Food and Agriculture Organization of the United Nations

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

GLOBAL Monthly Report

Foot-and-Mouth Disease

Foot-and-Mouth Disease Situation | 2019 | August

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

August 2019

MAIN INFORMATION SOURCES USED:

Databases:

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

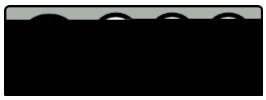
Other sources:

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 in references.

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.

Required citation:
FAO/EuFMD. 2019. *Global Monthly Report. Foot-and-Mouth Disease Situation August 2019*. Rome, FAO.



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I. HIGHLIGHTS

Guest Editor's Comments for the Global Monthly Report:

I am honored as a guest editor to comment the Global Monthly Report (GMR). Therefore, before moving to the point, allow me to introduce myself. I am Dr Henri Kaboré a national of Burkina, veterinarian with more than 26 years working experience on Animal Parasitic Diseases (APD), Transboundary Animal Diseases (TADs), Ethno-Veterinary Medicine (EVM), Public Gastroenteritis & Zoonoses integrating the One Health approach. Newly appointed as a Foot & Mouth Disease Global Intelligence Focal Point (FMD-GIFP), it is my pleasure to comment the GMR which is a relevant tool, available free of charge, addressing the FMD issue worldwide. The GMR is trying the best of its possible to compile information related to FMD worldwide grouped in 7 pools, supported by GIFPs tasked to oversee each pool.

In general, the GIFP role is to: (1) contribute to the EuFMD GMR, (2) provides monthly updates on FMD virus dynamics across the globe, (3) be the knowledge leader for either an entire FMDV pool, (4) build further on their own network of key informants to improve information shared in the GMR.

More specifically the GIFP role is to: (1) review available knowledge and deliver "FMD annual risk calendars" per country and per species (large and small ruminants), (2) review on a monthly basis, the FMD disease situation of every country within the region in the GMR, and deliver timely interpretations at the national-level, (3) build regional knowledge on live animal market's profile and location, and associated value chains, (4) build regional knowledge on available FMD vaccines. The three pillars of the EuFMD, since 2013, work simultaneously with member countries on their preparedness, with European neighbors to put in place sustainable control programmes, and to support and promote the progressive control of FMD in all regions under the Global FMD Control Strategy of FAO and OIE. The GIFP under this programme is helping to build regional knowledge for a progressive FMD control within each of their regions. The GIFP is a key position for coordination, support and information sharing provision enabling countries to take proactive action against the spread of the disease. This advantageous position can go beyond the scope of FMD.

Many FMD outbreaks are reported each year by Sahelian and central African countries (Serotypes O, A, SAT 1 and SAT 2). From January to December 2018, more than 232 FMD outbreaks were reported in 11 countries in West and Central Africa (Burkina Faso, Cameroon, Guinea, Mali, Senegal, Sierra Leone, Mauritania, Chad, Niger, Nigeria and Ghana).

Under the project FMD/RAF/PROJECT, FAO supported 4 countries (Gambia, Guinea, Guinea Bissau and Sierra Leone) to implement risk-based surveillance activities, field investigations, FMD laboratory diagnostics and conduct awareness campaigns to better prevent, detect and control FMD. The next stage requires the extension of support to the remaining countries in order the control FMD spread in the region. Cross-border Animal Mobility seems to be the main driver for FMD transmission and spread in pool 5. Other drivers must not be neglected like annual Muslim feast which is an occasion of considerable animal movement.

In my opinion the main gap addressing the FMD in Pool 5 is the lack of a relevant surveillance system established and operated by countries. Moreover, the weak laboratory capacity is not a good support to all the system. The knowledge gaps related to vaccination, cross-border animal movements and annual risk calendars are real and governments of all countries in pool 5 need to raise their political will to address these issues limiting any control

action against the disease.

In West and Central Africa, the FMD serotypes O, A, SAT 1, and SAT 2 are widely distributed and co-circulating. Quadrivalent vaccine, including the local isolates containing serotypes A, O, SAT 1, and SAT 2, should be used for vaccination campaigns against FMD in these regions, The cattle movement restriction and frequent contacts of different herds at watering and feeding points should be banned and meaningful control measure and husbandry management system that prevent the spread of the FMDV should be established.

Thank you for allowing me to share my thoughts with all the GMR readers. I hope you will continue reading the GMR which is the first-choice document giving you a good insight of FMD worldwide enabling action to be taken (community of subscribers, decision makers, vaccine bank or surveillance managers or others).

Dr H. Kaboré

II. 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 2014 – 2018 (source EuFMD)

POOL	REGION/COUNTRIES	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, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Russian Federation, Thailand, Viet Nam	**A, Asia 1 and O**
2	**SOUTH ASIA** Bangladesh, Bhutan, India, Mauritius, Nepal, Sri Lanka	**A, Asia 1 and O**
3	**WEST EURASIA & MIDDLE EAST** Afghanistan, Armenia, Azerbaijan, Bahrain, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan	**A, Asia 1 and O (SAT 2)***
	NORTH AFRICA Algeria, Egypt, Libya, Morocco, Tunisia	**A, O and SAT 2**
4	**EASTERN AFRICA** Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, 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, Malawi, Mozambique, Namibia, South Africa, Zambia*, Zimbabwe	**{O, A}**, SAT 1, SAT 2 and SAT 3**
7	**SOUTH AMERICA** Colombia, Venezuela (Bolivarian Republic of)	**O and A**

*REPORTED ONLY IN OMAN IN 2017
** ONLY IN NORTH ZAMBIA AS SPILL-OVER FROM POOL 4

III. IN THIS REPORT

POOL 1- SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA

China (Hong Kong, SAR) [1] **–** FMDV serotype O was detected in the pig samples collected in the country during 2019.

China [2] **–** A FMD outbreak, again due to serotype O was notified on July 13th 2019 at the Yandun Animal Health Inspection and Disinfection Station of the Yizhou District, Xinjiang.

Russian Federation [3] **-** The Regional Reference Laboratory for FMD (ARRIAH, Russia) reported the detection of O/ME-SA/Ind/2001 in samples collected in March 2019.

POOL 2 - SOUTH ASIA

No outbreaks were reported for this Pool for the reporting month.

POOL 3 - WEST EURASIA & MIDDLE EAST

Afghanistan [4] **-** The Central Veterinary Research and Development Laboratory (CVDRL) detected FMDV serotypes ASIA 1 and O among the samples analysed during the reporting month.

Israel [1] **-** FMDV field isolates detected in 2019 and belonging to FMDV serotype O obtained good matching results when analysed in the vaccine matching strain differentiation (VMSD) tests.

Pakistan [1, 5] – Different lineages belonging to FMDV serotypes A, ASIA 1 and O were detected in the thirty six bovine and water buffalo samples collected between January 2018 and April 2019, among which was O/ME-SA/Ind-2001e, detected for the first time in the country, as described in the July issue of this report.
Thirty seven FMD outbreaks due to serotypes Asia 1 and O were reported in four different provinces of the country.

POOL 3 – NORTH AFRICA

Libya [1, 6] – The VP1 sequence of a sample collected in the country in May 2019 was identified as belonging to lineage O/EA-3.

POOL 4 - EASTERN AFRICA

Kenya [7] - The FMD National Reference Laboratory (FMDNRL), Embakasi, Kenya detected FMDV serotypes O and SAT 2 in samples analysed during the current month.

POOL 5 - WEST/CENTRAL AFRICA

Nigeria [8] –FMDV serotype A was detected in a field sample analysed during the reporting month.

POOL 6 - SOUTHERN AFRICA

Namibia [2] – A clinical outbreak of FMD was reported on August 8th 2019 in cattle of a village of Zambesi.

POOL 7 - SOUTH AMERICA [2, 9]

No outbreaks were reported for this Pool. FMD was last reported in South America with outbreaks due to FMDV serotype O in Colombia during October 2018 and due to serotype A in Venezuela during 2013.

