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MONTHLY REPORT  
FOOT-AND-MOUTH DISEASE SITUATION



Food and Agriculture  
Organization of the  
United Nations



European  
Commission

**eofmd**  
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**

**January 2018**

**Guest Editor**

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**#INFORMATION SOURCES USED:**

Databases:

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

Other sources:

FAO/EuFMD supported FMD networks  
FAO/EuFMD projects and field officers

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

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

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## Guest Editor's comments:

It is an honour to be the guest editor for this month's Global Foot-and-Mouth Disease Situation report prepared by the EUFMD, more so, after participating in the November 2017 meeting of the FAO/OIE FMD Laboratory Network in Pretoria and the Eastern Africa Regional Laboratory Network meeting of December 2017 in Addis Ababa. These meetings highlighted the major global and the Eastern Africa epidemiological events for 2017 respectively. Key events noted in January 2018 have been a reflection of the FMD situation at the end of 2017 as reported in these meetings. The highlights of this report include observation of outbreaks of serotypes A - A/ASIA/Sea-97 and O in South East Asia (China, Mongolia and Thailand). Outbreaks of serotype O - O/ME-SA/Ind-2001d and the circulation of Asia 1 were reported in South Asia (India, Nepal and Sri Lanka). Serotypes O, A and Asia 1 outbreaks occurred in West Eurasia (Pakistan and Turkey - O/ME-SA/PanAsia-2). There was a spread of an Eastern Africa serotype O topotype (O/EA-3) into the Middle East (Palestine) at the end of 2017. In Eastern Africa, circulation of serotypes A, O, SAT 1 and SAT 2 (Ethiopia – A, O, SAT 2 and Kenya – A, O, SAT 1) was recorded. In West/Central Africa, no reports of outbreaks were recorded in January 2018. In the Southern Africa region, only an untyped outbreak was reported in Mozambique at the end of December 2018. The situation in Southern America remained the same as at the end of 2017 with no FMD notifications since the last detected type O outbreak in Colombia in July 2017. It is also worth noting that it is now more than 13 years (161 months) since the last serotype C outbreak was reported. I do hope that the surveillance information is complete particularly in endemic virus pools where the serotype was in circulation in the past. Active regional epidemiology and laboratory networks collaborating closely with the reference laboratories enhance surveillance information in the various virus endemic pools. The information gaps observed from certain virus pools goes to emphasise the importance of reports such as this one, compiled from multiple sources, in enriching the understanding of the global FMD situation and contribute to its control.

Availability of suitable vaccines for the different virus pools remained a major focus for the different regions as indicated by the vaccine matching and strain differentiation results reported.

The implementation of tools shared at network meetings and the improvement of the presentation formats as promised in the earlier reports will definitely increase the value of this very important source of information on the geographical distribution of FMD.

Wishing you all an informed 2018

Abraham Sangula, Foot and Mouth Disease Laboratory, Embakasi, February 2018

**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).

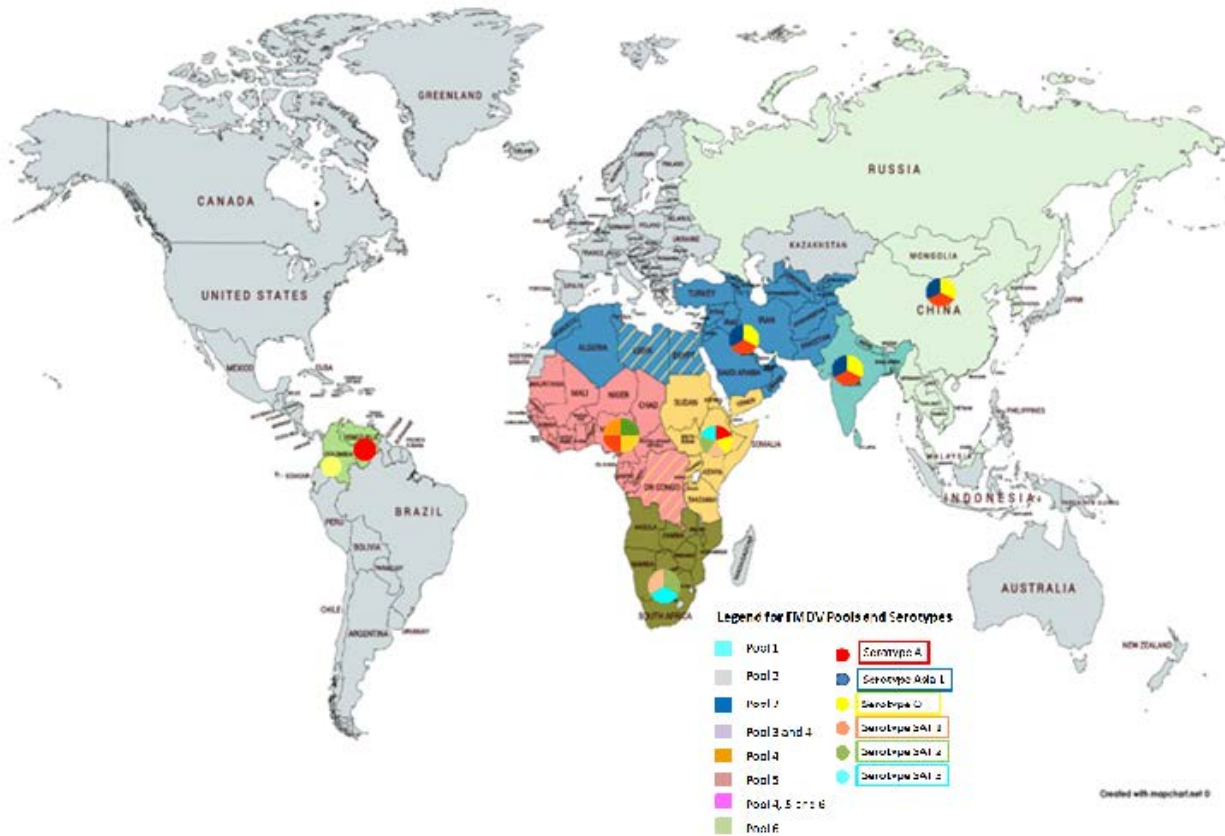
**Table 1:** List of countries representing each virus pool for the period 2013 – 2017 (source EuFMD)

POOL	REGION/COUNTRIES – colour pools as in Map	SEROTYPES
1	<b>SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA</b> 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	A, Asia 1 and O
2	<b>SOUTH ASIA</b> Bangladesh, Bhutan, India, Mauritius, Nepal, Sri Lanka	A, Asia 1 and O
3	<b>WEST EURASIA &amp; MIDDLE EAST</b> Afghanistan, Algeria, Armenia, Azerbaijan, Bahrain, <b>Egypt</b> , Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, <b>Libya</b> , Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Tajikistan, Tunisia, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan	A, Asia 1 and O
4	<b>EASTERN AFRICA</b> Burundi, Comoros, <b>Democratic Republic of Congo</b> , Djibouti, <b>Egypt</b> , Eritrea, Ethiopia, Kenya, <b>Libya</b> , Rwanda, Somalia, Sudan, South Sudan, United Republic of Tanzania, Uganda, Yemen	O, A, SAT 1, SAT 2 and SAT 3
5	<b>WEST/CENTRAL AFRICA</b> Benin, Burkina Faso, Cameroon, Cabo Verde, Central Afr. Rep., Chad, <b>Democratic Republic of Congo</b> , 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	<b>SOUTHERN AFRICA</b> Angola, Botswana, <b>Congo D. R.</b> , Malawi, Mozambique, Namibia, South Africa, Zambia*, Zimbabwe	{O, A}*, SAT 1, SAT 2 and SAT 3
7	<b>SOUTH AMERICA</b> Colombia, 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. \* ONLY IN NORTH ZAMBIA AS SPILL-OVER FROM POOL 4

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**MAP 1: Foot-and-mouth disease (FMD) virus pools: world distribution by serotype in 2013-2017 (source EuFMD, <https://mapchart.net/world.html>)**



## II. HEADLINE NEWS

### POOL 1 - SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA

**China**<sup>1,2</sup> - FMD outbreaks due to serotypes A and O were reported on multiple species farms during January 2018 in, respectively at Guizhou and Ningxia.

The VP1 sequence submitted by the Lanzhou Veterinary Research Institute of a field virus isolated in January 2018 was genotyped as A/ASIA/Sea-97.

**Laos**<sup>3</sup> – Six FMD outbreaks were reported for which sampling was not carried out.

**Mongolia**<sup>1</sup> – Fifteen new outbreaks due to serotype O occurred between September and November 2017 in cattle and small ruminants.

