



Food and Agriculture  
Organization of the  
United Nations

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

# GLOBAL Monthly Report

## Foot-and-Mouth Disease

Foot-and-Mouth Disease Situation | 2019 | April



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

**April 2019**

**MAIN INFORMATION SOURCES USED:**

\_\_\_\_\_

\_\_\_\_\_

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.*

Required citation:

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## CONTENTS

**Please note that the report contains hyperlinks**

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**I. HIGHLIGHTS**

Empty rectangular box for highlights.

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**Actions to Outbreaks and Emerging FMD Serotypes"**

**"Response**

## II. GENERAL OVERVIEW

Pools represent independently circulating and evolving 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:

POOL	REGION/COUNTRIES – colour pools as in Map	SEROTYPES
1	<u>SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA</u>	A, Asia 1 and O
2	<u>SOUTH ASIA</u>	A, Asia 1 and O
3	<u>WEST EURASIA &amp; MIDDLE EAST</u>	A, Asia 1 and O (SAT 2)*
	<u>NORTH AFRICA</u>	A, O and SAT 2
4	<u>EASTERN AFRICA</u>	O, A, SAT 1, SAT 2 and SAT 3
5	<u>WEST/CENTRAL AFRICA</u>	O, A, SAT 1 and SAT 2
6	<u>SOUTHERN AFRICA</u>	{O, A}**, SAT 1, SAT 2 and SAT 3
7	<u>SOUTH AMERICA</u>	O and A

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### III. **IN THIS REPORT**

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

China <sup>1</sup> –

#### *POOL 2 - SOUTH ASIA*

Bhutan <sup>2</sup> –

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

Afghanistan <sup>3</sup>

Israel <sup>2</sup>

Pakistan <sup>4</sup> –

Palestine <sup>2</sup>

#### *POOL 3 – NORTH AFRICA*

Algeria<sup>2</sup> –

Egypt <sup>2</sup> –

Morocco <sup>2</sup>

Libya <sup>1</sup>

Tunisia <sup>2</sup> –

#### *POOL 4 - EASTERN AFRICA*

Comoros <sup>1</sup> –

Ethiopia <sup>2, 5</sup>



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Kenya <sup>6</sup>

*POOL 5 - WEST/CENTRAL AFRICA*

Cote d'Ivoire <sup>2</sup>

Ghana <sup>2</sup>

Guinea <sup>2</sup> –

Guinea-Bissau <sup>1</sup>

Mauritania <sup>2</sup>

*POOL 6 - SOUTHERN AFRICA*

Zambia <sup>2</sup>

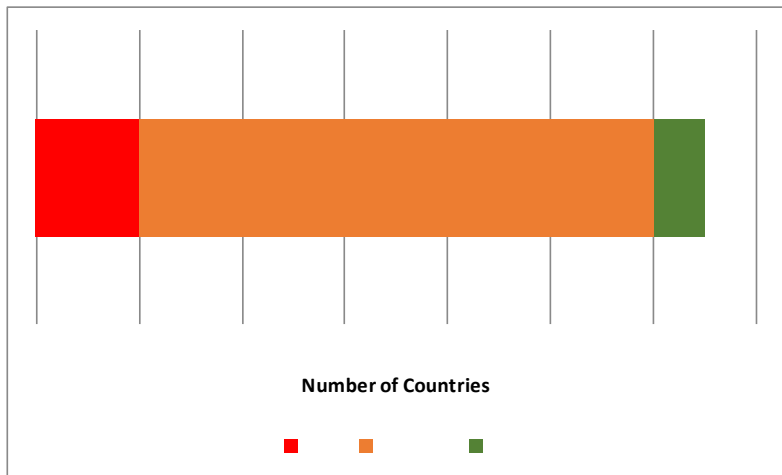
*POOL 7 - SOUTH AMERICA <sup>1,7</sup>*

**COUNTER**

**\*\*\* 177 MONTHS SINCE THE LAST SEROTYPE C OUTBREAK WAS REPORTED**



Graph 2:

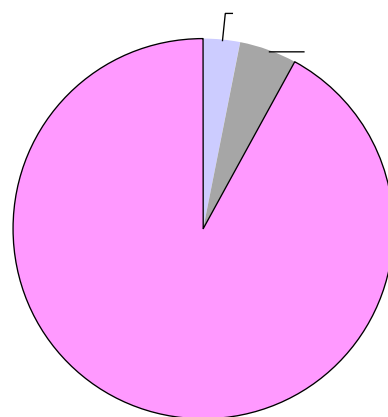


**B. POOL 2 – South Asia**

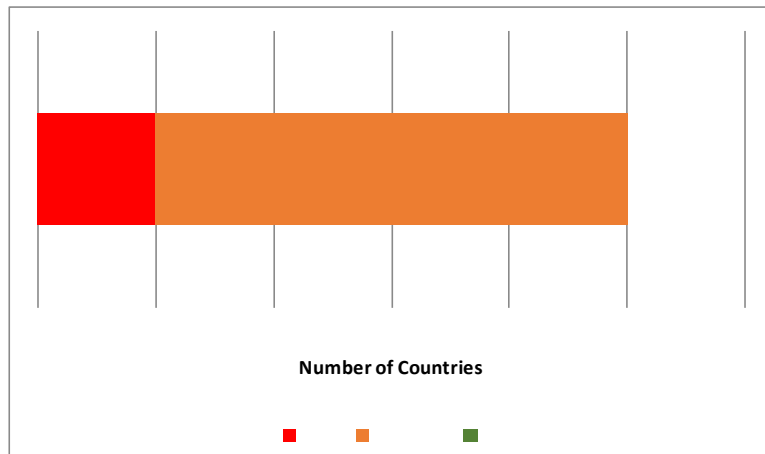
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
<a href="#">Bhutan</a> <sup>2</sup>		
India <sup>9</sup>		

Table 3 and Graph 3:

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 2



Graph 4:



C. POOL 3 – West Eurasia & Middle East

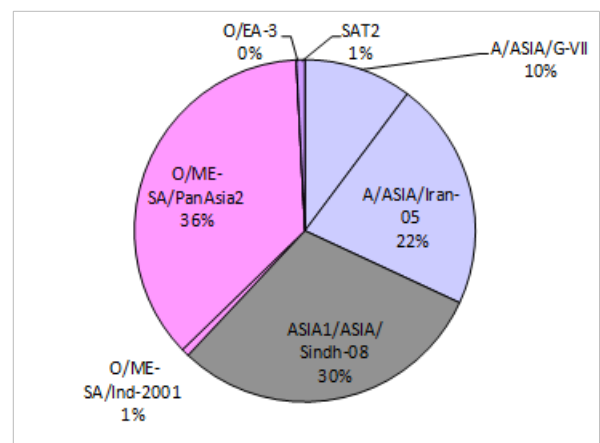
OUTBREAKS	
Country	Description
<p>Serotypes A, ASIA 1 and O in Pakistan<sup>4</sup></p>	<p><i>Interpretation</i></p> <p><b>Map 1</b></p> <p style="text-align: center;"><i>Dr. Muhammad Afzal</i></p>