COUNTER

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

IV. DETAILED POOL ANALYSIS

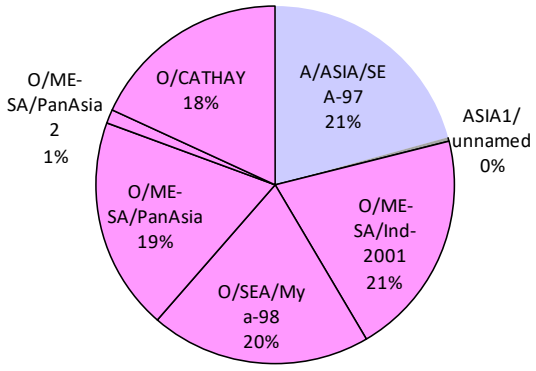
A. POOL 1 – SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA

OUTBREAKS	
Country	*Description*
Serotype O in China [2]	FMDV serotype O continues to be the only serotype detected in the course of the outbreaks notified in the country, with the most recent one occurring on July 13th 2019 at the Yandun Animal Health Inspection and Disinfection Station along highway G30, Yizhou District, Hami, Xinjiang (location of outbreak is available at the present link). Laboratory diagnosis was confirmed by the Lanzhou National Reference Laboratory for Foot and Mouth Disease (OIE Reference Laboratory) on August 1st 2019 The apparent morbidity rate in the affected cattle was 2.99% with no mortality. General control measures were adopted that included the stamping out and disposal of the exposed animals. The origin of the outbreak was attributed to the legal movements of animals, which are apparently are not controlled for FMD infection prior to their departure or may be become infected during their transportation through contact with infected animals. *Interpretation*: This report is consistent with previous reports. FMDV serotype O is believed to circulate endemically in the country.

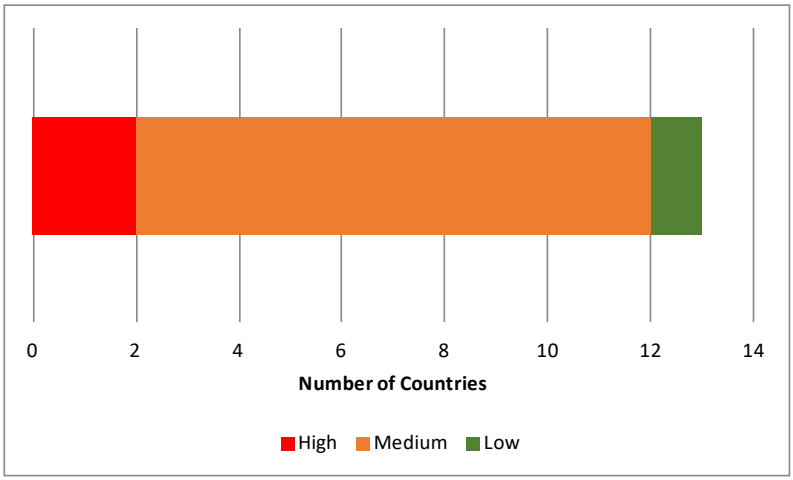
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	*Activity*	*Description*
China (Hong Kong, SAR) [1]	Surv.	FMDV serotype O was detected in six of the seven samples that were collected from pigs between March and May 2019. Relative to the serotype detected, O CATHAY is the last lineage reported in by the WRLFMD in samples collected in 2018.
Russian Federation [3]	Surv.	O/ME-SA/Ind/2001 was detected by the Regional Reference Laboratory for FMD (ARRIAH, Russia) in samples collected in March 2019. This strain resulted close the vaccine strain O/PanAsia2 in vaccine matching tests. The laboratory also carried out the analysis of 2, 877 sera for post vaccination monitoring purposes and of 3,066 sera from unvaccinated animals.

Table2 and Graph 1: Conjectured circulating FMD viral lineages in Pool 1 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 13 countries of Pool 1
A	A/ASIA/SEA-97	8
ASIA 1	ASIA1/ unnamed	1
O	O/ME-SA/Ind-2001	8
	O/SEA/Mya-98	6
	O/ME-SA/PanAsia	8
	O/ME-SA/PanAsia2	1
	O/CATHAY	4



Graph 2 Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 1 – see Annex for explanation).

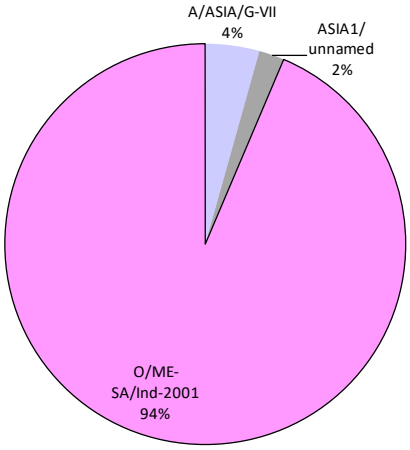


B. POOL 2 – South Asia

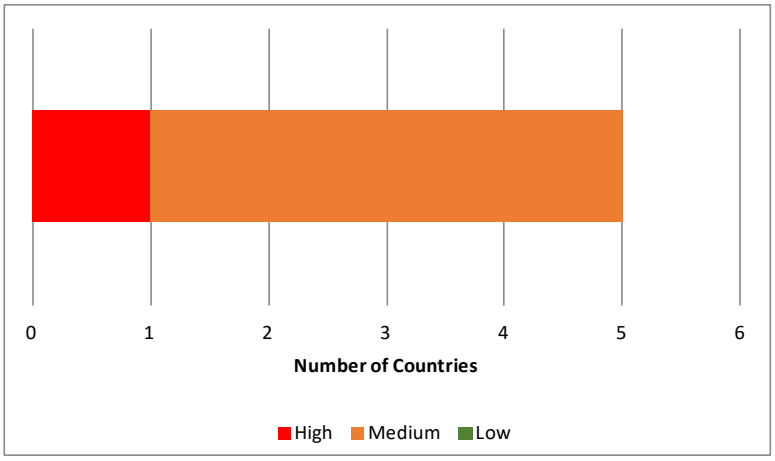
No outbreaks were reported for this Pool during the reporting month

Table 3 and Graph 3 Conjectured circulating FMD viral lineages in Pool 2 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 2
A	A/ASIA/G-VII	3
Asia 1	ASIA1/ unnamed	1
O	O/ME-SA/Ind-2001	5



Graph 4: Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 2 (see Annex for explanation).



C. POOL 3 – West Eurasia & Middle East

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	*Activity*	*Description*
Afghanistan [4]	Surv.	The CVDRL, Afghanistan detected the following FMDV serotypes in the 24 samples analysed: serotype ASIA 1 in 14 samples (58.1%), serotype O in 4 samples (16.7%) while for one sample FMDV was untyped (4.2%). A/ASIA/Iran-05, Asia 1/ASIA/Sindh-08 and O/ME-SA/PanAsia-2 are the most recent lineages detected by the WRLFMD in samples collected in the country during 2016 and 2017.
Israel [1]		Field isolates O/ISR/12/2019 and O/ISR/27/2019, both belonging to lineage O/ME-SA/PanAsia-2^{QOM-15}, obtained good matching results in the VMSD tests conducted in which the vaccine strains used were represented by O3039, O Manisa and O Tur 5/09.
Pakistan [1, 5]	Surv.	FMDV serotypes A, ASIA 1 and O were detected in 31 of the 36 bovine (N° 29) and water buffalo (N° 7) samples collected between January 2018 and April 2019. Lineage O/ME-SA/Ind-2001e, as anticipated in the July issue of this report was, detected for the first time in the country in 6.5% of the positive samples. Other lineages detected were A/ASIA7Iran-05^{SIS13} (6.5%), Asia 1/ASIA/Sindh-08 (61.3%) and O/ME-SA/PanAsia-2^{ANT-10} (25.7%). A summary of the results is represented in Table 4 and the areas of where the positive samples were collected are reported in Map 1.

Map 1: location of the areas of where the samples reported in Table 0 were collected (Source –WRLFMD and Google Earth Pro).

