Food and Agriculture Organization of the United Nations

European Commission for the Control of Foot-and-Mouth disease

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

FMD 2025 APR MAY JUN Quarterly Report

2025 Foot-and-mouth disease quarterly report
April-May-June

European Commission for the Control of Foot-and-Mouth Disease

2023-2027 Strategy
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Abyei: *Final status of the Abyei area is not yet determined.*

Falkland Islands (Malvinas): *A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).*

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Abbreviations and acronyms

ANSES	Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail
EuFMD	European Commission for the Control of Foot-and-Mouth Disease
EURL for FMD	European Union Reference laboratory for Foot-and-mouth disease
FAST reports	foot-and-mouth and similar transboundary animal diseases reports
FLI	Friedrich Loeffler Institute
FMD	foot-and-mouth disease
FMDV	foot-and-mouth disease virus
FMDV GD	foot-and-mouth disease virus genome detected
FMDV NGD	foot-and-mouth disease virus genome not detected
GF-TAD	Global Framework for the Progressive Control of Transboundary Animal Diseases
NT	not tested
NVD	no virus detected
NRL	National reference Laboratory
rRT-PCR	real-time reverse transcription polymerase chain reaction
SAT	Southern African Territories
SVD	swine vesicular disease
VI	virus isolation
WAHIS	World Animal Health Information System (of the WOAH)
WOAH	World Organisation for Animal Health
WRLFMD	World Reference Laboratory for Foot-and-Mouth Disease

1. Highlights and headlines

Thank you for reading this quarterly report which describes headline events for FMD during April-June 2025. During this period, the WRLFMD has reported results for samples received from Bahrain, Hungary and Iraq. In addition, new sequences have been submitted for analyses associated with FMD cases in Eswatini (from OVI, South Africa), South Africa (from OVI, South Africa), Israel (from Kimron Veterinary Institute), Kuwait (from Animal Health Department, PAAF), Türkiye (from Şap Enstitüsü) and Syria (from Şap Enstitüsü).

This three-month period has been an unusually busy time:

During the first quarter of the year, two FMD incursions were reported in Europe; the first in Germany [1 outbreak in water buffalo due to the O/ME-SA/SA-2018 lineage] and then in Hungary/Slovakia [11 outbreaks in dairy cattle due to the O/ME-SA/PanAsia-2^{PUN-16} lineage]. During this quarter, there has been positive news: the WOAH FMD-free status (without vaccination) has been reinstated in Germany, and extensive surveillance in Slovakia and Hungary has detected no further cases or evidence of FMDV infection since 17th April. The risk pathways underpinning these separate incursions into Europe are still not understood.

Beyond Europe, the exotic SAT1/1 topotype has spread into new locations in the Middle East, to cause outbreaks in Kuwait and Türkiye as well as continuing to cause cases in Iraq. At the same time, there have also been further reports of cases due to the SAT2/XIV topotype in Türkiye and new outbreaks due to the O/ME-SA/SA-2018 lineage which has recently emerged from south Asia into the Middle East (recent cases in Israel, Türkiye and Syria). The lack of pre-existing immunity (from infection or vaccination) for SAT 1 raises concerns about the potential for this serotype to spread quickly in the region (https://doi.org/10.4060/cd5055en). In response, Turkish vaccine producers have already made and started to deploy a homologous FMD vaccine, and this report also provides results for recently completed studies to assess the homologous responses of six commercial vaccines against four representative isolates from this lineage.

In southern Africa, new FMD outbreaks have been reported in Mozambique and Zimbabwe as well as in South Africa where the continued circulation of serotype SAT 2 has led to FMD cases being detected in Eswatini which was previously FMD-free without vaccination. In North Africa, new serotype O outbreaks have been reported in Algeria and Libya, while in Burkina Faso reports of SAT 1 require urgent confirmation by a Reference Laboratory since this would be the first time that this serotype has been detected in the country.

In East Asia, further serotype O cases due to the O/ME-SA/Ind-2001e lineage have been reported in South Korea.

Published information on these samples can be retrieved from the following website (http://www.wrlfmd.org/). We also maintain a web-based dashboard (OpenFMD: http://www.openfmd.org) to allow users to retrieve and interrogate FMDV sequences, perform custom analyses for vaccine selection using PRAGMATIST and review FMD surveillance data.