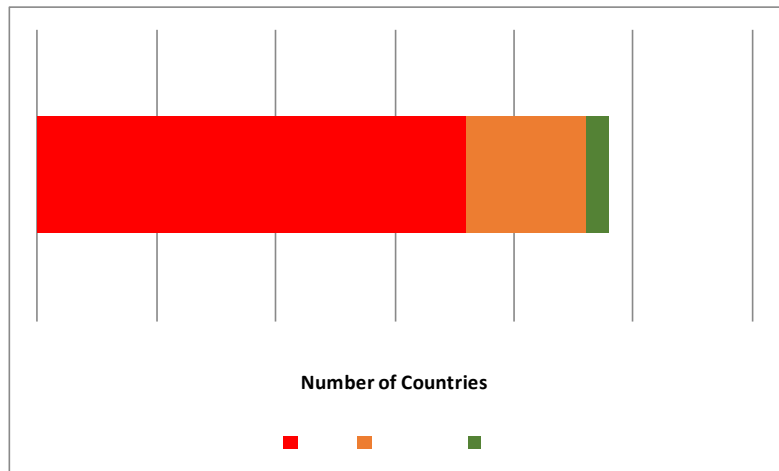
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)																
Country	Activity	Description														
Afghanistan <sup>3</sup>																
Israel <sup>2</sup>																
Palestine <sup>2</sup>																
Pakistan <sup>4</sup>		<table border="1"> <thead> <tr> <th>Province</th> <th>Ring Vaccination (Doses)</th> </tr> </thead> <tbody> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr> <td><b>Total</b></td> <td><b>37,675</b></td> </tr> </tbody> </table>	Province	Ring Vaccination (Doses)											<b>Total</b>	<b>37,675</b>
Province	Ring Vaccination (Doses)															
<b>Total</b>	<b>37,675</b>															

Table 5 and Graph 5

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 24 countries of Pool 3 - West Eurasia



Graph 6:



**D. POOL 3 – North Africa**

OUTBREAKS	
Country	Description
<a href="#">Serotype pending in Libya</a> <sup>1</sup>	
	<i>Interpretation</i>

SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)																											
Country	Activity	Description																									
<a href="#">Algeria</a> <sup>2</sup>		<p><b>Table 6</b></p> <table border="1"> <thead> <tr> <th>Sample Identification</th> <th>Location of origin of sample</th> <th>Host species</th> <th>Date of collection</th> <th>Genotype</th> <th>Most Closely Related Viruses not pertaining to the country- Seq id %</th> <th>Host species</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Sample Identification	Location of origin of sample	Host species	Date of collection	Genotype	Most Closely Related Viruses not pertaining to the country- Seq id %	Host species														
Sample Identification	Location of origin of sample	Host species	Date of collection	Genotype	Most Closely Related Viruses not pertaining to the country- Seq id %	Host species																					





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**Morocco**  
[12](#)