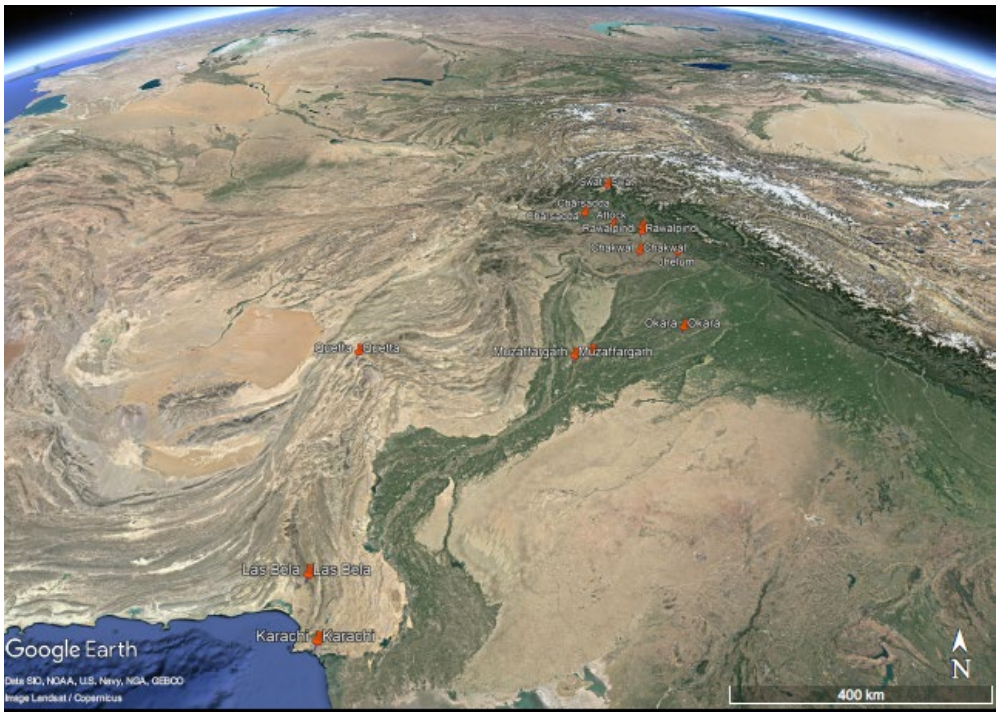


Table 4: summary of the genotyping results relative to the samples collected in Pakistan between January 2018 and April 2019 (Source – WRLFMD).

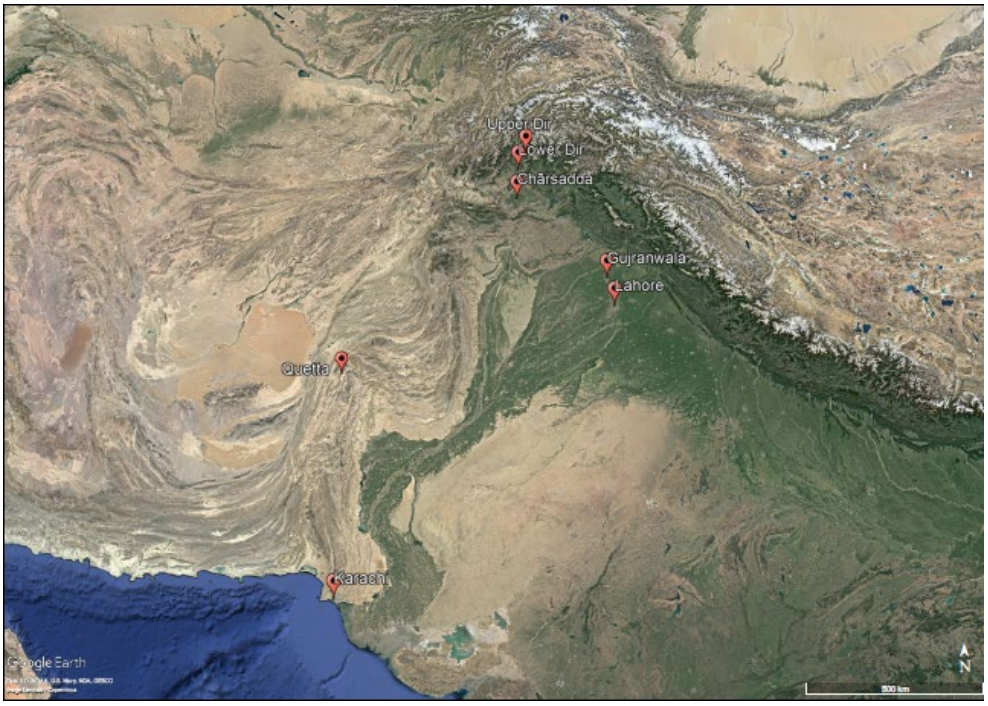
Sample Identification	Location of origin of sample	Species	Date of collection	Genotype	Most Closely Related Viruses not belonging to the country - Seq id %
PAK/1/2018	Muzaffargarh, Punjab	cattle	31/01/2018	A/ASIA7Iran-05^{SIS13}	IRN/4/2018b (99.8%)
PAK/24/2019	Karachi, Sindh	cattle	27/02/2019		AFG/60/2017 (98.4)
PAK/3/2019	Quetta, Balochistan	cattle	16/01/2019	Asia 1/ASIA/Sindh-08	/
PAK/4/2019	Swat, Khyber Pakhtunkhwa	cattle	24/01/2019		
PAK/7/2019	Karachi, Sindh	cattle	31/01/2019		
PAK/10/2019	Karachi, Sindh	cattle	03/02/2019		
PAK/11/2019	Karachi, Sindh	cattle	04/02/2019		
PAK/13/2019	Karachi, Sindh	cattle	06/02/2019		
PAK/14/2019	Swat, Khyber Pakhtunkhwa	cattle	07/02/2019		
PAK/18/2019	Lasbela, Balochistan	cattle	14/02/2019		
PAK/19/2019	Rawalpindi, Punjab	water buffalo	19/02/2019		
PAK/20/2019	Rawalpindi, Punjab	water buffalo	19/02/2019		
PAK/21/2019	Charsadda, Khyber Pakhtunkhwa	water buffalo	19/02/2019		
PAK/22/2019	Attock, Punjab	cattle	26/02/2019		
PAK/25/2019	Multan, Punjab	cattle	07/03/2019		
PAK/26/2019	Jhelum, Punjab	cattle	13/03/2019		
PAK/27/2019	Islamabad Capital Territory	cattle	14/03/2019		
PAK/30/2019	Swat, Khyber Pakhtunkhwa	cattle	19/03/2019		
PAK/31/2019	Swat, Khyber Pakhtunkhwa	cattle	19/03/2019		
PAK/33/2019	Rawalpindi, Punjab	cattle	26/03/2019		
PAK/34/2019	Multan, Punjab	cattle	16/04/2019		
PAK/1/2019	Attock, Punjab	cattle	02/01/2019	O/ME-SA/Ind-2001e	BHU/2/2018 (99.1)
PAK/2/2019	Rawalpindi, Punjab	cattle	16/01/2019		
PAK/6/2019	Karachi, Sindh	water buffalo	31/01/2019	O/ME-SA/PanAsia-2^{ANT-10}	IRN/37/2016 (97.5)
PAK/8/2019	Karachi, Sindh	cattle	01/02/2019		IRN/36/2016 (97.6)
PAK/12/2019	Chakwal, Punjab	cattle	06/02/2019		IRN/31/2016 (97.3)
PAK/15/2019	Multan, Punjab	cattle	08/02/2019		IRN/36/2016 (95.9)
PAK/16/2019	Attock, Punjab	cattle	14/02/2019		IRN/36/2016 (97.6)
PAK/17/2019	Chakwal, Punjab	cattle	14/02/2019		AFG/3/2014 (96.5)
PAK/23/2019	Multan, Punjan	cattle	27/02/2019		AFG/9/2014 (96.1)
PAK/32/2019	Okara, Punjab	cattle	22/03/2019		IRN/36/2016 (97.6)

In addition to the above information, 37 outbreaks were notified in the country and a summary of the information relative to these events is reported in Table 5.Location of the areas of where these outbreaks occurred is represented in Map 2.