**Thailand**<sup>3</sup> – Eighteen FMD outbreaks were reported, partly due to serotypes A and O.

### POOL 2 - SOUTH ASIA

**India**<sup>4</sup> – FMDV serotype O was detected during January 2018 in the bovine samples examined by the Indian Council of Agricultural Research - Directorate of Foot and Mouth Disease (ICAR-PDFMD).

**Nepal**<sup>5</sup> - Further to serotype O, the National Foot and Mouth Disease and TADS Laboratory reported the circulation of FMDV Asia 1.

**Sri Lanka**<sup>2</sup> – FMD field viruses genotyped as O/ME-SA/Ind-2001d obtained good matching results with the vaccine strains used in the vaccine matching strain differentiation (VMSD) tests.

### **POOL 3 - WEST EURASIA & MIDDLE EAST**

**Palestine**<sup>1,2</sup> – Two FMD outbreaks for which serotyping is pending occurred in cattle and small ruminants during December 2017 in Hebron, West Bank.

The Kimron Veterinary Institute submitted to the WRLFMD the FMDV VP1 sequence by of a field virus collected during December 2017 from a FMD event different from the above that was genotyped as O/EA-3.

**Pakistan**<sup>2,6</sup> – Ninety FMD outbreaks due to serotypes A, Asia 1 and O and untyped were reported in three provinces of the country reporting surveillance activities.

Only one of the vaccine strains used in the VMSD tests obtained good matching results with the field virus belonging to A/ASIA/Iran-05<sup>FAR-11</sup> genotype.

**Turkey**<sup>2</sup> – The FMD VP1 sequence submitted by the FMD Institute (Ankara, Turkey) of a field virus detected during 2017 was genotyped as O/ME-SA/PanAsia-2.

### **POOL 4 - EASTERN AFRICA**

**Ethiopia**<sup>7</sup> – The National Animal Health Diagnostic and Investigation Center (NAHDIC), Ethiopia reported for January 2018, the circulation of FMDV serotypes A, O and SAT 2.

**Kenya**<sup>2,8</sup> – For the reporting month the FMD National Reference Laboratory, Embakasi, Kenya reported FMDV serotypes A, O and SAT 1.

Samples collected in the country between November 2016 -2017 were genotyped by the WRLFMD as O/EA-2 and SAT 1/I/unnamed.

### **POOL 5 - WEST/CENTRAL AFRICA**

<sup>9,10,11,12</sup> During January 2018, no FMD outbreaks were reported in this pool.

### **POOL 6 - SOUTHERN AFRICA**

**Botswana**<sup>2</sup> – Good matching results were obtained in the VMSD tests for a FMDV serotype SAT 2 field isolate of 2017.

**Malawi**<sup>2</sup> – FMDV serotype SAT 1 field isolate of 2016 did not obtain good results in the VMSD test.

**Mozambique**<sup>1</sup> – A FMD outbreak diagnosed on clinical basis occurred on December 25<sup>th</sup> 2017, affecting cattle of the village of Gaza.

**Zambia**<sup>1,2</sup> – Three FMD outbreaks for which typing is not available occurred between the June and August 2017 in North Western.

FMDV serotype SAT 3 field isolate of 2017 did not obtain good matching results in the VMSD test performed.

**Zimbabwe**<sup>2</sup> – FMDV serotype SAT 2 field isolate of 2017 obtained good matching results in the VMSD test performed.

### **POOL 7 - SOUTH AMERICA**<sup>1,13,14</sup>

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No FMD notifications were reported for this pool during the reporting month.

FMD in Latin America was last detected in Colombia in July 2017 with outbreaks due to FMDV serotype O, while historical outbreaks occurred in Venezuela in 2013 due to serotype A for which PANAFTOSA reported also the sequence data.

**COUNTER**

**\*\*\* 161 MONTHS SINCE THE LAST SEROTYPE C OUTBREAK WAS REPORTED**



### III. DETAILED POOL ANALYSIS

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

##### China<sup>1,2</sup>

A outbreak due to FMDV serotype A occurred on January 2<sup>nd</sup> 2018 in a multispecies backyard farm at Buyi and Miao Autonomous Prefecture of QianNan, Changshun, Guizhou.

The Lanzhou National Reference Laboratory for Foot and Mouth Disease testing cattle samples using polymerase chain reaction (RT-PCR) and virus isolation carried out diagnosis on January 8<sup>th</sup> 2018.

Source of outbreak is unknown while the containment measures applied are movement control inside the country, screening, surveillance within containment and/or protection zone, vaccination permitted if available, quarantine, official disposal of carcasses, by-products and waste, disinfection and stamping out. No treatment is being administered to the affected animals.

A summary of the animals involved and the location of the outbreak are respectively reported in Table 2 and Map 2.

**Table 2:** summary of the animals involved in the FMD outbreak that occurred on January 2<sup>nd</sup> 2018 in a backyard farm at Buyi and Miao Autonomous Prefecture of QianNan, Changshun, Guizhou. (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	646	260	14	372	0	40.25%	2.17%	5.38%	59.75%
Sheep	203	17	9	177	0	8.37%	4.43%	52.94%	91.63%
Swine	108	6	0	102	0	5.56%	0.00%	0.00%	94.44%

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

**Map 2:** location of the FMD outbreak that occurred on January 2<sup>nd</sup> 2018 at Guizhou, China. (Source – WAHIS)



The Lanzhou Veterinary Research Institute submitted to the WRLFMD a FMDV VP1, sequence of a field virus isolated at Changshun, Guizhou on January 1<sup>st</sup> 2018, that was genotyped as A/ASIA/Sea-97. The field virus most closely related to this isolate not pertaining to this country was Amur/2/RUS/2013 with a 99.2% sequence identity (seq id).

FMD outbreaks due to O were reported on January 3<sup>rd</sup> and 10<sup>th</sup> in swine, respectively at Buyi and Miao Autonomous Prefecture of QianNan, Sandu, Guizhou and Yinchuan, Xingqing District, Ningxia.

As in the previous outbreak, diagnosis was carried out by the National and OIE Reference laboratory using RT-PCR and virus isolation.

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Source of outbreak is unknown and control measures applied are as those described in the previous outbreak.

A summary of the animals involved and the location of the outbreak are respectively reported in Table 3 and Map 3 and 4.

**Table3:** summary of the animals involved in the FMD outbreaks that occurred on January 3<sup>rd</sup> and 10<sup>th</sup> 2018 at Buyi and Miao Autonomous Prefecture of QianNan, Sandu, Guizhou and Yinchuan, Xingqing District, Ningxia. (Source – WAHIS)

Location of Outbreak	Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Guizhou	Cattle	40	0	0	40	0	0.00%	0.00%	-	100.00%
	Swine	1520	42	25	1453	0	2.76%	1.64%	59.52%	97.24%
Ningxia	Cattle	14	14	0	14	0	100.00%	0.00%	0.00%	100.00%
	Sheep	21	0	0	21	0	0.00%	0.00%	-	100.00%

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

**Maps 3 and 4:** location of the FMD outbreaks that respectively occurred on January 3<sup>rd</sup> and 10<sup>th</sup> 2018 at Guizhou (left) and Ningxia (right) China. (Source – WAHIS)



### Mongolia <sup>1</sup>

Fifteen outbreaks due to serotype O were reported in cattle and small ruminants between September and November 2017 respectively in Dornod, Sukhbaatar, Khentii And Dornogovi. All the outbreaks, apart from that at Dornogovi were resolved.

Diagnosis was confirmed on December 12<sup>th</sup> 2017, by the All-Russian Research Institute for Animal Health (FGBI-ARRIAH) (OIE Reference Laboratory) using RT-PCR.

Source of outbreak is unknown and control measures put in place are as those reported for the outbreaks in China. A summary of the vaccination activities carried out in response to the outbreaks is reported in Table 4. No details on the type of vaccine employed were provided.

A summary of the animals involved and the location of the outbreaks are respectively reported in Table 5 and Map 5.

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Table 4: summary of the vaccination activities carried out in response to the outbreaks that occurred in Mongolia between September and November 2017 respectively in Dornod, Sukhbaatar, Khentii and Dornogovi. (Source – WAHIS)

Administrative division	Species	Total Vaccinated
DORNOD	Cattle	166,526
	Goats	290,011
	Sheep	478,584
KHENTII	Cattle	177,056
	Goats	483,809
	Sheep	764,176
SUKHBAATAR	Cattle	206,012
	Goats	973,009
	Sheep	1,523,375
<b>Total vaccinated</b>		<b>5,062,558</b>

Table 5: summary of the animals involved in the FMD outbreaks that occurred in Mongolia between September and November 2017 respectively in Dornod, Sukhbaatar, Khentii and Dornogovi. (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	/	650	0	650	0	**	**	0.00%	**
Goats	/	241	0	241	0	**	**	0.00%	**
Sheep	/	366	0	366	0	**	**	0.00%	**

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

\*\*Not calculated because of missing information

Map 5: location of the FMD outbreaks that occurred in Mongolia between September and November 2017 respectively in Dornod, Sukhbaatar, Khentii And Dornogovi. (Source – WAHIS)



**Russian Federation**<sup>15</sup>

ARRIAH reported for January 2018 the detection of FMD serotype O in Mongolia and the genotyping of field viruses as O/ME-SA/PanAsia.

