



OIE/FAO
Foot-and-Mouth Disease
Reference Laboratories
Network



An update on the recent global FMD situation

(risks of FMD from a global perspective
and the ongoing research activities at WRLFMD)

Donald King

FAO World Reference Laboratory for FMD and OIE Reference Laboratory

Acknowledgements: Valerie Mioulet, Anna Ludi, Nick Knowles, Ginette Wilsden, Abid Bin-Tarif, Hayley Hicks, Lissie Henry, Alex Gidley, Andrew Shaw, Antonello Di Nardo, Ashley Gray, Beth Johns, Mark Henstock, Jemma Wadsworth, Clare Browning, Britta Wood, Natasha Edwards, David Paton, Dexter Wiseman, Julie Maryan, Sarah Belgrave



Department
for Environment
Food & Rural Affairs



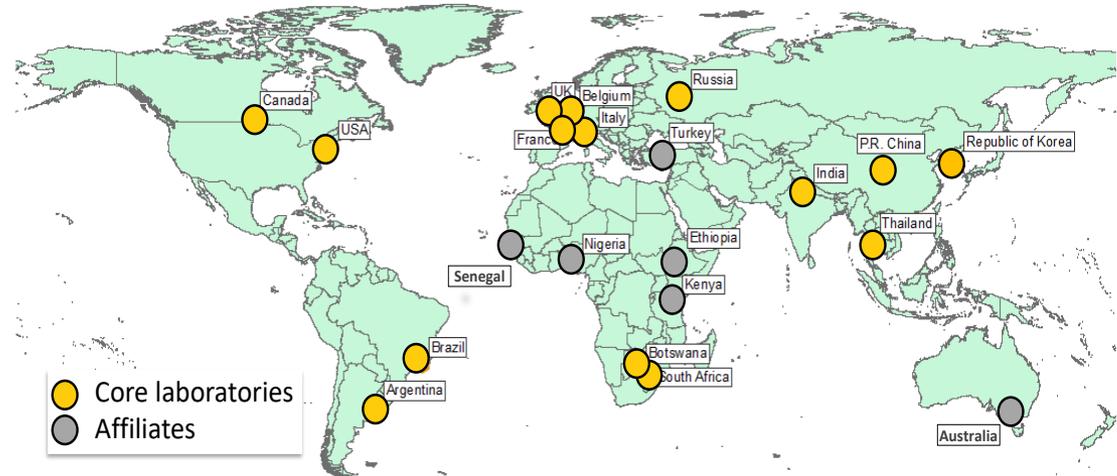
OIE/FAO FMD Laboratory Network

www.foot-and-mouth.org



Network Members and affiliates:

New member: Wageningen Bioveterinary Research (WBVR), The Netherlands as FAO Reference Centre for FMD



Core activities:

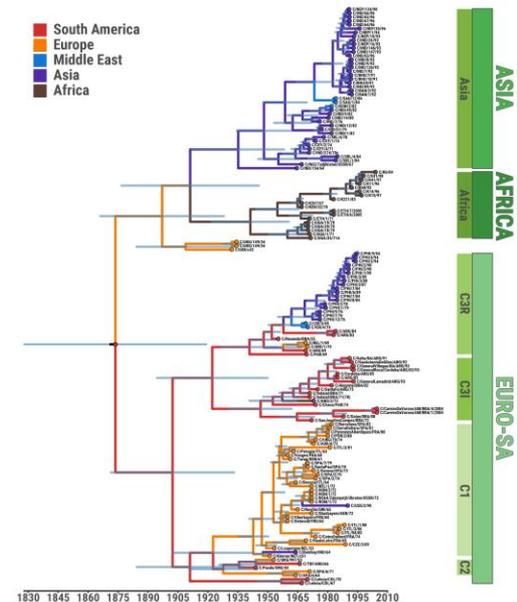
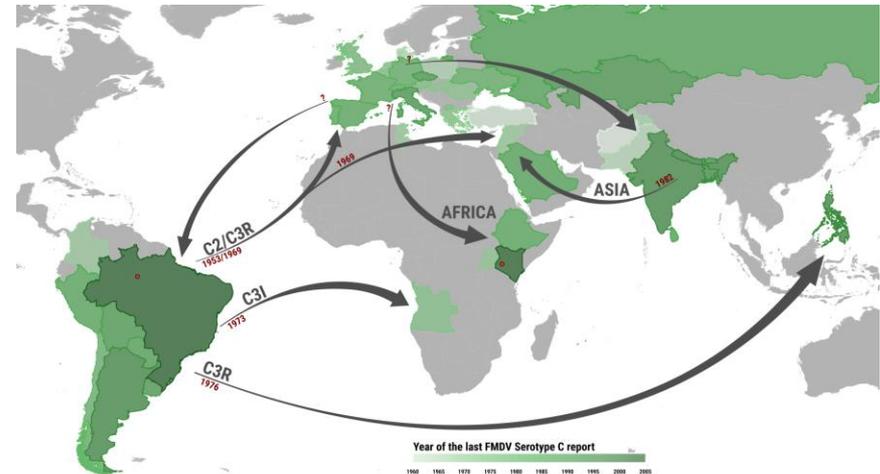
- Collation and exchange of data
- Test improvement and harmonization
- **Understanding FMD epidemiology and the changing pattern of risk**



Network "virtual format" with >70 participants – December 2020

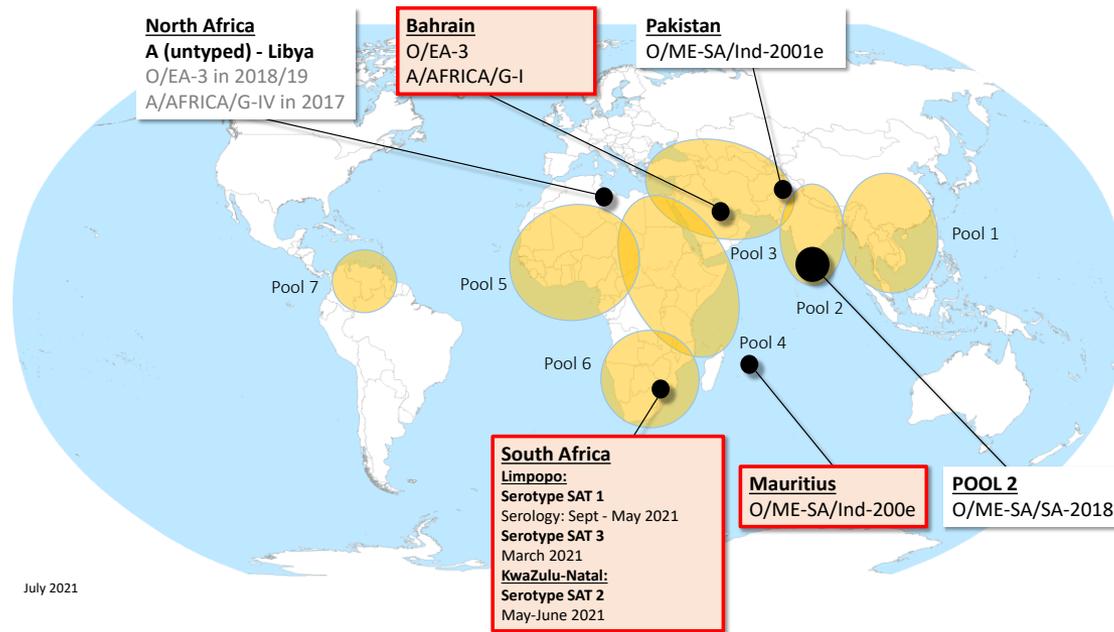
Extinction of serotype C?