Table 5: summary of the outbreaks reported in different provinces of Pakistan during August 2019 (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			
			O	Asia-1	NYT	Negative
Punjab	Gujranwala	2	1	-	1	-
	Lahore	1	-	-	-	1
Sindh	Karachi	18	-	-	18	-
Khyber Pakhtunkhwa	Upper Dir	1	-	1	-	-
	Lower Dir	1	1	-	-	-
	Charsadda	1	1	-	-	-
Baluchistan	Quetta	13	-	-	13	-
Total		**37**	**3**	**1**	**32**	**1**

Map 2: location of the areas of the FMD outbreaks that were notified in Pakistan during August 2019 (Source. Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator and Google Earth Pro)



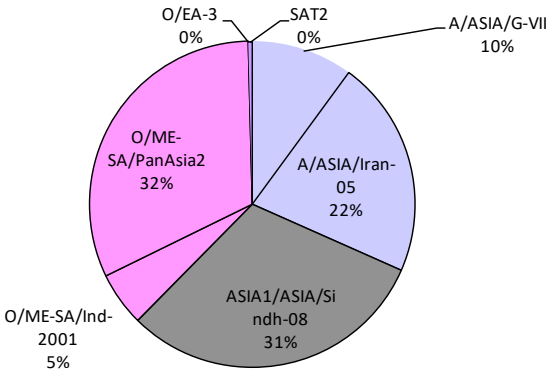
Ring vaccination was also carried out in some of the areas that had experienced outbreaks as reported in Table 6.

Table 6: location and doses of the ring vaccination campaign carried out in Pakistan during August 2019 (Source - Progressive Control of Foot and Mouth Disease in Pakistan, *Dr. Muhammad Afzal*, Project Coordinator)

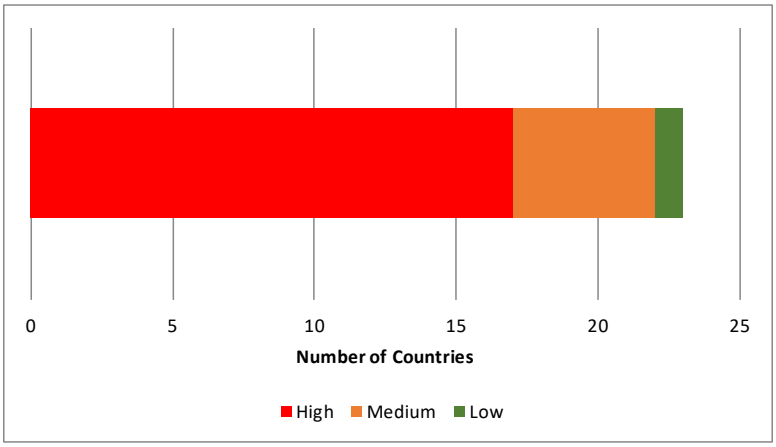
Province	Ring Vaccination (Doses)
Punjab	250
Khyber Pakhtunkhwa	300
Baluchistan	390
Total	940

Table 7 and Graph 5: Conjectured circulating FMD viral lineages in Pool 3 - West Eurasia & Middle East (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countr where strain is believed to circula in the 24 countri of Pool 3 - West Eurasia
A	A/ASIA/G-VII	17
	A/ASIA/Iran-05	9
ASIA 1	ASIA1/ASIA/Sindh-08	9
O	O/ME-SA/Ind-2001	8
	O/ME-SA/PanAsia2	22
	O/EA-3	2
SAT2	SAT2	1



Graph 5: Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 3 – West Eurasia & Middle East (see Annex for explanation).



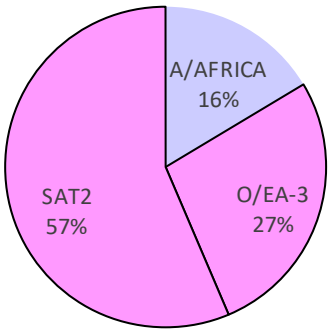
D. POOL 3 – North Africa

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	*Activity*	*Description*
Libya [1]	Surv.	The phylogenetic analysis of the sequence of the VP1 of the FMDV submitted by the Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (IZLER), OIE/FAO FMD Reference Laboratory that detected it in a sample collected at Misrata in cattle during May 2019 was defined as belonging to the lineage O/EA-3. The most closely related sequence to this virus belongs to field isolate ALG/Medea/2019/IZSLER/19/33806/2, with a % identity of 99.8%. Location of the area of where the sample was collected is reported in Map 3.

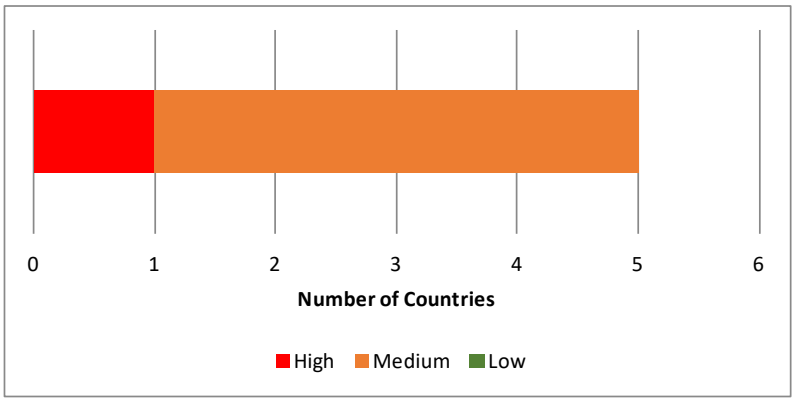
Map 3: location of the area of where the genotyped sample was collected in Libya in May 2019. (Source –WRLFMD, IZSLER and Google Earth Pro).

Table 8 and Graph 6: Conjectured circulating FMD viral lineages in Pool 3 - North Africa (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 3 - North Africa
A	A/AFRICA	4
O	O/EA-3	5
SAT 2	SAT 2	2



Graph 7 Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 3 – North Africa (see Annex for explanation).

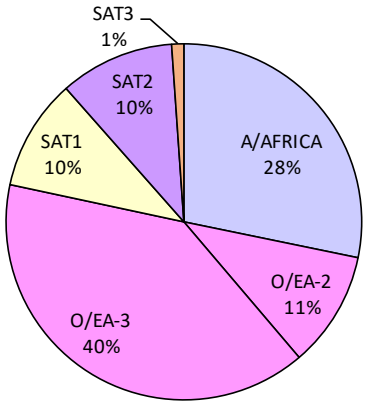


E. POOL 4 – Eastern Africa

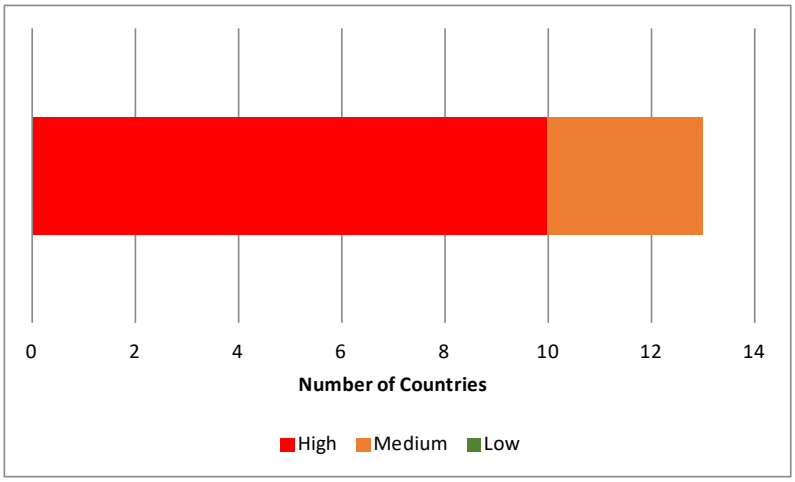
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	*Activity*	*Description*
Kenya [4]	Surv.	The FMD NRL, Embakasi, Kenya, reported the detection of FMDV serotypes O in four samples (25%) SAT 1 in nine samples (56.2%) and SAT 2 in three samples (18.8%), among the nineteen bovine samples analysed during the reporting month. The serotypes reported are believed to circulate endemically in the country with a continuous spread of the different FMDVs between the different districts. The most recent lineages relative to the above serotypes detected in the country are A/AFRICA/G-I, SAT 1/I (NWZ) and SAT 2/IV/unnamed were in samples collected in 2017.

Table 9 and Graph 8: Conjectured circulating FMD viral lineages in Pool 4 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries whe strain is believed to circul in the 13 countries of Poo East Africa
A	A/AFRICA	11
O	O-EA2	4
	O EA-3	9
SAT1	SAT1	10
SAT2	SAT2	6
SAT3	SAT3	5



Graph 9 Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 4 (see Annex for explanation).

