries. The discussion of this table is within the report. (Table 19)
The WRLFMD is at present working to adopt a risk-based approach for identifying circulating FMDV lineages and relate these to priority vaccines for use in Europe and other FMD-free settings.

Table 19: Recommendations from WRLFMD® on FMD virus strains to be included in FMDV antigen banks (for FMD-free countries).
Note: Virus strains are NOT listed in order of importance

RECOMMENDATIONS FROM WRLFMD® ON FMD VIRUS STRAINS TO BE INCLUDED IN FMDV ANTIGEN BANKS (FOR FMD-FREE COUNTRIES)

June 2017:

Note: Virus strains are NOT listed in order of importance

High Priority	A/ASIA/G-VII(G-18)* O Manisa O PanAsia-2 *(or equivalent)* Asia 1 Shamir A Iran-05 *(or A TUR 06)* A22 Iraq A24 Cruzeiro O BFS or Campos SAT 2 Saudi Arabia *(or equivalent i.e. SAT 2 Eritrea)*
Medium Priority	A Eritrea-98 SAT 2 Zimbabwe SAT 1 South Africa A Malaysia 97 (or Thai equivalent such as A/Sakolnakorn/97) A Argentina 2001 O Taiwan 97 *(pig-adapted strain or Philippine equivalent)*
Low Priority	A Iran '96 A Iran '99 A Iran 87 or A Saudi Arabia 23/86 *(or equivalent)* A15 Bangkok related strain A87 Argentina related strain C Noville SAT 2 Kenya SAT 1 Kenya SAT 3 Zimbabwe

Note: Discussions are currently underway to adopt a risk-based approach for different FMD viral lineages to identify priority vaccines for use in Europe and other FMD-free settings.

*Recent *in vitro* data from WRLFMD for serotype A viruses from Saudi Arabia and Iran highlights an apparent gap in vaccines supplied by international manufacturers for this viral lineage.

V. REFERENCES - Superscripts

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