In support of the post-vaccination immunity monitoring activities, the Laboratory examined 1,021 serum blood samples for the detection of FMDV antibodies.

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 by respectively supplying materials and technical advice.

**SEACFMD**<sup>3</sup>

In December 2017, six FMD outbreaks were reported in Laos for which sampling was not carried out and eighteen outbreaks were reported Thailand, in part due to FMDV serotypes A and O.

Ongoing outbreaks in the countries of the region are listed in Table 6, and the FMDV serotypes notified as currently circulating are A, Asia 1 and O.

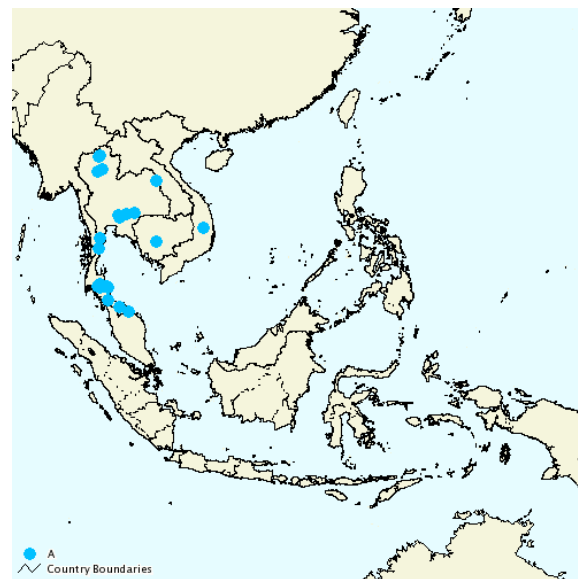
While Asia 1 is reported as still circulating in Viet Nam, further reports on the genotype circulating to those of 2007 are not available.

Distribution in the area of the individual serotypes is reported in Maps 6, 7 and 8.

**Table 6:** number FMD outbreaks caused by the various circulating serotypes reported as ongoing during December 2017, in the relative countries of the Southeast Asia Region are listed below. (Source – SEAFMD Campaign)

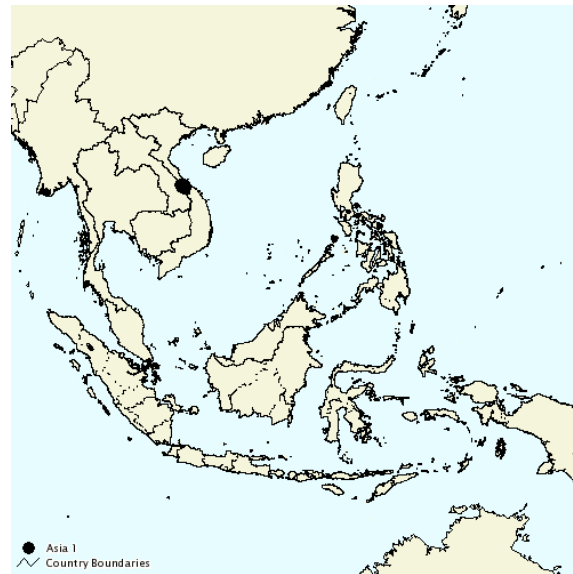
Country	Number of ongoing outbreaks	Serotypes responsible of outbreaks					
		Serotype A	Serotype Asia 1	Serotype O	Not sampled	Not typed	Pending
Cambodia	114	/		6	107	/	1
Laos	10	/		/	10	/	/
Malaysia	48	1		2	2	31	12
Myanmar	3	/		3		/	/
Thailand	266	15		125	25	19	/
Viet Nam	29	/	15	3	11	/	82
<b>Total</b>	<b>470</b>	<b>16</b>	<b>15</b>	<b>139</b>	<b>155</b>	<b>50</b>	<b>95</b>

**Map 6:** location of the ongoing FMD outbreaks occurring during December 2017 due to serotype A in the countries reported in Table 6. (Source – SEAFMD Campaign)

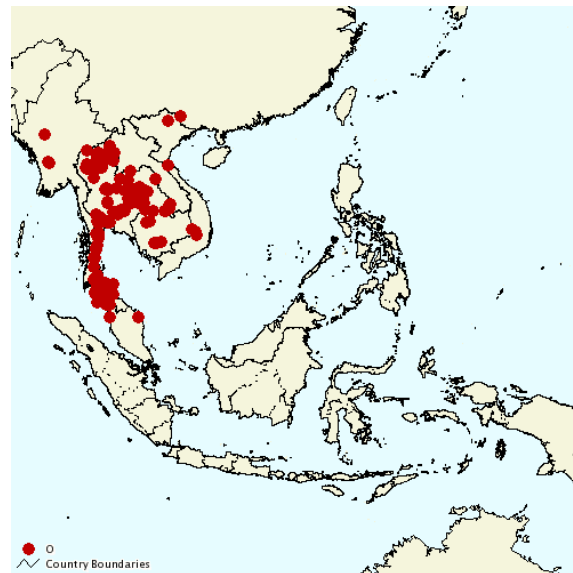


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**Map 7:** location of the ongoing FMD outbreaks occurring during December 2017 due to serotype Asia 1 in the countries reported in Table 6. (Source – SEAFMD Campaign)



**Map 8:** location of the ongoing FMD outbreaks occurring during December 2017 due to serotype O in the countries reported in Table 6. (Source – SEAFMD Campaign)



**Table 7:** Summary of the history of FMD Pool 1 between 2012 – 2018. For geographic distribution of circulating FMDVs between 2013 -2017 see Map 9 below. (Source – Wahis, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2016 **(1 <sup>st</sup> 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 1 <sup>st</sup> semester 2015 2013 & 2015/A, 2012-2013/O, 2012 -2014/NOT TYPED	Nov 2017/O, May 2017/A	See text
China, Hong Kong, SAR	O	Sep 2017/O	Follow-up needed

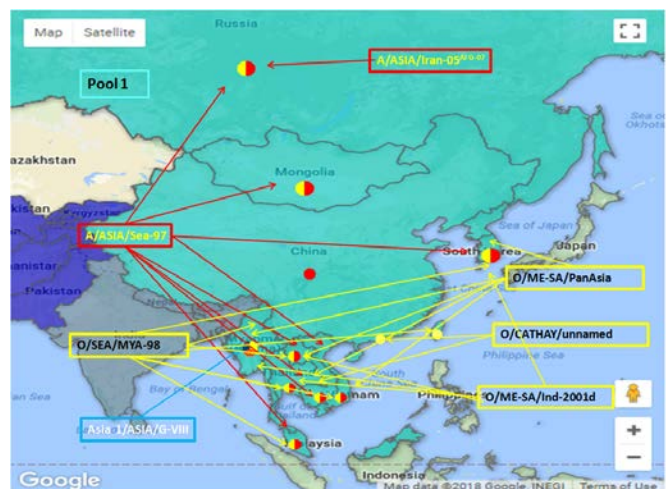
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<b>Democratic People's Republic of Korea</b>	O/2016 2012-2013/DISEASE ABSENT 2014 & 2015/ NO DATA REPORTED	May 2014/not confirmed, July 2014/O	Follow-up needed
<b>Lao People's Democratic Republic</b>	Data up to 1 <sup>st</sup> semester 2015) A, O/2015 2012/DISEASE PRESENT WITH QUANTITATIVE DATA BUT WITH AN UNKNOWN NUMBER OF OUTBREAKS	Jan 2017/O Mar 2015/A,	See text
<b>Malaysia</b>	A/2016, 2012 –2016/O, 2013 & 2015/NOT TYPED	August 2016/A & O	See text
<b>Mongolia</b>	Disease Absent /2016**, 2014 & 2015/O, 2013/A & NOT TYPED	Sep 2017/O, Sept 2016/A	See text
<b>Myanmar</b>	2012-2016/O, 2015/A & NOT TYPED	Dec 2017/O, April 2017/Asia 1, July 2016/ not typed, Oct 2015/A	See text
<b>Republic of Korea</b>	Data up to 1 <sup>st</sup> semester 2015 2014 -2015/O, 2012-2013/DISEASE ABSENT	Feb 2017/O & A	Follow-up needed
<b>Russian Federation</b>	2013 – 2016**/A, 2012, 2014 & 2015/O	Oct 2017/O, Oct 2016/Asia 1, Jan 2016/ A	See text
<b>Taiwan Province of China</b>	2016/NO DISEASE PRESENT A/2015, 2012-2013/O	Jun 2015/A	Follow-up needed
<b>Thailand</b>	O, A NOT SAMPLED & NOT TYPED	Feb 2017 /A, Jan 2017/O June – July 2016/not typed	See text
<b>Viet Nam</b>	O, NOT SAMPLED, NOT TYPED 2013-2016/A	November 2016/A, Oct 2016/O and not typed	See text

**Map 9:** FMD distribution between 2013 – 2017 by serotype and topotype in South East Asia – red boxes and circles refer to serotype A genotypes, yellow to serotype O genotypes and white script refers to new introduction of viral lineage in pool or country of the pool during 2017. (Source – Google Fusion Maps, WRLFMD).