- No serotype C outbreaks recorded since 2004 (Kenya and Brazil)
- Network motivated a resolution that was endorsed by the OIE General Session (2017)
- Recommendations regarding future use of live FMDV strains in research and FMD vaccine development
- New paper describes origins, historical distribution and disappearance of this serotype



Paton and Di Nardo et al. 2021) The history of foot-and-mouth disease virus serotype C: the first known extinct serotype? *Virus Evolution* (IN PRESS)

Recent global events (2020-21)



Mauritius

- Ind-2001e outbreaks during March 2021
- Distinct to the FMD viruses associated with cases in 2016

Bahrain

- Imported animals from East Africa
- O/EA-3 and A/AFRICA/G-I

South Africa

- Outbreaks due to SAT 1, SAT 2 and SAT 3

Pool 1: Status in 2021

Characterisation of different FMD virus lineages



Based on data from WRLFMD, RRLSEA and the OIE/FAO Lab Network

Country (date of last shipment to WRLFMD)	O					A		Asia-1
	ME-SA/Ind-2001	SEA / Mya-98	CATHAY	ME-SA / PanAsia	ME-SA / PanAsia-2	ASIA / Sea-97	ASIA/Ind	
Cambodia (2017)		2016		2018		2016		
Laos (2018)	2020	2017		2018		2018		
Malaysia (2018)	2021	2016	2005	2020	2009	2014		
Myanmar (2019)	2019	2019				2019	2010	2017
Thailand (2019)	2020	2018	2012	2019		2019		
Vietnam (2021)	2021	2019	2018	2018		2017		2006
PR China (2020)	2019	2020	2019	2019		2019		2009
Mongolia (2019)	2018	2018		2017		2015		

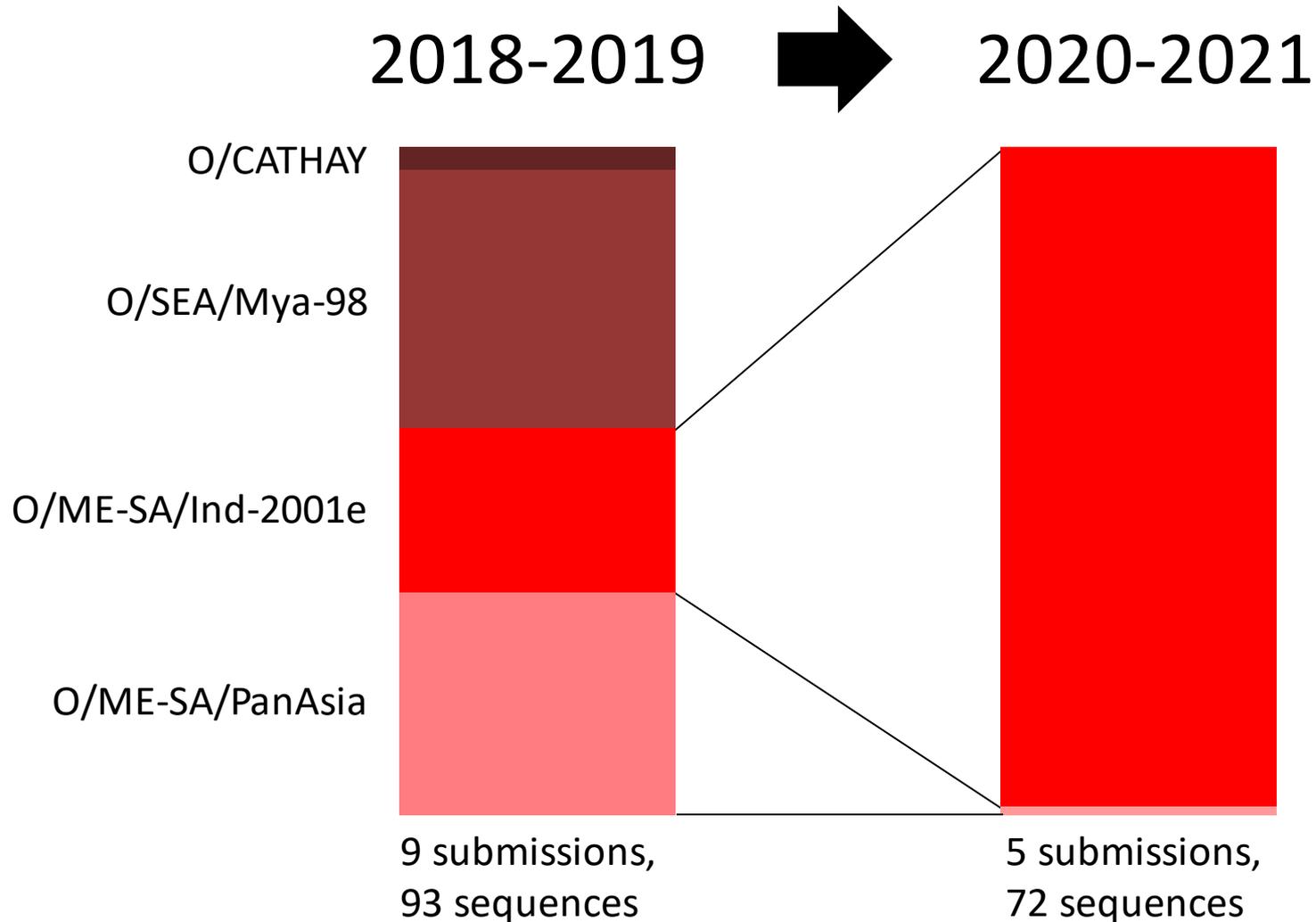
Is this the true picture of FMD in SEACFMD countries?