**Map 4**

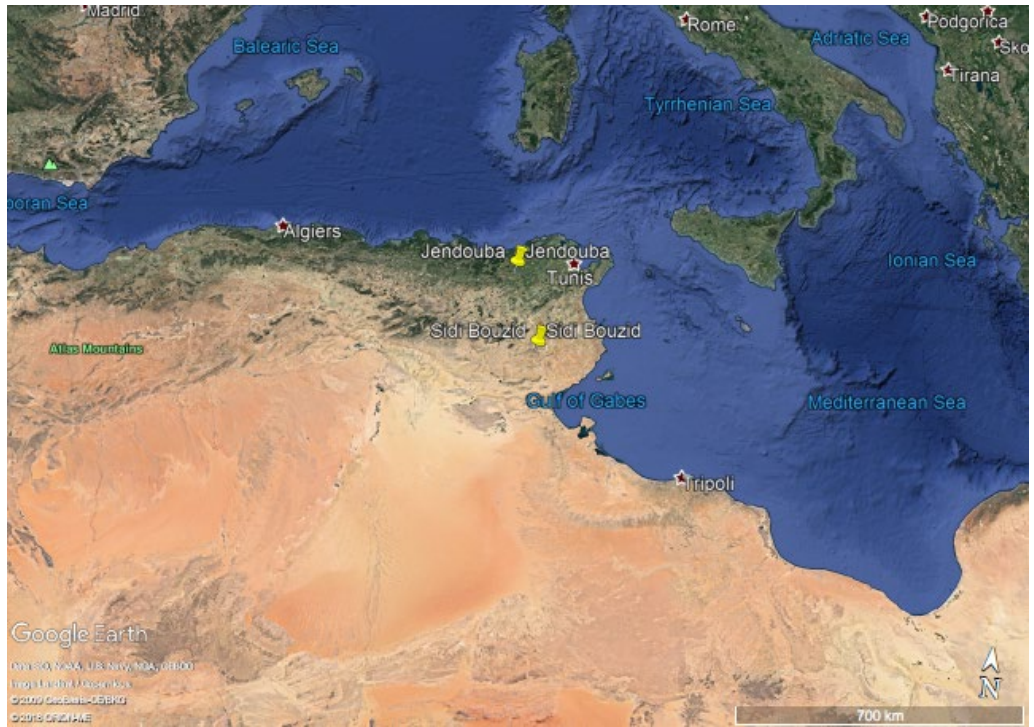


Administrative division	Species	Total Vaccinated	Number of farms
<b>Total</b>		<b>55,500</b>	<b>10,918</b>

[Tunisia](#) <sup>2</sup>

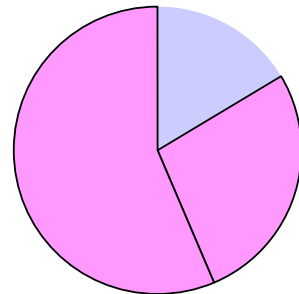
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**Map 5**

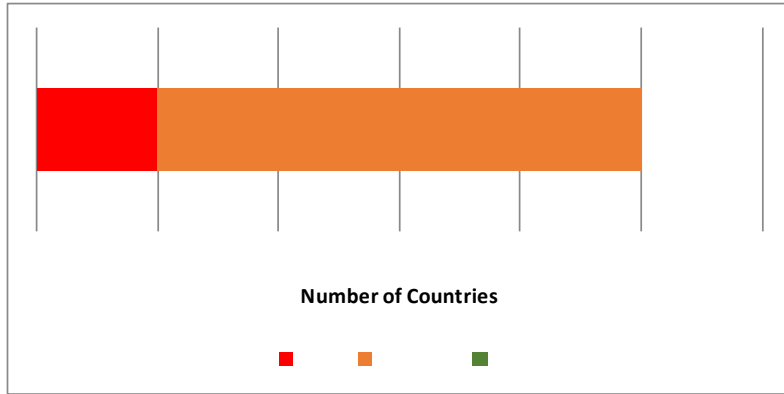


**Table 8 and Graph 7:**

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 5 countries of Pool 3 - North Africa



**Graph 8:**



**E. POOL 4 – Eastern Africa**

OUTBREAKS	
Country	Description
<b>Serotype O in Comoros</b> <a href="#">1</a> , <a href="#">10</a>	<p><i>Interpretation:</i></p> <p>Map 6</p>

Serotypes  
A and  
SAT 2 in  
Ethiopia <sup>5</sup>

*Interpretation:*

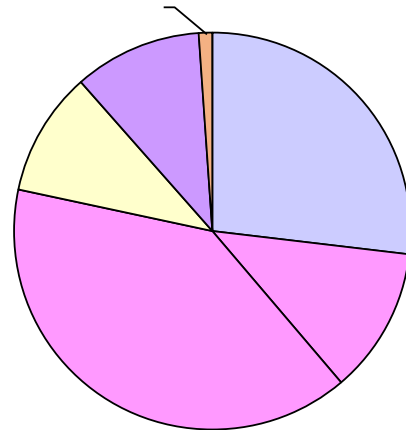
**Map 7**



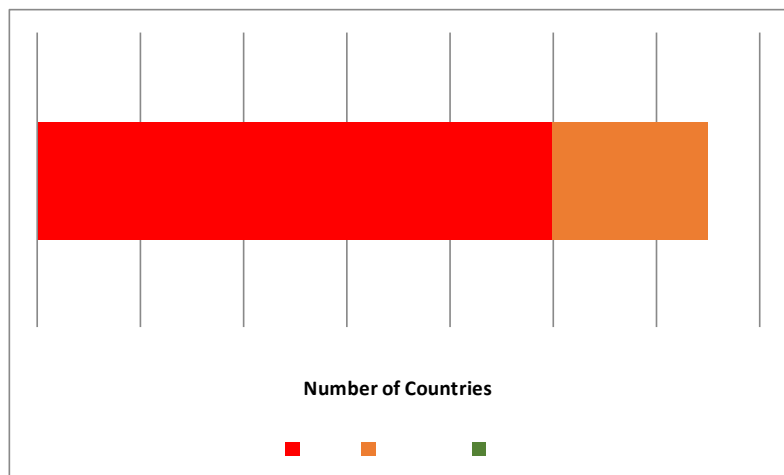
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
Ethiopia <sup>2</sup>		
Kenya <sup>6</sup>		