Conjectured circulating FMD viral lineages in Pool 1<sup>2, 13</sup>:

- Serotype O: O/SEA/Mya-98, O/CATHAY, O/ME-SA/PanAsia, O/ME-SA/Ind-2001d (new detection in Myanmar and Thailand during 2016)
- Serotype A: A/ASIA/Sea-97 and Iran-05<sup>SIS10</sup> sublineage, only in the Russian Federation
- Serotype Asia-1 – reappearance of this serotype in 2016 in Russia and in 2017 in Myanmar – previous detection in the region was in 2006 in Vietnam and in China (People's Rep. of).



**B. POOL 2 – South Asia****India** <sup>4</sup>

During January 2018, ICAR-PDFMD, Mukteswar, India detected FMDV serotype O among the five bovine samples examined using FMDV antigen and/or RNA detection methods. In the last PD-FMD annual report of 2016-17, all FMD outbreaks recorded were exclusively due to this serotype.

The laboratory submitted five field isolates belonging to serotype O for genotyping and for vaccine matching tests. The laboratory also conducted the analysis of 604 sera collected in the course of epidemiological studies for the detection of FMD antibodies. The FMD diagnostics kits employed are those developed at ICAR-PDFMD.

The laboratory is 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 has ongoing research studies and collaborations with international organisations.

**Nepal** <sup>5,16</sup>

FMDV serotypes Asia 1 and O were detected among the eighteen bovine samples collected between November and December 2017 that were submitted by the National Foot and Mouth Disease and TADS Laboratory to the WRLFMD FMDV for further identification.

Relative to reappearance of FMDV serotype Asia 1 in the country, previous notification of this serotype was in the FMD Quarterly Bulletin of January - March 2016, where ASIA 1 was diagnosed in 15% of the FMDV viruses detected between 2001 and 2012.

**Sri Lanka** <sup>2</sup>

The field viruses, O/SRL/7/2016 and O/SRL/3/2017, genotyped as O/ME-SA/Ind-2001d obtained good matching results with vaccine strains, O 3039, O Manisa and O Tur5/09, used in the vaccine matching strain differentiation (VMSD) tests.

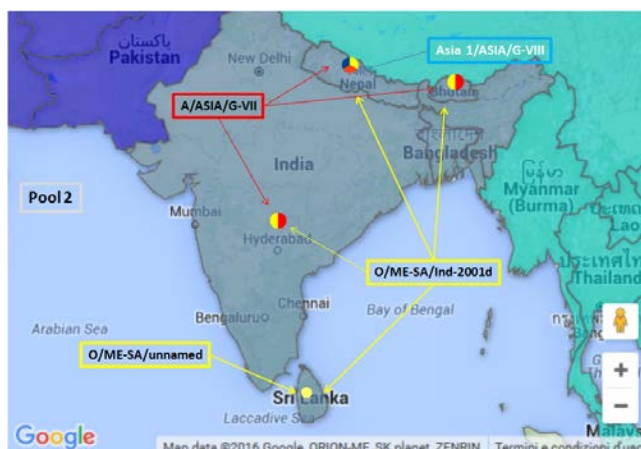
**Table 8:** Summary of the history of FMD Pool 2 between 2012 – 2018. For geographic distribution of circulating FMDVs between 2013 -2017, see Map 10 below. (Source – WAHIS, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE between 2012 – 2016 **(1 <sup>st</sup> 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	Sep 2017/untyped, July 2017/O, April 2017/A	Follow-up needed
India	NO DATA AVAILABLE/2016, O, A, NOT SAMPLED 2012-2014/Asia 1 2013/NOT TYPED	Jan 2018/O, Apr 2015/A Asia 1	See text
Mauritius	DISEASE ABSENT	Sep 2016/O	Follow-up needed
Nepal	O, 2012-2103/Asia 1	Dec 2017/O & Asia 1, April 2017/A	See text
Sri Lanka	2015 -16/NO DATA REPORTED, 2012 – 2014/O	Sep 2017/O	See text

**Map 10:** FMD distribution between 2013 – 2017 by serotype and topotype in South Asia - red boxes and circles refer to serotype A genotypes, yellow to serotype O genotypes and white script refers to new introduction of viral lineage in pool or country of the pool during 2017. (Source – Google Fusion Maps, WRLFMD)

Conjectured circulating FMDV lineages in Pool 2<sup>1,2</sup>.

- O/ME-SA/Ind-2001d predominates (the O/ME-SA/Ind-2011 lineage that emerged during 2011 has not been detected during 2012-17), outbreaks of this serotype detected also in Mauritius during 2016 (**not reported in Map**)
- A/ASIA/G-VII (genotype 18)
- Asia-1 (lineage C subdivided into Eastern and Western clusters) – not reported in map – reappearance in 2017 in Nepal.



### C. POOL 3 – West Eurasia & Middle East

#### **Palestine**<sup>1,2</sup>

The two FMD outbreaks for which serotyping is pending occurred on December 18<sup>th</sup> and 20<sup>th</sup> 2017 in cattle and small ruminants at Biet Ommar and Qalqas Hebron, West Bank.

Diagnosis was confirmed on December 18<sup>th</sup> 2017 by the Kimron Veterinary Institute through the detection of FMD antibodies in sheep samples.

Source of outbreak is unknown and control measures adopted are movement control inside the country surveillance outside containment and/or protection zone surveillance within containment and/or protection zone screening traceability quarantine control of wildlife reservoirs zoning and disinfection. Vaccination was administered in the West Bank to 1,450 cattle and 700 sheep and goats. Details of the type of vaccine employed are not available.

A summary of the animals involved and the location of the outbreaks are respectively reported in Table 9 and Map 11.

**Table 9:** summary of the animals involved in the FMD outbreaks that occurred on December 18<sup>th</sup> and 20<sup>th</sup> 2017 at Biet Ommar and Qalqas Hebron, West Bank. (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*
Sheep / goats	12	2				16.67%	**	**	**
Cattle	1400	60	0			4.29%	0.00%	0.00%	**

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

\*\*Not calculated because of missing information



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**Map 11:** location of the FMD outbreaks that occurred on December 18<sup>th</sup> and 20<sup>th</sup> 2017 at Biet Ommar and Qalqas Hebron, West Bank. (Source – WAHIS)



The FMDV VP1 sequence, submitted to the WRLFMD by the Kimron Veterinary Institute, of a field virus collected in a sheep on December 12<sup>th</sup> 2017 from a FMD event previous to the above was genotyped as O/EA-3. The most closely related field virus not pertaining to the country is Ayn al-Sahla/ISR/2017 with a seq id of 99.1%.

The first detection of the present strain in the country was in samples collected in February 2017.

#### **Pakistan** <sup>2, 6</sup>

The FMD control project is currently operated only Punjab and information relative to other areas of the country is provided on voluntarily basis.

During the reporting month, ninety FMD outbreaks due to serotypes A, Asia 1 and O and untyped were diagnosed in three provinces of the country reporting surveillance activities.

A summary of the distribution of the outbreaks relative to location and serotypes are represented in Table 10 and Map 12.

Emergency and preventive vaccinations were also carried out in some of the provinces of the country and a summary of these activities is reported in Table 11 and 12.

Further to the VMSD results reported in the December 2017 report, A22 IRQ/24/64, but not A IRN/2005 and A/TUR/20/2006, obtained good matching results with field virus (A/PAK/25/2016) belonging to A/ASIA/Iran-05<sup>FAR-11</sup> genotype.