..... or does under-sampling bias our understanding of the epidemiology of the disease?

Increasing dominance of O/ME-SA/Ind-2001e

Serotype O data for countries in mainland SEA:

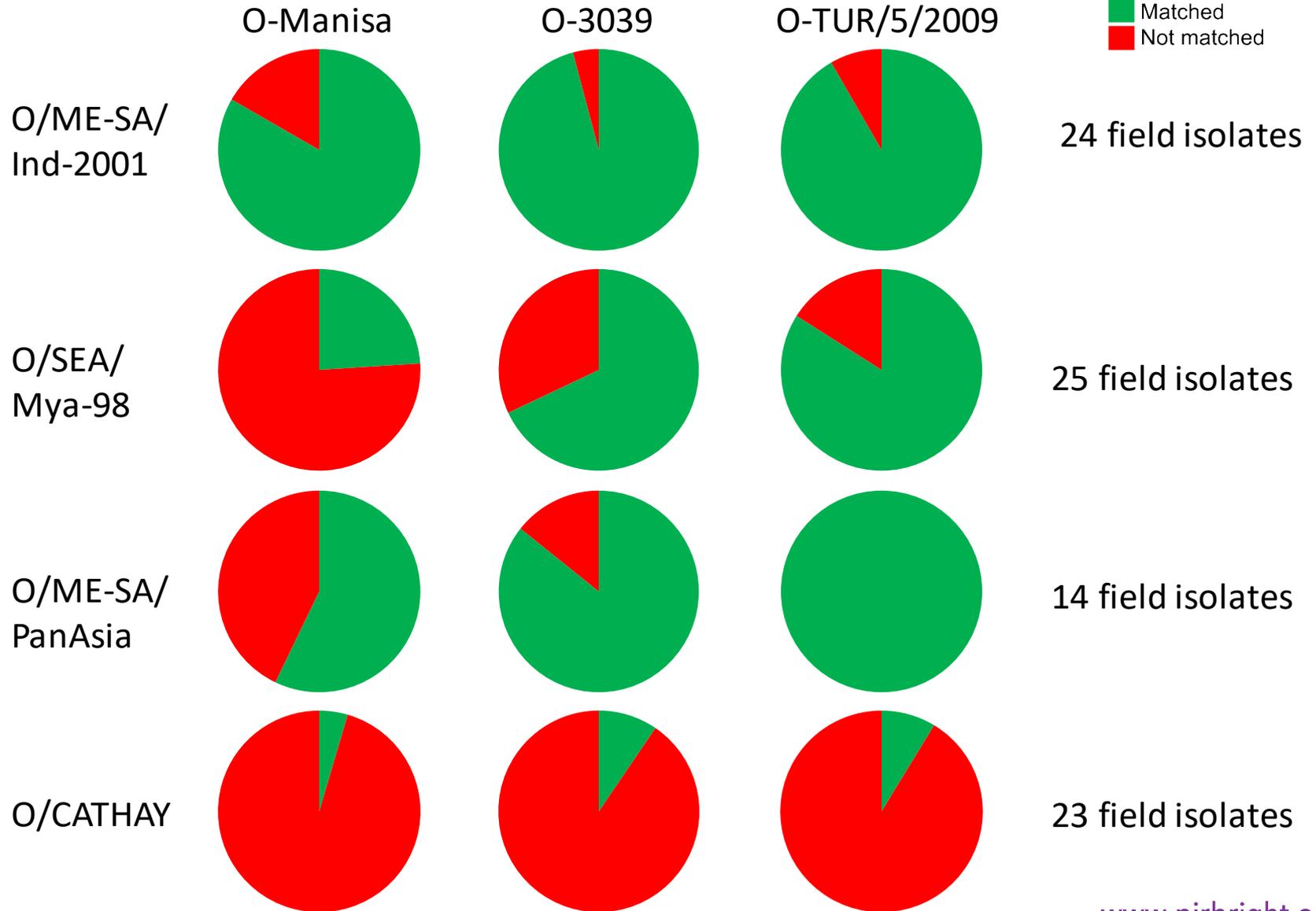
(sequences from Cambodia, Laos, Myanmar, Thailand, Vietnam)