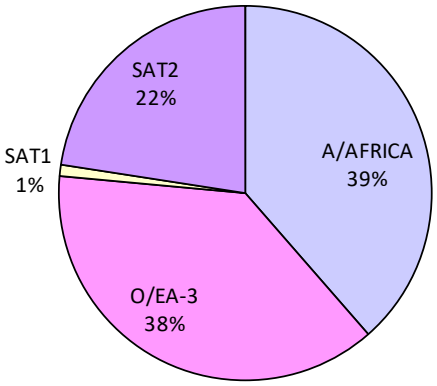


F. POOL 5 – West / Central Africa

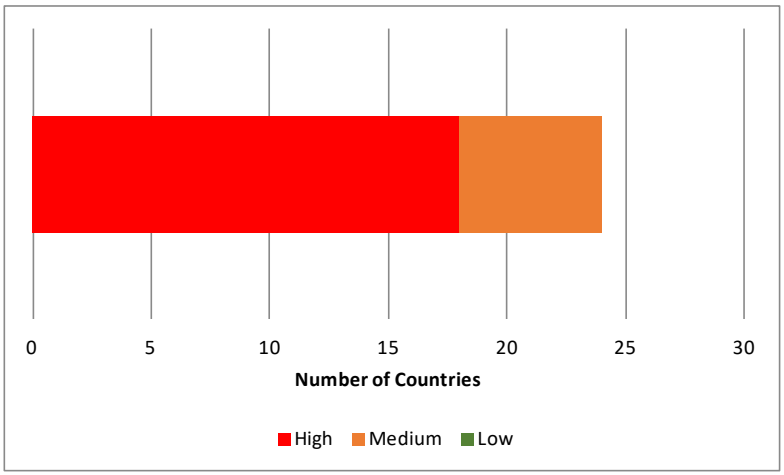
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	*Activity*	*Description*
Cameroon [10]	*Surv.*	The Laboratory:Laboratoire National Vétérinaire (LANAVET) of Garoua detected FMDV non-structural protein in 181 (41.9%) of the 432 samples analyzed using the ELISA. The last lineages reported by the WRLFMD as circulating in the country are A/AFRICA/G-IV and SAT 2/VII in samples collected in 2013.
Nigeria [8]	*Surv.*	FMDV serotype A was detected in a sample analysed using the antigen detection ELISA. The sample was collected from the Jos South of the Plateau State. Lineages belonging to this serotype were genotyped by the WRLFMD as A/AFRICA/G-IV in samples collected in 2013.

Table 10 and Graph 10: Conjectured circulating FMD viral lineages in Pool 5 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 24 countries of Pool 5 - West Africa
A	A/AFRICA	13
O	O/EA-3	22
SAT1	SAT1	2
SAT2	SAT2	14



Graph 11: Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 5 (see Annex for explanation).



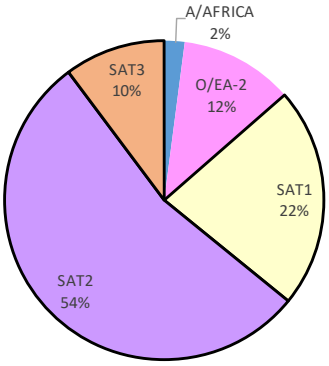
G. POOL 6 – Southern Africa

OUTBREAKS	
Country	*Description*
Serotyping pending in Namibia [2]	A FMD outbreak for which serotyping is still pending was notified on August 8th 2019 at Sigwe Crushpen, Katima-Mulilo, Kabwe North, Zambezi. Of the 700 cattle present, 51 animals of two different kraals presented clinical signs referable to FMD, with an apparent morbidity rate of 7.29%. The source of the outbreak was attributed to contact with wild species. Laboratory diagnosis of the outbreak was confirmed on August 12th by the National Central Veterinary Laboratory using a reverse transcription - polymerase chain reaction. *Interpretation:* This report is consistent with previous reports. FMD is believed to circulate endemically in the country, and structured surveillances activities are required to define the extent of the widespread of the infection.

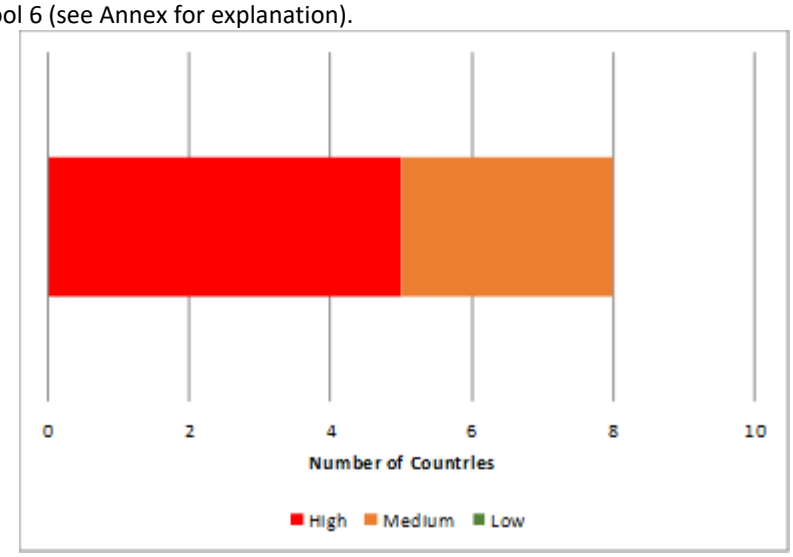
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	**Activity**	**Description**
Mozambique [2]	Surv.	Following the FMD outbreaks reported in the area of Tete 77,780 cattle were administered a Trivalent FMD vaccine containing FMDV serotypes SAT 1, SAT 2 and SAT 3.
South Africa [11]	Surv.	The Agricultural Research Council, Onderstpoort Veterinary Institute, Transboundary Animal Diseases (OIE Reference Laboratory) analysed 5,250 sera in solid-phase competition ELISA for the detection antibodies against FMDV serotypes SAT 1, SAT 2 and SAT 3 and 50 in non-structural protein ELISA.

Table 11 and Graph 12: Conjectured circulating FMD viral lineages in Pool 6 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 8 countries of Pool 6 - Southern Africa
A	A/AFRICA	2
O	O-EA-2	2
SAT1	SAT1	6
SAT2	SAT2	8
SAT3	SAT3	3



Graph 13: Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 6 (see Annex for explanation).

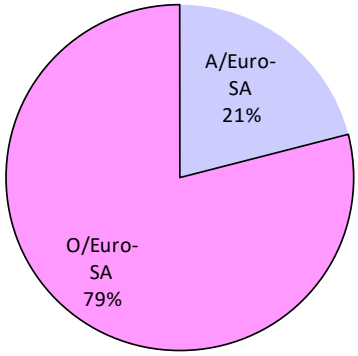


H. POOL 7 – South America

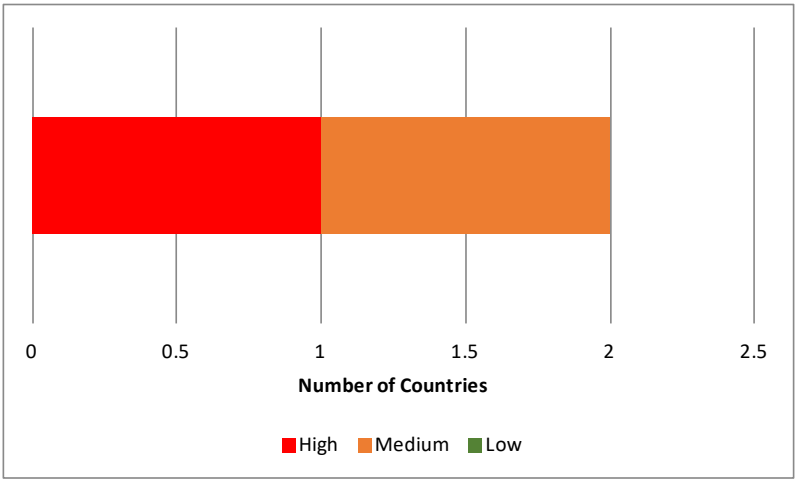
No outbreaks are reported for this Pool during the reporting month.

Table 12 and Graph 14: Conjectured circulating FMD viral lineages in Pool 7 (further detail (country-level) in Annex).