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**Table 10:** summary of the FMD outbreaks reported in Pakistan during January 2018. (Source – Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

Province	District	Number Outbreaks	Number of Outbreaks due to FMDV Serotypes				
			'O'	'A'	'Asia-1'	'Mixed'	Un-Typed
AJK	Mirpur	10	--	6	--	--	4
Punjab	Attock	3	--	2	--	--	1
	Chiniot	2	1	--	--	1	--
	Faisalabad	6	1	1	--	--	4
	Gujrat	1	--	1	--	--	--
	Hafizabad	2	1	--	--	--	1
	Lahore	1	--	1	--	--	--
	Lodhran	5	1	3	--	--	1
	T. T. Singh	2	--	1	--	--	1
	Chakwal	6	1	3	--	--	2
	Rawalpindi	25	11	--	5	--	9
	Rahim Yar Khan	3	--	1	--	--	2
	Sahiwal	2	--	2	--	--	--
	Sargodha	7	1	--	2	--	4
	Bhakkar	8	5	--	2	--	1
	Mandi Bahaudin	1	--	--	1	--	--
ICT	ICT	6	4	--	--	--	2
Total		90	26	21	10	1	32

**Table 11:** summary of the emergency vaccination activities conducted in some provinces of Pakistan during January 2018. (Source – Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

Province	Ring Vaccination (Doses)
Punjab	3,250
ICT	500
<b>Total</b>	<b>3,750</b>

**Table 12:** summary of the preventive vaccination activities conducted in some province of Punjab, Pakistan during January 2018. (Source – Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

District	No. of Households	Animals Vaccinated (Primary Dose)			Animals Vaccinated (Booster Dose)			Animals Vaccinated (6 Monthly Dose)		
		Cattles	Buffaloes	Total	Cattles	Buffaloes	Total	Cattles	Buffaloes	Total
Sahiwal	1,352	-	-	-	-	-	-	4,147	7,264	11,411
Bahawalpur	29,045	241,664	104,449	346,113	5,648	4,168	9,816	-	-	-
Rahim Yar Khan	108,047	519,284	451,819	988,033	26,990	25,181	52,171	-	-	-
Cholistan	1,583	45,747	1,023	46,770	93	-	93	-	-	-
<b>Totals</b>	<b>140,027</b>	<b>806,695</b>	<b>557,291</b>	<b>1,380,916</b>	<b>32,731</b>	<b>29,349</b>	<b>62,080</b>	<b>4,147</b>	<b>7,264</b>	<b>11,411</b>

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**Map 12:** location of the FMD outbreaks reported in Pakistan during January 2018. (Source – Google Fusion Maps, Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)



### Turkey<sup>2</sup>

The FMDV VP1 sequence submitted by the FMD Institute (Ankara, Turkey) of a field virus collected in sheep during 2017 was genotyped as O/ME-SA/PanAsia-2<sup>ANT-10</sup>. Most closely related virus not pertaining to the country is represented by IRN/3/2017 with a seq id of 98.6. Location of where the sample was collected is not provided. The present strain was first detected by the WRLFMD in samples forwarded in 2010.

**Table 13:** Summary of the history of FMD Pool 3 between 2012 – 2018. For geographic distribution of circulating FMDVs between 2012 -2016, see Map 13 below. (Source – Wahis, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1 <sup>st</sup> semester)	LAST OUTBREAK REPORTED/SEROTYPE # see pg. 1	Comment
Afghanistan	2013-2016**/O, A, Asia 1, NOT TYPED 2012/SEROTYPE NOT REPORTED	Nov 2017/A & O, Aug 2017/Asia 1	Follow –up needed
Algeria	Data available up to 1 <sup>st</sup> 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/O	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	April 2017/O, Nov 2016/A May-Jun 2016/Sat 2, 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	Follow –up needed
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	Follow –up needed
Jordan	DISEASE ABSENT	Mar 2017/O, 2006/A	Follow –up needed

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<b>Kazakhstan</b>	2014-2016**/ DISEASE ABSENT, 2012/O,2012 –2013/A	Jun 2013/ A & Aug 2012/O	Follow –up needed
<b>Kuwait</b>	O/2016 2013 – 2014/ DISEASE ABSENT, 2012/O	April 2016/O	Follow –up needed
<b>Kyrgyzstan</b>	2015 -16/ DISEASE ABSENT, 2012-2014/O, A	Aug 2014/not typed & Apr 2013 /O, A,	Follow –up needed
<b>Lebanon</b>	DISEASE ABSENT/2016**, 2015/ NO DATA REPORTED	2010/not typed	Follow –up needed
<b>Libya</b>	NO DATA REPORTED	Oct 2013/O	Follow –up needed
<b>Morocco</b>	2012-14,2016**/DISEASE ABSENT, O/2015	Oct 2015/O	Follow –up needed
<b>Oman</b>	2016/ NO DATA REPORTED, 2012-2015/O	May 2015/SAT 2	Follow –up needed
<b>Pakistan</b>	2012 & 2015-16/ NO DATA REPORTED 2013-2014/A, ASIA 1 & O	Jan 2018/ A, Asia 1 & O	<b>See text</b>
<b>Palestine</b>	O, 2012-2013/SAT 2	Dec 2017/O, untyped Mar 2013/Sat 2	<b>See text</b>
<b>Qatar</b>	NO DATA AVAILABLE/2016 2012-2015/O	Dec 2013/O	Follow –up needed
<b>Saudi Arabia</b>	2012-2014, 2016**/O A/2015	Oct 2016/A & April 2016/O	See text Follow –up needed
<b>Syrian Arab Republic</b>	DISEASE ABSENT**	2002/ A & O	Follow –up needed
<b>Tajikistan</b>	2016/ NO DATA REPORTED 2014-2015**/DISEASE ABSENT 2012- 2013/NOT TYPED	Nov 2012/ not typed & Nov 2011/Asia 1,	Follow –up needed
<b>Tunisia</b>	2015-16**/ DISEASE ABSENT, 2014/O	April 2017/A, Oct 2014/O	Follow –up needed
<b>Turkey</b>	A & O, NOT TYPED Asia 1/2012-15	Oct 2015/ A May, 2014- 2015/ Asia 1 and O	<b>See text</b>
<b>Turkmenistan</b>	2013-2016**/DISEASE ABSENT, 2012/NO DATA REPORTED	Not available	Follow –up needed
<b>United Arab Emirates</b>	O/2016 2012, 2015/DISEASE ABSENT 2013-2014/O	Sep 2016/O	Follow –up needed
<b>Uzbekistan</b>	2012,2013 & 2015/NO DATA REPORTED 2014/DISEASE ABSENT	Not available	Follow –up needed

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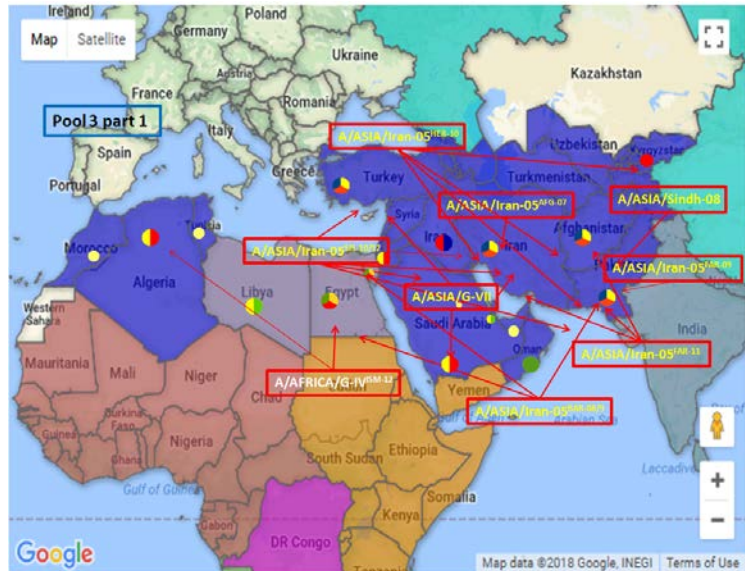
**Map 13.** FMD distribution between 2013 – 2017 by serotype and toptotype for West Eurasia and Middle East– red boxes and circles refer to serotype A genotypes, yellow to serotype O genotypes, green to serotype SAT 2 genotypes and white script to new introduction of viral lineage in pool or country of the pool during 2017.

(source – Google Fusion Maps, WRLFMD).