Vaccine Matching – field samples from SEA/East Asia

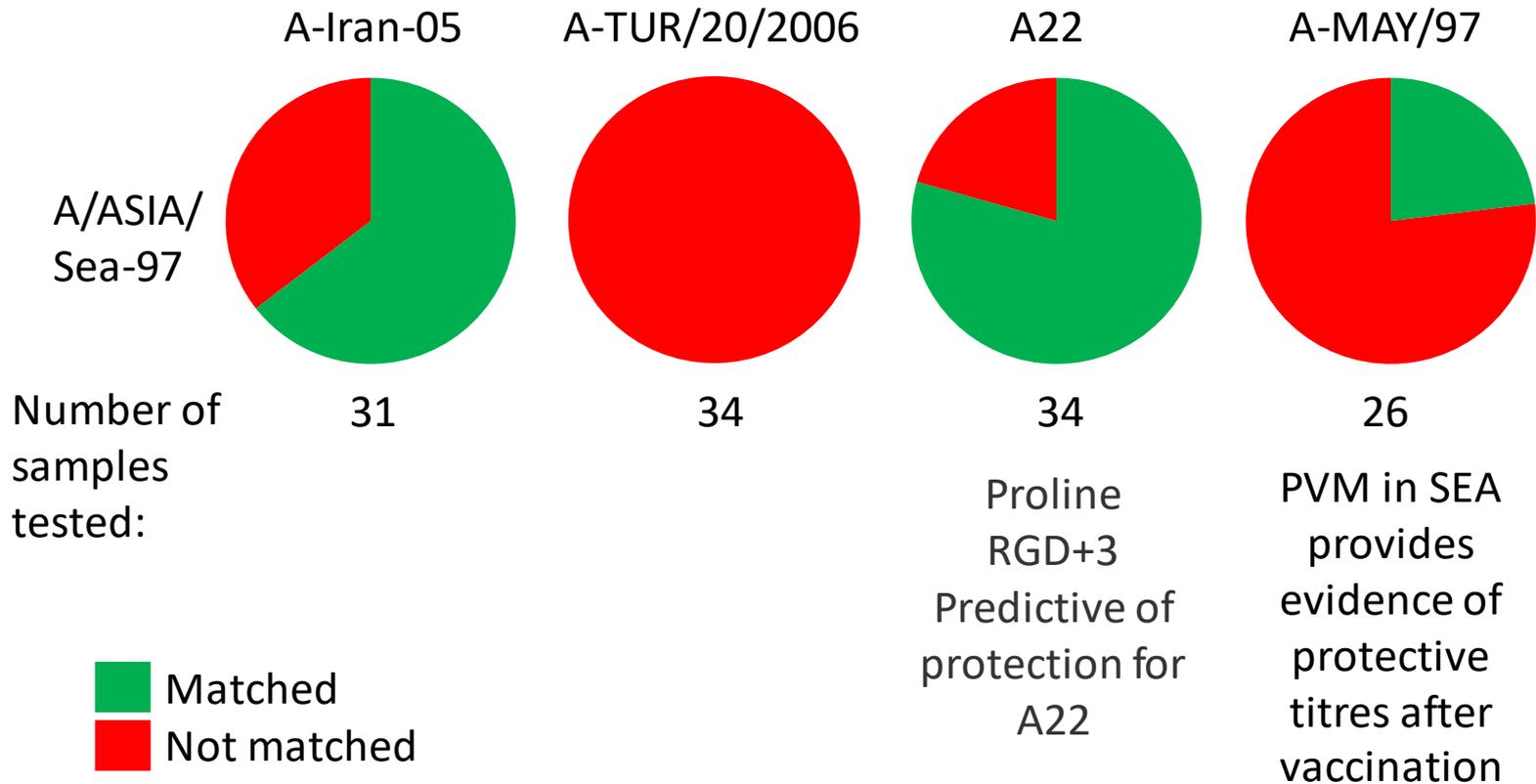
Serotype O (2015-21)