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 2 countries of Pool 7 -South America
A	A/Euro SA	1
O	O/Euro SA	2



Graph 15: Categorization of the level of uncertainty relative to the prevalence of circulating serotypes/strains defined for each country of Pool 7 (see Annex for explanation).



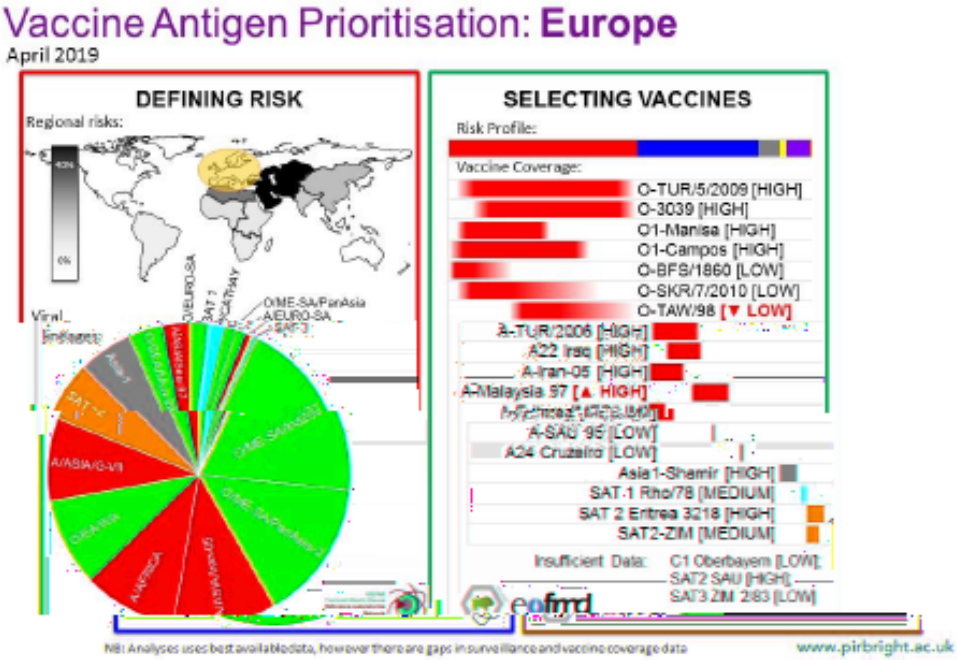
V. OTHER NEWS

[1]The 1st WRLFMD Quarterly Report for the period April-June 2019 contains the recommendations of FMDV vaccines to be included in antigen banks for Europe. The discussion of Table 13 is contained within the report.

Table 13: Recommendations from WRLFMD® on FMD virus strains to be included in FMDV antigen banks (for Europe).

This report provides recommendations of FMDV vaccines to be included in antigen banks. These outputs are generated with a new tool (called PRAGMATIST) that has been developed in partnership between WRLFMD® and EuFMD. These analyses accommodate the latest epidemiological data collected by the OIE FAO FMD Laboratory Network regarding FMDV lineages that are present in different *source regions* (see Table below), as well as available *in vitro, in vivo* and field data to score the ability of vaccines to protect against these FMDV lineages.

Lineage	West Eurasia	East Asia	North Africa	India and Southern Asia	East Africa	West and Central Africa	Southern Africa	South America
O ME-SA PanAsia-2	35	-	-	-	-	-	-	-
O ME-SA PanAsia	-	10	-	-	-	-	-	-
O SEA Mya-98	-	33	-	-	-	-	-	-
O ME-SA Ind2001	6	20	35	80	-	-	-	-
O EA or O WA	3	-	20	-	45	37	-	-
O EURO-SA	-	-	-	-	-	-	-	74
O CATHAY	-	10.5	-	-	-	-	-	-
A ASIA Sea-97	-	25	-	-	-	-	-	-
A ASIA Iran-05	25.5	-	-	-	-	-	-	-
A ASIA G-VII	17.5	-	-	16	-	-	-	-
A AFRICA	-	-	35	-	24	25	-	-
A EURO-SA	-	-	-	-	-	-	-	26
Asia-1	12.5	1.5	-	4	-	-	-	-
SAT 1	-	-	-	-	10	10	27	-
SAT 2	0.5	-	10	-	20	28	57	-
SAT 3	-	-	-	-	1		16	-
C	-	-	-	-	-	-	-	-



ions, The table defines the relative distribution of FMDV lineages in each of the eight *source reg*
data while the figure highlights the importance of these *source regions* for Europe (using
tailor collected at the EU-RL Workshop); please contact WRLFMD EuFMD for assistance to
ased these outputs to other geographical regions. NB: Vaccine-coverage data presented is b
on available data and may under-represent the true performance of individual vaccines.

VI. REFERENCES – Superscripts

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4. Central Veterinary Research and Development Laboratory (CVDRL), Afghanistan - *Dr. Wahidullah* Head of Laboratory.
5. Progressive Control of Foot and Mouth Disease in Pakistan - *Dr. Muhammad Afzal*, Project Coordinator.
6. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (IZLER), OIE/FAO FMD Reference Laboratory
7. National FMD Reference Laboratory, Embakasi, Kenya –*Dr. Kenneth Ketter/Ms Helen Mutua.*
8. FMD Research Centre, Virology Research Department, National Veterinary Research Institute, Vom, Plateau State, Nigeria - *Dr. Ularamu Hussaini*
9. OIE/FAO FMD Reference Laboratory Network, Annual Report 2016
10. Laboratory:Laboratoire National Vétérinaire (LANAVET), Garoua, Cameroon . Dr. Simon Jumbo Dickmu
11. ARC -Onderstepoort Veterinary Institute, Republic of South Africa - *Dr LE Heath/Ms E Kirkbride*
12. FMD Situation in SEACFMD Countries 2015-2016; presentation at the The 23rd SEACFMD Sub-Commission Meeting 9-10 March 2017, Siem Reap, Cambodia, http://www.rr-asia.oie.int/fileadmin/sub_regional_representation/sub_regional_programme/seacfmd/SEACFMD_Activities/sub_com/23nd_Meeting__2017_/presentations/1.3_Regional_FMD_situation.pdfhttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/
13. Islam, M. S., et al. "Distribution of foot and mouth disease virus serotypes in cattle of Bangladesh." SAARC Journal of Agriculture 15.1 (2017): 33-42. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/ and neighbouring countries (A lineage).
14. http://www.fao.org/ag/againfo/commissions/eufmd/commissions/eufmd-home/reports/westeurasia-roadmap/en/
15. Ibrahim Eldaghayes et al. Exploiting serological data to understand the epidemiology of foot-and-mouth disease virus serotypes circulating in Libya Open Vet J. 2017; 7(1): 1–11, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5283054/
16. OIE/FAO FMD Reference Laboratory Network, Annual Report 2017

VII. Annex

The estimates of the relative prevalence of serotypes and strains presented in the Tables below are based on the best data available to us and we are always trying to improve them. The accuracy of these estimates is only as good as the level of surveillance and reporting permits. Readers with relevant data or information are encouraged to contact EuFMD so that it can be included in the report.

In this report, the N. African countries of Morocco, Algeria, Tunisia and Libya considered together as a separate group, as the epidemiological situation is distinct and of interest to risk managers.

Description of methods

How to interpret the estimates of the relative prevalence of serotypes and strains:

If 100 animals that had been infected with FMD virus in the last 12 months were randomly selected from a country or virus pool:

1. How many animals would be infected with each serotype?
2. Within each serotype, how many would be infected with each virus strain?

Pool-level estimates and assumptions:

As the data required to calculate the relative prevalence of serotypes and strains are not directly available in most countries, they were estimated in 3 steps as follows:

1. First, each country in the pool is assigned a weight according to the number of animals infected with FMD each year:

$$weight_{country\ 1} = \frac{(FMD\ incidence * susceptible\ population)_{country1}}{\sum_{country\ 1}^{country\ n}(FMD\ incidence * susceptible\ population)}$$

   The expected FMD incidence was based on the paper by Sumption *et al* 2008 as follows: i) Low/Sporadic: 0.029 new infections per 1000 animals/year; ii) Medium: 0.458 new infections per 1000 animals/year; iii) High: 1.759 new infections per 1000 animals/year.

   The susceptible livestock population is the sum of sheep, goat, cattle, buffalo and pig populations from FAOStat.