(Note: Kazakhstan is not included in map as declared by OIE as FMD free divided in zones with and without vaccination)

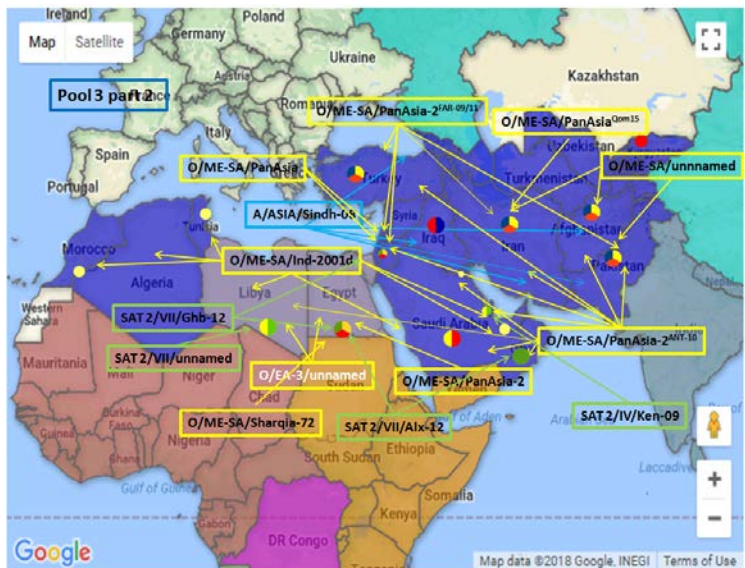
Conjectured circulating FMDV serotype A and Asia 1 lineages in Pool 3<sup>2, 13</sup>:

- A/ASIA/Iran-05 (from AFG-07, HER 10, SIS-10-13, FAR 11 and BAR-08 sub-lineages)
- A/Asia/G-VII (recent incursion from South Asia)
- 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, Libya, Israel and Palestine
- SAT 2/IV/Ken-09
- SAT 2/VII/Alx-12 and Ghb-12 sublineages



#### D. POOL 4 – Eastern Africa

##### Ethiopia<sup>7</sup>

The NAHDIC, Ethiopia detected during January 2018 FMDV serotypes A, O and SAT 2 using antigen detection ELISA in 14 probang, swab and tissue cattle samples collected from three outbreak areas.

The laboratory staff was involved in the field in the investigation of FMD outbreaks and in providing advice to the local community for the containment of the these.

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**Kenya**<sup>2, 8</sup>

The FMD National Reference Laboratory, Embakasi, Kenya detected during January 2018 FMDV serotypes A (1 sample), O (17 samples) and SAT 1 (1 sample) and FMDV genome (3 samples) in the 23 bovine samples tested.

O/EA-2 (3 samples) and SAT 1/I/unnamed (1 sample) were detected among the seven bovine samples collected between November 2016 -2017 that were submitted to the WRLFMD for genotyping.

Most closely related virus not pertaining to the country for O/EA-2 is represented by UGA/3/2004 with a seq id of at least 91.5%, while for SAT 1/I/unnamed, the field virus not pertaining to the country is represented by T155/71 isolated in Tanzania with a seq id of 89.8%.

**Table 14:** Summary of the history of FMD Pool 4 between 2012 – 2018. For geographic distribution of circulating FMDVs between 2013 -2017, see Map 14 below. (Source – WAHIS, EuFMD Global Monthly Report)

<b>COUNTRY</b>	<b>FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1<sup>st</sup> semester)</b>	<b>LAST OUTBREAK REPORTED/SEROTYPE <small>#see pg. 1</small></b>	<b>Comment</b>
<b>Burundi</b>	DISEASE PRESENT	Aug 2013 / not available	Typing required
<b>Comoros</b>	NO DATA AVAILABLE	2010	Follow –up needed
<b>Democratic Republic of Congo</b>	2012 – 2016**/A, O, SAT 1	May 2017/not typed	Follow –up needed
<b>Djibouti</b>	DISEASE ABSENT	Not available	Follow –up needed
<b>Egypt</b>	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
<b>Eritrea</b>	2014, 16/ DISEASE PRESENT 2015/ NO DATA REPORTED 2013/ DISEASE ABSENT, 2012/O	Nov 2016/not reported, Jan 2012/O	Follow –up needed
<b>Ethiopia</b>	O, 2015-16/SAT 1 2012 & 2105/SAT 2, 2012/A	Jan 2018/A, O & SAT 2, March 2017/SAT 1	<b>See text</b>
<b>Kenya</b>	2012 – 2016 /NOT TYPED, A, O, SAT1, SAT2	Dec 2017/O, Nov 2017/A & SAT 2, Oct 2017/ SAT 1	<b>See text</b>
<b>Libya</b>	NO DATA REPORTED	Oct 2013/ O, Sat 2/Apr 2012	Follow-up needed
<b>Rwanda</b>	2015-16/NO DATA AVAILABLE 2012-2013/A, O, SAT1, SAT 2	Nov 2012/not typed	Typing required
<b>Somalia</b>	2012-13, 2015-16/DISEASE PRESENT, 2014/PENDING	June 2016/not reported	Follow –up needed
<b>Sudan</b>	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
<b>South Sudan</b>	2015/DISEASE PRESENT 2014/A, O SAT 1, SAT 2, SAT 3 2012-2013 & 2016 NO DATA REPORTED	2011	Follow –up needed
<b>United Republic of Tanzania</b>	2012-2016/A, O, SAT 1, SAT 2	Oct 2016/SAT 1, Aug 2016/O & SAT 2, Jun 2016/ A	Follow –up needed

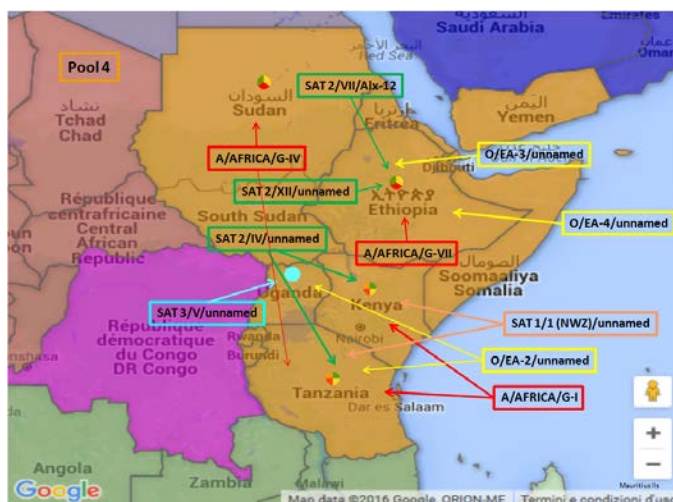
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<b>Uganda</b>	2016/NO DATA REPORTED 2013-16/NOT TYPED or NOT SAMPLED, 2012, 2015/ SAT 1,2012, 2014-15/O	May 2017/O Nov 2014/SAT1, Jan 2015/A and SAT 3, July 2015/ SAT 2 and untyped	Follow –up needed
<b>Yemen</b>	2015-16/NO DATA REPORTED 2013 – 2014/ DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA, 2012/O	2009/O	Follow –up needed

**Map 14:** FMD distribution between 2013 – 2017, by serotype and toptotype for East Africa - red boxes and circles refers to serotype A genotypes, yellow refers to serotype O genotypes, green refers to serotype SAT 2 genotypes and light blue refers to SAT 3 genotypes. (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<sup>2, 13</sup>:

- O (topotypes EA-2 (Tanzania, DR Congo & Uganda), EA-3 and EA-4 (Ethiopia))
- A/AFRICA (genotypes I (Kenya, Tanzania, D.R. Congo), VII (Ethiopia))
- 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<sup>9</sup>, Ghana<sup>10</sup>, Nigeria<sup>11</sup>, Senegal<sup>12</sup>**

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'Élevage et de Recherches Vétérinaires of Senegal did not report FMD outbreaks in their respective countries for January 2018.

**Table 15:** Summary of the history of FMD Pool 5 between 2012 – 2018. For geographic distribution of circulating FMDVs between 2012 -2016, see Map 15 below. (Source – WAHIS, EuFMD Global Monthly Report)

<b>Country</b>	<b>FMD history FMDV serotypes, reported to OIE in 2012 – 2016 **(1<sup>st</sup> semester)</b>	<b>Last outbreak reported/serotype #see pg. 1</b>	<b>Comment (Genotyping would be useful for this region)</b>
<b>Benin</b>	2016/NO DATA REPORTED A, O, SAT 1, SAT 2/2012- 2015	Jun 2014/O, A, SAT 1, SAT 2	Follow –up needed
<b>Burkina Faso</b>	DISEASE PRESENT	Dec 2016/ not available	Follow –up needed