**Table 9 and Graph 9:**

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 13 countries of Pool 4 - East Africa



**Graph 10:**

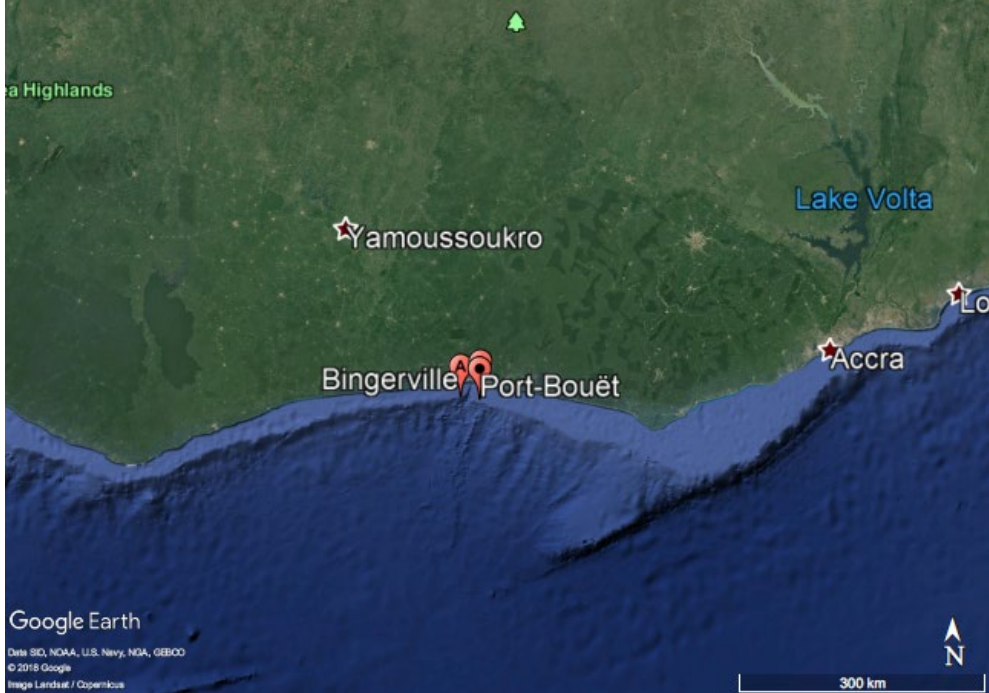


**F. POOL 5 – West / Central Africa**

Country	Description
<a href="#">Serotype O in Guinea-Bissau <sup>1</sup></a>	<hr/> <hr/> <p><i>Interpretation</i></p>
Serotyping pending in Nigeria <sup>11</sup>	