2. For each country, the relative prevalence (RP) of each FMD serotype and strains within serotype is specified for all countries where FMD is believed to circulate endemically. First, the relative prevalence of each serotype is specified by dividing 100 points according to the serotypes that would be represented if 100 animals infected with FMDV in the previous year were randomly selected from the country. Subsequently, the relative prevalence of each serotype is broken down to reflect the distribution of circulating strains within each serotype.

   - If no information is available for a given country, then the circulating serotypes and strains are inferred from the neighbouring countries.
   - If there is only information about presence of serotypes and/or strains, but no data on the relative prevalence, then it is assumed that the serotypes/strains are circulating in equal prevalence.
   - When available, data from the last 24 months are considered, otherwise the most recent data available are used as well as the current situation in the region.
   - In the absence of reporting, a country is considered infected until it (re)gains recognition of freedom from the OIE

3. Data from steps 1 and 2 are combined at pool level according to the following formula:

$$relative\ prevalence_{serotype\ or\ strain} = \sum_{country\ 1}^{country\ n} \left(weight_{country} * RP_{serotype\ or\ strain}\right)$$

Similarly to what is described above are the criteria adopted for the categorization of the level of uncertainty relative to the FMD epidemiological situation defined for each country:

High: There has been little or no reporting of laboratory results (serotype and/or molecular characteristics) from this country within the last 24 months. The serotype/strain distribution is based on inferences from the situation in neighbouring countries;

Medium: There is some information available about the circulating serotypes and/or strains, but from a low number of samples and/or not representative of entire country or different sectors and/or not from the past 24 months;

Low: There is reliable information available about the circulating serotypes and/or strains, obtained from analysis of a large number of samples that represent the country's livestock population.

Legend of icons in the following tables

●	>=95%
◕	>=60%
◑	>=30%
◔	>=5%
○	<5%
	no strain circulating

Table 14: Conjectured circulating FMD viral lineages in each country of Pool 1 (current to August 2019).

			Presumed serotype distribution within country			Presumed viral lineage distribution within country								
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	**A**	**Asia1**	**O**	**A/ASIA/SEA-97**	**ASIA1/ unnamed**	**O/ME-SA/Ind-2001**	**O/SEA/Mya-98**	**O/ME-SA/PanAsia**	**O/ME-SA/PanAsia2**	**O/CATHAY**	**Uncertainty on circulating serotypes**	**Reference**
CAMBODIA	Aug 2018/O, Aug 2016/ A	high	◑		◑	◑				◑			medium	1
CHINA	July 2019/O, May 2017/A	high	◔		◕	◔		◔	◔	◔		◔	medium	1
CHINA (HONG KONG, SAR)	May 2019/O	high			●							●	medium	1
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	Dec 2016/O	high	◑		◕	◑		◕					high	as per REPUBLIC OF KOREA (SOUTH KOREA)
LAO PEOPLE'S DEMOCRATIC REPUBLIC (LAOS)	Dec 2018/A & O	high	◔		◕	◔			◕	◔			medium	1
MALAYSIA	May 2018/O, August 2016/A	medium			●					●			medium	1
MONGOLIA	Jun 2018/O, Sept 2016/A	medium			●			◑	◑	◑			medium	1
MYANMAR	Dec 2018/O, April 2017/Asia 1, Oct 2015/A	high	◔	◔	◕	◔	◔	◑			◑		medium	1, 12
REPUBLIC OF KOREA (SOUTH KOREA)	Jan 2019/O, April 2018/A	low/sporadic	◑		◕	◑		◕					low	1
RUSSIAN FEDERATION	March 2019/O, Oct 2016/Asia 1, Jan 2016/ A	low/sporadic			●			◑	◑	◑			medium	1
TAIWAN PROVINCE OF CHINA	Jun 2015/A	low/sporadic			●							●	high	as per HONG KONG
THAILAND	Oct 2018 /A & O	high	◔		◕	◔		◔	◔	◔			medium	1
VIETNAM	Jan 2019/O, November 2017/A and not typed	high	◑		◕	◑		◔	◑	◔		◔	medium	1

Table 15: Conjectured circulating FMD viral lineages in each country of Pool 2 (current to August 2019).

			Presumed serotype distribution within country			Presumed viral lineage distribution within country				
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	A	Asia1	O	A/ASIA/G-VII	ASIA1/ unnamed	O/ME-SA/Ind-2001	**Uncertainty on circulating serotypes**	**Reference**
BANGLADESH	Jun 2018/A, ASIA 1 and O	high	◔	◔	◕	◔	◔	◕	high	13
BHUTAN	Jan 2019/O, Dec 2017/A	high	◔		◕	◔		◕	medium	1
INDIA	July 2019/O, Apr 2015/A, ASIA 1	high	○		●	○		●	medium	1
NEPAL	June 2019/O, Mar 2018/Asia 1, April 2017/A	high			●			●	medium	1
SRI LANKA	Dec 2018/O	high			●			●	medium	1

Table 16: Conjectured circulating FMD viral lineages in each country of Pool 3 –West Eurasia (current to August 2019).

			Presumed serotype distribution within country			Presumed viral lineage distribution within country									
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	A	Asia1	O	sat2	A/ASIA/G-VII	A/ASIA/Iran-05	ASIA1/ASIA/Sindh-08	O/ME-SA/Ind-2001	O/ME-SA/PanAsia2	O/EA-3	SAT2	**Uncertainty on circulating strains**	**reference**
AFGHANISTAN	Aug 2019/O & Asia 1, Juy 2019/A	high	◑	◔	◑			◑	◔		◑			medium	4
ARMENIA	Dec 2015/A	low/sporadic	◔		◕		◔				◕			high	14
AZERBAIJAN	2007/0	low/sporadic	◑	◔	◑		◔	◑	◔		◑			high	as per Iran
BAHRAIN	Mar 2015/O	low/sporadic	◕		◑		◕			◔	◔			high	as per Saudi Arabia
GEORGIA	2001/ASIA 1	low/sporadic	◔		◕		◔				◕			high	as per Turkey
IRAN, ISLAMIC REPUBLIC OF	Dec 2018/A, Asia 1& O,	high	◑	◔	◑		◔	◑	◔		◑			medium	1
IRAQ	Dec 2018/O, Dec 2016/A	high	◑	◔	◑		◔	◑	◔		◑			high	as per Iran
ISRAEL	May 2019/O, June2017/A	low/sporadic	◔		◕		◔				◑	◔		low	1
JORDAN	Mar 2017/O	low/sporadic	◕		◑		◕			◔	◔			high	1, as per Saudi
KUWAIT	April 2016/O	high	◕		◑		◕			◔	◔			high	1, as per Saudi
KYRGYZSTAN	Sep 2014/A, O	low/sporadic	◔	◕	◔			◔	◕		◔			high	as per Pakistan
LEBANON	2010/not typed	low/sporadic	◔		◕		◔				◕			high	as per Turkey
OMAN	Dec 2018/O, May 2015/SAT 2	high			◑	◑				◔	◔		◑	high	1
PAKISTAN	Aug 2019/ A, Asia 1 & O	high	◔	◕	◔			◔	◕	◔	◔			medium	1
PALESTINE	Mar 2019/Untyped, Dec 2017/O, Mar 2013/Sat 2	low/sporadic			●							●		medium	1
QATAR	Dec 2018/O, Oct 2017/A	low/sporadic	◕		◑		◕			◔	◔			high	as per Saudi Arabia
SAUDI ARABIA	Dec 2018/O & Jun 2018/A	high	◕		◑		◕			◔	◔			high	1
SYRIAN ARAB REPUBLIC (SYRIA)	2002/ A & O	high	◔		◕		◔				◕			high	as per Turkey
TAJIKISTAN	Nov 2013/ not typed	low/sporadic	◔	◕	◔			◔	◕		◔			high	as per Pakistan
TURKEY	April 2019/O, Oct 2017/A, May 2015/ Asia 1	high	◔		◕		◔				◕			medium	1
TURKMENISTAN	Not available	low/sporadic	◑	◔	◑		◔	◑	◔		◑			high	as per Iran
UNITED ARAB EMIRATES	Jan 2018/O	low/sporadic	◕		◑		◕			◔	◔			high	as per Saudi Arabia
UZBEKISTAN	Not available	low/sporadic	◑	◔	◑		◔	◑	◔		◑			high	as per Iran

Table 17: Conjectured circulating FMD viral lineages in each country of Pool 3 - North Africa (current to August 2019).