Matched
Not matched



Vaccine Matching – field samples from SEA/East Asia

Serotype A (2015-19)



Additional information

- FMD reports and lab testing (<https://www.wrlfmd.org/ref-lab-reports>)
 - *Genotyping reports, Vaccine matching and Serotyping reports*
- Other data sources:
 - Quarterly WRLFMD/EuFMD report (<https://www.wrlfmd.org/ref-lab-reports>)
 - Annual report of the OIE/FAO FMD Laboratory Network (<http://foot-and-mouth.org/>)



The screenshot shows the WRLFMD website interface. At the top, there is a navigation menu with links for WRLFMD, REPORTS, LABORATORY PROTOCOLS, NEWS, EVENTS, and RELATED SITES. Below the menu is a large, colorful world map with numerous colored dots and lines representing FMD cases and transmission routes. A text box on the right side of the map reads 'FOOT-AND-MOUTH DISEASE'. Below the map, there is a 'Welcome' section with the WRLFMD logo (a purple bull in a hexagon) and a paragraph stating that the Pirbright Institute is designated as the World Reference Laboratory for Foot-and-Mouth Disease by the Food and Agriculture Organization (FAO) and as a reference laboratory for FMD by the Office International des Epizooties (OIE). To the right of the welcome message is a 'Country FMD Reports' section featuring a world map and a link to 'Country Reports'. At the bottom of the screenshot, there are two overlapping document covers. The left one is the 'WRLFMD Quarterly Report April to June 2019' cover, featuring the WRLFMD logo and logos for BBSRC, the Department for Environment, Food & Rural Affairs, and eofmd. The right one is the 'OIE/FAO Foot-and-Mouth Disease Reference Laboratory Network Annual Report 2019' cover, featuring the OIE/FAO logo and listing the editors: Dr Donald King, Dr Antonello Di Nardo, and Dr Mark Henstock, The Pirbright Institute, UK.

Acknowledgements

- Support for the WRLFMD and research projects
- Collaborating FMD Reference Laboratories and field teams
- Partners in Southeast Asia and within the OIE/FAO FMD Lab Network



Department
for Environment
Food & Rural Affairs

eofmd