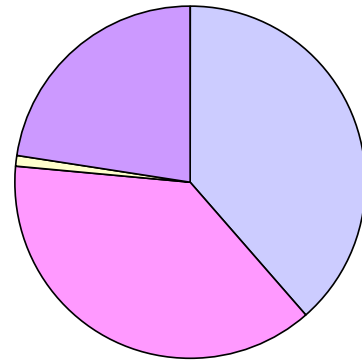
Interpretation

**SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)**

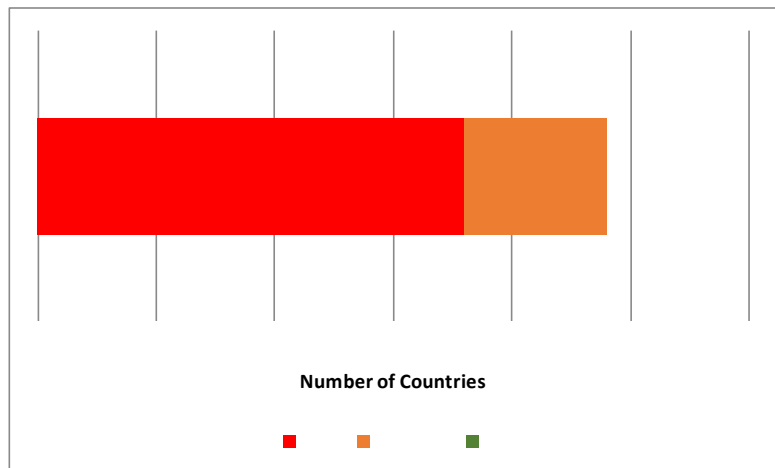
Country	Activity	Description
<a href="#">Cote d'Ivoire</a> <sup>2</sup>		<p><b>Map 8</b></p>  <p>The map shows the coastal region of West Africa. In the north, the 'Cote d'Ivoire Highlands' are visible. The city of Yamoussoukro is marked with a star in the interior. Along the coast, Bingerville and Port-Bouët are marked with red location pins. Further east, Accra is marked with a star. Lake Volta is shown in the northeast. A scale bar at the bottom right indicates 300 km. The Google Earth logo and data sources (SID, NOAA, U.S. Navy, NGA, GEBCO) are visible in the bottom left corner of the map area.</p>
<a href="#">Ghana</a> <sup>2</sup>		
<a href="#">Guinea</a> <sup>2</sup>		
<a href="#">Mauritania</a> <sup>2</sup>		

**Table 10 and Graph 11:**

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 24 countries of Pool 5 - West Africa



**Graph 12:**

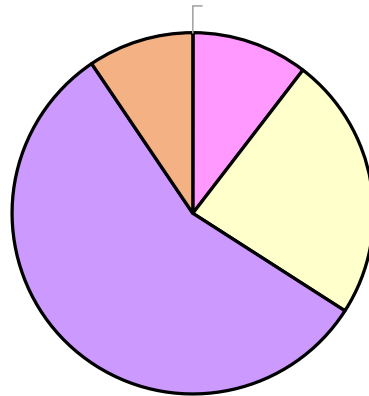


**G. POOL 6 – Southern Africa**

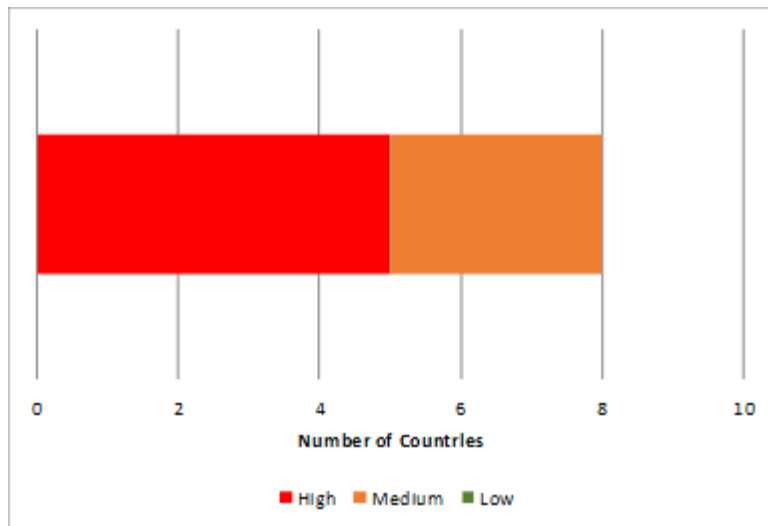
SURVEILLANCE (Surv.), VACCINATION (Vacc.) AND POST VACCINATION MONITORING (PVM)		
Country	Activity	Description
<a href="#">-</a>		
<b>South Africa</b> <small>12</small>		
<a href="#">Zambia</a> <sup>2</sup>		