			Presumed serotype distribution within country			Presumed viral lineage distribution within country				
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	**A**	**O**	**SAT 2**	**A/AFRICA**	**O/EA-3**	**SAT 2**	**Uncertainty on circulating serotypes**	**Reference**
ALGERIA	Mar 2019/O, Nov 2016/A, Jun 2016/Sat 2	medium	◑	◕		◑	◕		medium	1
EGYPT	Nov 2018/Sat 2, Feb 2018/A April 2017/O	high	◔	◔	◕	◔	◔	◕	medium	1
LIBYA	June 2019/O	high	◔	◔	◕	◔	◔	◕	high	15, as per egypt
MOROCCO	July 2019/O	low/sporadic		●			●		medium	1
TUNISIA	Feb 2019/O, April 2017/A	low/sporadic	◔	◕		◑	◕		medium	1

Table 18: Conjectured circulating FMD viral lineages in each country of Pool 4 (current to August 2019).

			Presumed serotype distribution within country					Presumed viral lineage distribution within country							
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	**A**	**O**	**sat1**	**sat2**	**sat3**	**A/AFRICA**	**O/EA-2**	**O/EA-3**	**SAT1**	**SAT2**	**SAT3**	**Uncertainty on circulating serotypes**	**Reference**
BURUNDI	Dec 2017 / not available	high	◑	◔	◔	◔		◑		◔	◔	◔		high	as per Tanzania
COMOROS	March 2019/O	high		●					●					high	no data
DJIBOUTI	Not available	high	◔	◕	◔		○	◔		◕	◔		○	high	as per Ethiopia
ERITREA	Oct 2018/not reported	high	◔	◕	◔		○	◔		◕	◔		○	high	as per Ethiopia
ETHIOPIA	April 2019/A, O &SAT 2, Feb 2018/SAT 1	high	◔	◕	◔		○	◔		◕	◔		○	medium	1
KENYA	Aug 2019/O & SAT 2, May 2018/ SAT 1 , July 2019/A	high	◔	◕	◔	◔		◔	◕		◔	◔		medium	1
RWANDA	Oct 2018/ A, O , SAT 1 & Sat 2	high	◔	◕	◔	◔		◔	◕		◔	◔		high	as per Kenya
SOMALIA	June 2018/not reported	high	◔	◕	◔		○	◔		◕	◔		○	high	as per Ethiopia
SOUTH SUDAN	June 2017/O & SAT 2, Mar 2018/A Dec 2018/ not sampled	high		●						●				high	1
SUDAN	Dec 2018/ not sampled, May 2017/O	high	◑	◔		◔		◑		◔		◔		medium	1
TANZANIA, UNITED REPUBLIC OF	Dec2018/O, Nov2018/ A & SAT 2, Sep 2018/SAT 1	high	◑	◔	◔	◔		◑		◔	◔	◔		high	1
UGANDA	Feb 2019/A & O, July 2017/SAT1, Jan 2015/SAT 3, July 2015/ SAT 2	high	◑	◑	◔	◔		◑	◑		◔	◔		high	1, as per Kenya
YEMEN	Dec 2016/not sampled	high	◔	◕	◔		○	◔		◕	◔		○	high	as per Ethiopia

Table 19: Conjectured circulating FMD viral lineages in each country of Pool 5 (current to August 2019).

			Presumed serotype distribution within country				Presumed viral lineage distribution within country					
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	**A**	**O**	**sat1**	**sat2**	**A/AFRICA**	**O/EA-3**	**SAT1**	**SAT2**	**Uncertainty on circulating serotypes**	**Reference**
BENIN	Dec 2017/O, SAT 1 &SAT 2, Apr 2017/A	high	◔	◔	◔	◔	◔	◔	◔	◔	high	2
BURKINA FASO	Dec 2018/not sampled, Aug2018/O	high	◑	◑		◑	◑	◑		◑	medium	2, as per Mali
CAMEROON	Dec 2019/untyped, Nov 2014/O, SAT 2, May 2014/SAT 1, Apr 2014/ A	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
CAPE VERDE	Not available	low/sporadic		●				●			high	as per Senegal
CENTRAL AFRICAN REPUBLIC	Not available	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
CHAD	Dec 2018/Not sampled	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
CONGO	Not available	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
CONGO, DEMOCRATIC REPUBLIC OF	Jun 2018/A, O & Sat 1	high	◑	◑	◑		◑	◑	◑		high	2
COTE D'IVOIRE	Jun 2018/O	high		●				●			high	2, as per Guinea
EQUATORIAL GUINEA	Jun 2015/Disease suspected	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
GABON	Not available	high	◑	◑		◔	◑	◑		◔	high	
GAMBIA	Dec 2018/O	high		●				●			medium	2
GHANA	Dec 2018/SAT 2, Sep 2018/ O	high		◑		◑		◑		◑	high	1
GUINEA	Dec 2018/O	high		●				●			medium	2
GUINEA-BISSAU	Dec 2018/O	high		●				●			high	as per Guinea
LIBERIA	Not available	high		●				●			high	as per Guinea
MALI	Oct 2018/O, Jun 2018/A & SAT	high	◑	◑		◑	◑	◑		◑	high	2
MAURITANIA	Aug 2018/O, Dec 2014/SAT 2	high				●				●	medium	1
NIGER	Dec 2015/O	high	◑	◑		◔	◑	◑		◔	high	as per Nigeria
NIGERIA	June 2019/A, Sep 2018/O &Sat 2, Sept 2016/ SAT 1	high	◑	◑		◔	◑	◑		◔	high	1, 17
SAO TOME AND PRINCIPE	Not available	0									high	no data available
SENEGAL	Nov 2018/A, O & Sat 2, Jun 2018/ Sat 1	high		●				●			medium	1
SIERRA LEONE	Aug 2018/O	high		●				●			medium	as per Senegal
TOGO	Dec 2017/ not sampled, Dec 2016/ O & Sat 1	high	◑	◑		◔	◑	◑		◔	high	2, as per Nigeria

Table20: Conjectured circulating FMD viral lineages in each country of Pool 6 (current to August 2019).

			Presumed serotype distribution within country					Presumed viral lineage distribution within country						
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	**A**	O	SAT1	SAT2	SAT3	A/AFRICA	O/EA-2	SAT1	SAT2	SAT3	**Uncertainty on circulating serotypes**	**Reference**
ANGOLA	April 2016/SAT 2	high		◑	◔	○	◔		◑	◔	○	◔	high	as per Zambia
BOTSWANA	June 2018/SAT 2, Aug 2015/SAT 1	medium				●					●		medium	1
MALAWI	Apr 2019/A, SAT 2, June 2016/SAT 1	medium	◔		◔	◔		◔		◔	◔		high	1
MOZAMBIQUE	May 2019/ Typing pending, Oct 2017/SAT 2, May 2015/ SAT 1	high				◕	○				◕	○	high	1
NAMIBIA	Aug 2019/typing pending, Sep 2017/SAT 2, May 2015/SAT 1	medium			◑	◑				◑	◑		high	1
SOUTH AFRICA	Jan 2019/SAT 2, Oct 2017/SAT 1, Dec 2015/SAT 3	medium			○	◕				○	◕		high	1
ZAMBIA	Jun 2019/O, Apr 2019/SAT 2,Feb 2019/ A, May 2017/SAT 3, Jan 2013/SAT 1	medium	○	◑	○	○	◔	○	◑	○	○	◔	medium	1
ZIMBABWE	Jun 2019/SAT 2, April 2019/SAT 1, Jun 2013/SAT 3	high			◑	◑				◑	◑		medium	1, 2

Table 21: Conjectured circulating FMD viral lineages in each country of Pool 7 (current to August 2019).

			Presumed serotype distribution within country		Presumed viral lineage distribution within country			
Country	**Last Outbreak Repoted/Serotype#**	**FMD incidence rate**	A	O	A/Euro SA	O/Euro-SA	**Uncertainty on circulating serotypes**	**Reference**
VENEZUELA	Oct 2018/O	medium	◑	◑	◑	◑	high	9
COLUMBIA	2011/O, 2013/A	medium		●		●	medium	2

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