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<b>Cameroon</b>	2016/NO DATA REPORTED DISEASE PRESENT	April 2017/untyped, Nov 2014/O, SAT 2, May 2014/SAT 1, Apr 2014/ A	<b>See text</b>
<b>Cabo Verde</b>	DISEASE ABSENT	Not available	Follow –up needed
<b>Central African Republic</b>	DISEASE PRESENT BUT WITHOUT QUANTITATIVE DATA	Not available	Follow –up needed
<b>Chad</b>	2016/DISEASE PRESENT 2014-15/ DISEASE ABSENT 2012 – 2013/ DISEASE PRESENT	Aug 2016/Not reported	Follow –up needed
<b>Democratic Republic of the Congo</b>	2012 – 2016/A, O, SAT 1	Dec 2016/A, O & Sat 1	Typing required
<b>Congo</b>	NO DATA AVAILABLE	Jun 2013/not typed	Typing required
<b>Côte d'Ivoire</b>	2013-16/ not sampled or not reported, 2012/A, 2014 – 2016/ NO DATA AVAILABLE	Jul 2016/not reported	Follow –up needed
<b>Equatorial Guinea</b>	2012 – 2013/DISEASE SUSPECTED	Not available	Follow –up needed
<b>Gabon</b>	2012, 2014-16/DISEASE ABSENT 2013/NO DATA AVAILABLE	Not available	Follow –up needed
<b>Gambia</b>	NO DATA AVAILABLE	2012/O	Follow –up needed
<b>Ghana</b>	2016/NO DATA AVAILABLE 2012 – 2015/DISEASE PRESENT	Feb 2017/O, Dec 2016/ SAT 2 2014/not available	<b>See text</b>
<b>Guinea-Bissau</b>	2015-16**/DISEASE SUSPECTED 2014/ DISEASE PRESENT 2012-2013/DISEASE ABSENT	Oct 2016/O Dec 2016/SAT1 & SAT 2	Follow –up needed
<b>Guinea</b>	2012-2013, 2015-16**/ DISEASE ABSENT 2014/ DISEASE PRESENT	2014/not available	Follow –up needed
<b>Liberia</b>	NO DATA AVAILABLE	Not available	Follow –up needed
<b>Mali</b>	2013, 2016/DISEASE PRESENT 2015/A, SAT 1 2014-2015/SAT 2 2012/ NO DATA AVAILABLE	Oct 2016/not reported	Follow –up needed
<b>Mauritania</b>	2016/DISEASE SUSPECTED, 2014-2015**/SAT 2, 2012-2013/NO REPORTED OUTBREAKS	Dec 2014/SAT 2	Follow –up needed
<b>Niger</b>	2016**/DISEASE PRESENT BUT WITH NO QUALITATIVE DATA, 2015/O 2012 – 2014/NOT SAMPLED	2014/not sampled, May 2015/O	Follow –up needed
<b>Nigeria</b>	2015-16/DISEASE PRESENT 2012-2014/O	Feb 2017/not typed Sept 2016/ O & SAT 1 Nov 2015/A, Sept 2014/ SAT 2	<b>See text</b>



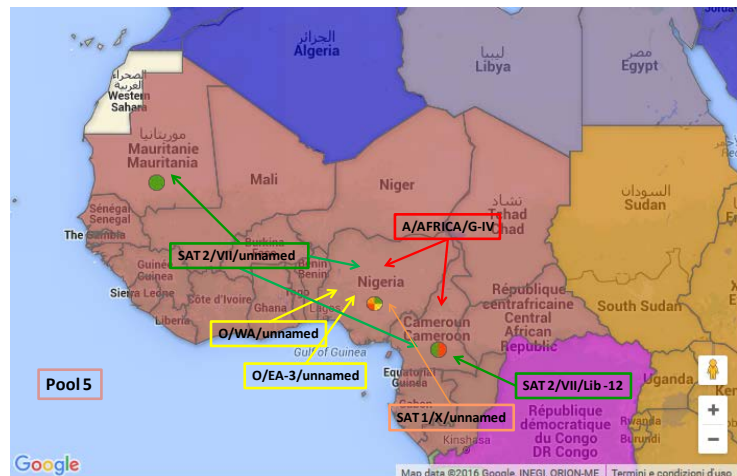
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<b>Sao Tome Principe</b>	2013-16/NO DATA AVAILABLE 2012/DISEASE ABSENT	Not available	Follow –up needed
<b>Senegal</b>	2015-16/DISEASE PRESENT 2012, 2014/NOT SAMPLED 2013/NO DATA AVAILABLE	Feb 2015/ A and O, 2014/ SAT 2	<b>See text</b>
<b>Sierra Leone</b>	DISEASE ABSENT**	Oct 1958	Follow –up needed
<b>Togo</b>	O, SAT 1	2012/O	Follow –up needed

**Map 15:** FMD distribution between 2013 – 2017 by serotype and topotypes for West Africa. Red boxes and circles refer to serotype A genotypes, yellow refers to serotype O genotypes, orange boxes to serotype SAT 1 genotypes, green refers to serotype SAT 2 serotypes and white script in map refers to new introduction of viral lineage in pool or country of the pool during 2017. (Source – Google Fusion Maps, WRLFMD).

Conjectured circulating FMDV lineages in Pool 5<sup>13</sup>:

- 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

##### Botswana<sup>2</sup>

Field isolate SAT 2/BOT/1/2017, identified as SAT 2/III/unnamed, obtained good matching results in the VMSS tests employing the following vaccine strains SAT 2 ERI and SAT 2 ZIM.

##### Malawi<sup>2</sup>

The field isolate SAT 1/MAL/1/2016, genotyped as SAT 1/I/unnamed, did not obtain good matching results in the VMSS test with the vaccine strain SAT1/RHO.

##### Mozambique<sup>1</sup>

A FMD outbreak, which occurred on December 25th 2017, was diagnosed on clinical basis in cattle of the village of Tchale B, Posto Administrative\_Sede, Chicualacuala, Gaza. The affected area is located close to Gonorezoe National Park in Zimbabwe.

Cattle of all ages were affected presenting salivation, lameness, eruptive lesions in the mouth, on the tongue and on the feet.

Source of outbreak is unknown and control measures adopted are movement control inside the country, surveillance outside containment and/or protection zone, surveillance within containment and/or protection zone, traceability, quarantine and inactivation of the virus in products and by-products. Vaccination is permitted in case a suitable vaccine is available.

A summary of the animals involved and the location of the outbreaks are respectively reported in Table 16 and Map 16.

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**Table 16:** summary of the animals involved in the FMD outbreak that occurred on December 25<sup>th</sup> 2017, affecting cattle of the village of Tchale B, Posto Adminstrative\_Sede, Chicualacuala, Gaza, Mozambique. (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	2,100	180	0	0	0	8.57%	0.00%	0.00%	0.00%

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

**Map 16:** location of the FMD outbreak that occurred on December 25<sup>th</sup> 2017, affecting cattle of the village of Tchale B, Posto Adminstrative\_Sede, Chicualacuala, Gaza, Mozambique. (Source – WAHIS)



### South Africa<sup>17</sup>

The ARC- Onderstepoort Veterinary Institute examined 2,145 serum samples using liquid-phase blocking ELISA for the detection of FMDV serotypes SAT 1, SAT 2 and SAT 3 and 107 sera using FMD NSP ELISA.

### Zambia<sup>1,2</sup>

Three FMD outbreaks for which typing is not yet available respectively occurred at Chinyamalitapi Vet Camp, Zambezi (June 27<sup>th</sup> 2017), Chavuma and Watopa and Mumbezhi Vet Camps (July 31<sup>st</sup> 2017) and Kabombo (August 2<sup>nd</sup> 2017) North Western. All the outbreaks are declared as resolved.

Source of outbreak was reported to be due to illegal movement of animals, contact with infected animal at grazing/watering and infected fomites (humans, vehicles, feed, etc.).

The control measures put in place include vaccination of 18,215 cattle in response to the outbreak, surveillance outside containment and/or protection zone, surveillance within containment and/or protection zone and traceability.

A summary of the animals involved and the location of the outbreaks are respectively reported in Table 17 and Map 17.

Field isolate SAT3/ZAM71/2017 belonging to SAT 3/II(WZ)/unnamed did not obtain good matching results in the VMSD test performed with vaccine strain SAT3 ZIM.

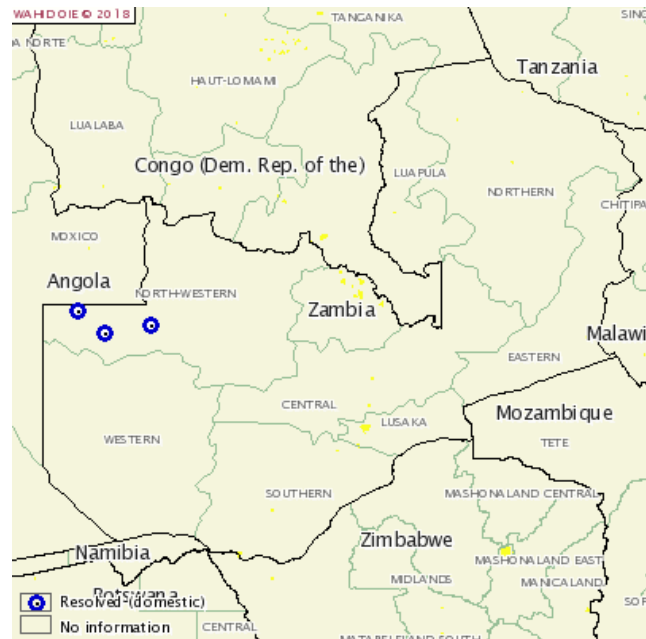
**Table 17:** summary of the animals involved in the FMD outbreaks that occurred at Chinyamalitapi Vet Camp, Zambezi (June 27<sup>th</sup> 2017), Chavuma and Watopa and Mumbezhi Vet Camps (July 31<sup>st</sup> 2017), Kabombo (August 2<sup>nd</sup> 2017) North Western. (Source – WAHIS)

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Species	Susceptible	Cases	Deaths	Killed and disposed of	Slaughtered	Apparent morbidity rate	Apparent mortality rate	Apparent case fatality rate	Proportion susceptible animals lost*
Cattle	44,587	11,555	0	0	0	25.92%	0.00%	0.00%	0.00%

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

**Map 17:** location of the FMD outbreaks that occurred at Chinyamalitapi Vet Camp, Zambezi (June 27<sup>th</sup> 2017), Chavuma and Watopa and Mumbezhi Vet Camps (July 31<sup>st</sup> 2017), Kabombo (August 2<sup>nd</sup> 2017) North Western. (Source – WAHIS)



### Zimbabwe<sup>2</sup>

FMDV field isolate SAT2/ZIM/1/2017 belonging to genotype SAT 2/II/unnamed obtained good matching results in the VMSSD test performed with vaccine strain SAT 2 ZIM.