Table 11 and Graph 13:

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 8 countries of Pool 6 -Southern Africa



Graph 14:

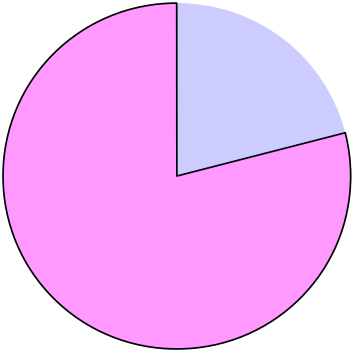




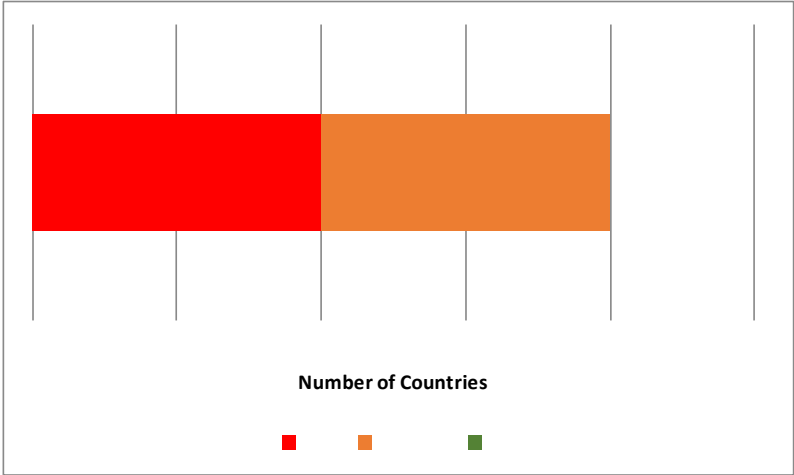
H. POOL 7 – South America

Table 12 and Graph 15:

Serotype	Viral lineage	Number of countries where strain is believed to circulate in the 2 countries of Pool 7 -South America



Graph 16:



## V. OTHER NEWS

### Thailand<sup>17</sup> –

2

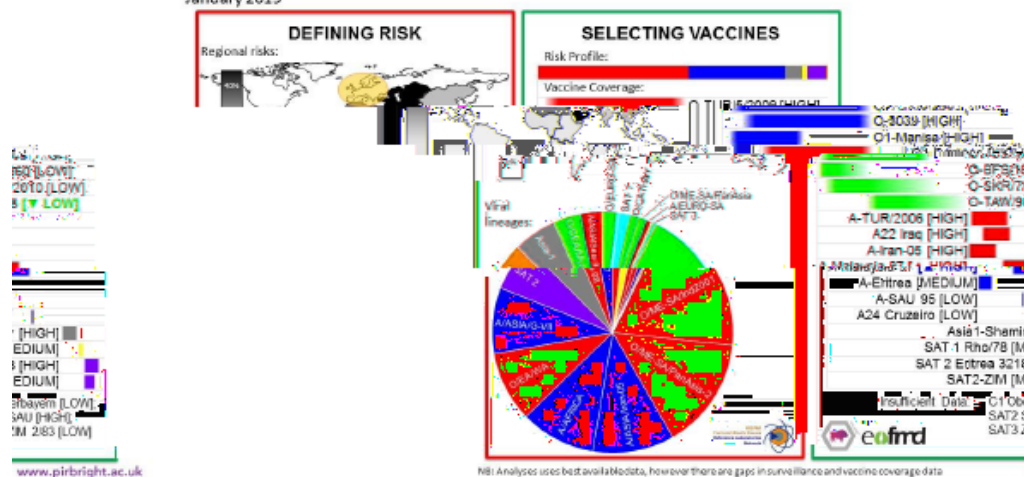
Table 13:

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<sup>®</sup> 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	-	-	-	-	-	-	-	-

### Vaccine Antigen Prioritisation: Europe

January 2019



eight *source regions*, r Europe (using data for assistance to tailor ita presented is based ividual vaccines.

The table defines the relative distribution of FMDV lineages in each of the while the figure highlights the importance of these *source regions* for collected at the EU-RL Workshop); please contact WRLFMD EuFMD for these outputs to other geographical regions. NB: Vaccine-coverage data on available data and may under-represent the true performance of individual

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**VI. REFERENCES – Superscripts**

*Dr. Muhammad Afzal*

*Dr. Wahidullah*

*Dr. Daniel Gizaw*

*Dr. Kenneth Ketter.*

*Dr. S. Kremenchugskaya.*

*Dr. S. Saravanan*

*Dr. Ularamu Hussaini*

*Dr LE Heath/Ms E Kirkbride*

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## VII. Annex

### Description of methods

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

2.

Pool-level estimates and assumptions:

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

*et al*

- 
- 
- 
-

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

**Uncertainty relative to the prevalence of circulating serotypes/strains**

**High**

**Medium**

**Low**

**Legend of icons in the following tables**



	
	
	
	
	

Table 14:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country						Uncertainty on circulating serotypes/strains	Reference	
			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
			●		●	●				●				
			●		●	●		●	●	●		●		
					●							●		
			●		●	●		●						
			●		●	●			●	●				
					●					●				
					●			●	●	●				
			●	●	●	●	●	●			●			
			●		●	●		●						
					●			●	●	●				
					●							●		
			●		●	●		●	●	●				
			●		●	●		●	●	●		●		

Table 15:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country			Uncertainty on circulating serotypes/strains	Reference
			Light Blue	Grey	Pink	Light Blue	Grey	Pink		
			●	●	●	●	●	●		
			●		●	●		●		
				○	●		○	●		
			●	●	●	●	●	●		
					●			●		

Table 16:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country								Uncertainty on circulating serotypes/strains	reference	
			1	2	3	4	5	6	7	8	9	10	11			12
			●	●	●			●	●			●				
			●		●		●					●				
			●	●	●		●	●	●		●					
			●		●		●			●	●					
			●	●	●		●	●	●		●					
			●		●		●				●		●			
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
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			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					
			●	●	●		●	●	●	●	●					
			●		●		●			●	●					



Table 17:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country			Presumed viral lineage distribution within country			Uncertainty on circulating serotypes/strains	Reference
			A	O	SAT 2	A/AFRICA	O/EA-3	SAT 2		
			●	●		●	●			
			●	●	●	●	●	●		
			●	●	●	●	●	●		
				●			●			
			●	●		●	●			

Table 18:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country					Presumed viral lineage distribution within country					Uncertainty on circulating serotypes/strains	Reference	
			A	O	sat1	sat2	sat3	A/AFRICA	O/EA-2	O/EA-3	SAT1	SAT2			SAT3
			●	●	●	●		●		●	●	●			
				●					●						
			●	●	●		○	●		●	●		○		
			●	●	●		○	●		●	●		○		
			●	●	●	●		●	●		●	●			
			●	●	●	●		●	●		●	●			
			●	●	●		○	●		●	●		○		
				●						●					
			●	●		●		●		●		●			
			●	●	●	●		●		●	●				
			●	●	●	●		●	●		●	●			
			●	●	●		○	●		●	●		○		



Table 20:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country					Presumed viral lineage distribution within country					Uncertainty on circulating serotypes/strains	Reference
			A											
				●	●	○	●		●	●	○	●		
						●					●			
					●	●				●	●			
						●	○				●	○		
					●	●				●	●			
						○	●			○	●			
			○	●	○	○	○	●	○	●	○	○	●	
					●	●				●	●			

Table 21:

Country	Last Outbreak Reported/Serotype#	FMD incidence rate	Presumed serotype distribution within country		Presumed viral lineage distribution within country		Uncertainty on circulating serotypes/strains	Reference
			●	●	●	●		
				●		●		



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