**Table 17:** Summary of the history of FMD Pool 6, 2013 – 2018, for geographic distribution see Map 17 below. (Source – WAHIS, EuFMD Global Monthly Report)

COUNTRY	FMD HISTORY FMDV serotypes, reported to OIE in 2012 – 2016 **(1 <sup>st</sup> 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	Sep 2017/SAT 2, June 2015/SAT 1	See text
Democratic Republic of the Congo	2012 – 2016/A, O, SAT 1	Dec 2016/A, O & Sat 1	Follow –up needed
Malawi	2012/NO OUTBREAKS REPORTED 2013-2015/ NO DATA AVAILABLE	June 2016/SAT 1, Oct 2011,	See text
Mozambique	2016**/ NO DATA AVAILABLE 2012 -2015/DISEASE ABSENT	Dec 2017/ Typing pending, Oct 2017/SAT 2, May 2015/ SAT 1	See text

JANUARY 2018

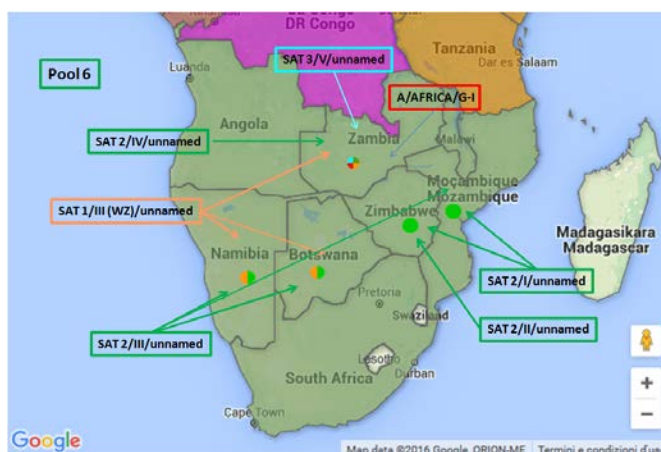
<b>Namibia</b>	2014-2016**/SAT 2 2012-2014/SAT 1	Sep 2017/SAT 2, Aug 2017/typing pending, May 2015/SAT 1	Follow –up needed
<b>South Africa</b>	2015-16**/SAT 3 2012-2015/SAT 2 2013/SAT 1	Aug 2017/SAT 1, May 2017/SAT 2 Dec 2015/SAT 3,	<b>See text</b>
<b>Zambia</b>	2016/SAT 3 & NOT TYPE C 2013-2014/ NO DATA AVAILABLE 2012/SAT 1, SAT 2	May 2017/SAT 3, Mar 2017/SAT 2, Jan 2013/SAT 1, Feb 2015/A,	<b>See text</b>
<b>Zimbabwe</b>	2012-2016/SAT 2 2014-15/SAT 1 2013/SAT 3	Sep 2017/typing pending, May 2017/SAT 2, Aug 2015/ SAT 1, Jun 2013/SAT 3	Follow –up needed

**Map 17:** FMD distribution by serotype and toptype for Southern Africa, 2013 – 2017 - red refers to serotype A, orange refers to SAT 1, green refers to serotype SAT 2. (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 2, 13:

- 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

#### Rest of Latin America <sup>1, 13 & 14</sup>

The OIE FMD status of the countries in South America as reported in December 2017 is presented in Map 18. Most South American countries are FMD free with vaccination (Uruguay) or without vaccination (Chile, Guyana) or with free zones with vaccination (Argentina, Bolivia, Brazil, 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 18). In fact, before the outbreak which occurred in Columbia, PANAFTOSA reported data for historical FMD outbreaks that occurred in Venezuela in 2013 caused by serotype A during the OIE/FAO FMD Laboratory Meeting held in November 2016. 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 between 2012 – 2018, for geographic distribution see Map 13 below. (Source – WAHIS, EuFMD Global Monthly Report)

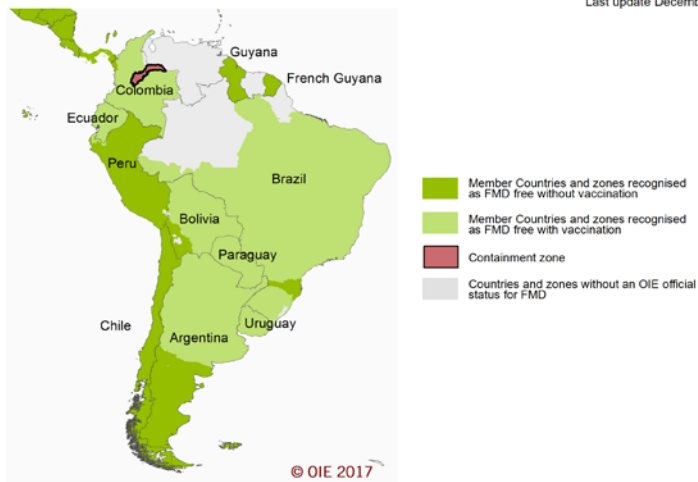
JANUARY 2018

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

**Map 18: FMD status for South America** <sup>1</sup>  
(Source – OIE)

**SOUTH AMERICA: OIE Member Countries' official FMD status map**

Last update December 2017



**IV. OTHER NEWS:**

<sup>2</sup>The 3<sup>rd</sup> WRLFMD Quarterly Report for the period October – December 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

<b>High Priority</b>	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)
<b>Medium Priority</b>	A Eritrea-98 SAT 2 Zimbabwe SAT 1 South Africa A Malaysia 97 (or Thai equivalent such as A/Sakoinakom/97) A Argentina 2001 O Taiwan 97 (pig-adapted strain or Philippine equivalent)
<b>Low Priority</b>	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 highlights an apparent gap in vaccines supplied by International manufacturers for this viral lineage.

**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](http://www.wrlfmd.org).
3. OIE Regional Coordination Unit, Bangkok - <http://www.arahis.oie.int/reports.php?site=seafmd>
4. Project Directorate on Foot and Mouth Disease (PD-FMD), Indian Council of Agricultural Research, Mukteswar, India - *Dr. S. Saravanan*.
5. National Foot and Mouth Disease and TADS Laboratory, Nepal - *Dr. Sharmila Chapagain*
6. Progressive Control of Foot and Mouth Disease in Pakistan, - *Dr. Manzoor Hussain*, National Project Director and *Dr. Muhammad Afzal*, Project Coordinator.
7. National animal health diagnostic and investigation center (NAHDIC), Ethiopia - *Dr. Daniel Gizaw*.
8. National FMD Reference Laboratory, Embakasi, Kenya - *Dr. Eunice Chepkwony*, *Dr. Hellen Mutua*.
9. Laboratoire National Vétérinaire (LANAVET) - Garoua, Cameroon - *Dr. Simon Dickmu Jumbo*.
10. ACCRA Veterinary Laboratory, Ghana - *Dr. Joseph Adongo Awuni*.
11. FMD Research Centre, Virology Research Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria - *Dr. Ularamu Hussaini*.
12. Laboratoire National de l'Élevage et de Recherches Vétérinaires (LNERV, Senegal) – *Miss Mariame Diop and Dr. Moustapha Lô*.
13. OIE/FAO FMD Reference Laboratory Network, Annual Report 2016
14. 44a Reunión Ordinaria de la Comisión Sudamericana para la Lucha contra la Fiebre Aftosa - 6 – 8 March 2017, Rio de Janeiro, Brasil
15. Regional Reference Laboratory for FMD (ARRIAH, Russia) - *Dr. S. Fomina*.
16. FMD Nepal Quarterly Bulletin of January- March 2016 -  
<http://epivet.gov.np/uploads/files/0292208658.pdf>
17. ARC -Onderstepoort Veterinary Institute, Republic of South Africa - *Dr LE Heath/Ms E Kirkbride*