Don King, Pirbright, July 2025

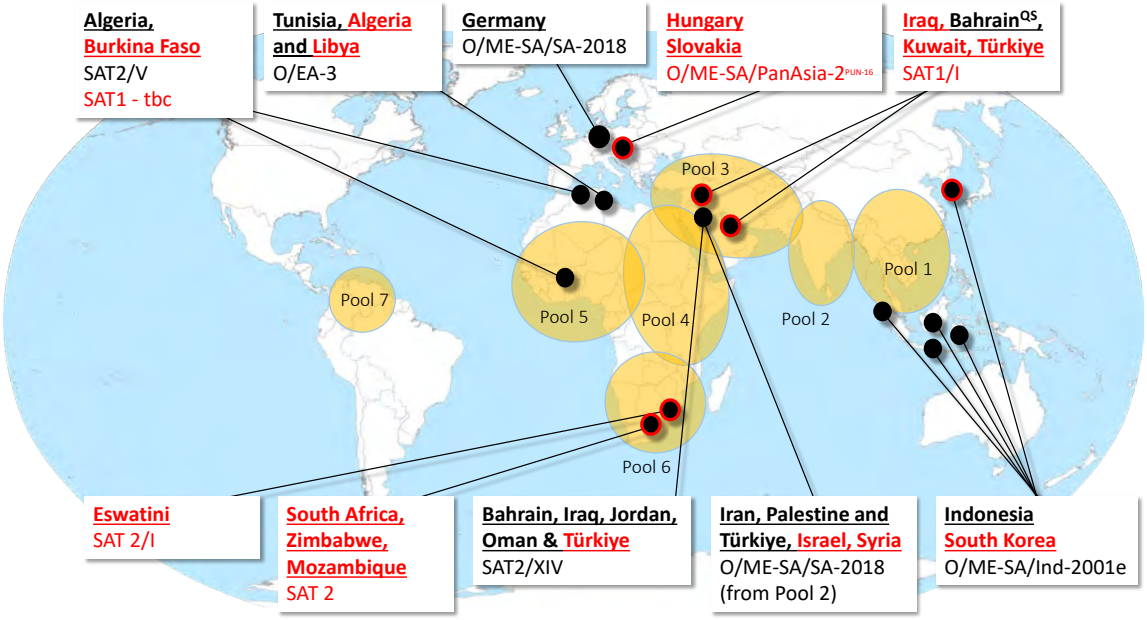


Figure 1: Recent FMD outbreaks with global epidemiological significance.

Note: New headline events reported April to June 2025 are highlighted in red with FMD endemic pools highlighted in orange. Source: WRLFMD. Map conforms to the United Nations World Map, June 2020.

2. General overview

Endemic Pools comprise separate ecosystems that maintain independently circulating and evolving foot-and-mouth disease virus (FMDV) genotypes. In the absence of specific reports, it should be assumed that the serotypes indicated below are continuously circulating in parts of these pools and would be detected if sufficient surveillance was in place.

POOL	REGION/COUNTRIES	SEROTYPES PRESENT
1	**SOUTHEAST ASIA/CENTRAL ASIA/EAST ASIA** Cambodia, China, China (Hong Kong SAR), Taiwan Province of China, Indonesia, Democratic People's Republic of Korea, Republic of Korea, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Russian Federation, Thailand, Viet Nam	A, Asia1 and O
2	**SOUTH ASIA** Bangladesh, Bhutan, India, (Mauritius[1]), Nepal, Sri Lanka	A, Asia1 and O
3	**WEST EURASIA & NEAR 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, Türkiye, Turkmenistan, United Arab Emirates, Uzbekistan	A, Asia1 and O (SAT2)
4	**EASTERN AFRICA** Burundi, Comoros, Djibouti, Egypt[3], Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Uganda, United Republic of Tanzania, Yemen	O, A, SAT1, SAT2 and SAT3
	NORTH AFRICA[2] Algeria, Libya, Morocco, Tunisia	A and O
5	**WEST/CENTRAL AFRICA** Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo	O, A, SAT1 and SAT2
6	**SOUTHERN AFRICA** Angola, Botswana, Malawi, Mozambique, (Mauritius[1]), Namibia, South Africa, Zambia, Zimbabwe	SAT1, SAT2 and SAT3 (O[4], A)
7	**SOUTH AMERICA** Venezuela (Bolivarian Republic of)	O and A

[1]FMD outbreaks in 2016/21 due to O/ME-SA/Ind-2001 demonstrate close epidemiological links between Pool 2 and Mauritius, while cases due to serotype SAT 3 (reported in 2024) highlight the connectivity to Pool 6.

[2]Long-term maintenance of FMDV lineages has not been documented in the Maghreb countries of North Africa and therefore this region does not constitute an Endemic Pool, but data is segregated here since FMD circulation in this region poses a specific risk to FMD-free countries in Southern Europe.

[3]Egypt represents a crossroads between East African Pool 4 and the Near East (Pool 3). NB: Serotypes SAT1 and SAT3 have not been detected in this country.

[4]Detection of O/EA-2 in southern/western Zambia (2018–2021), Namibia (2021), Malawi (2022) and Mozambique (2022) represent a new incursion into Pool 6.

3. Summary of FMD outbreaks and intelligence

3.1. Overview of reports

The location of information provided in this report can be seen on the map below. More detailed maps and sample data, on a country-by-country basis, can be found in the following sections of this report.

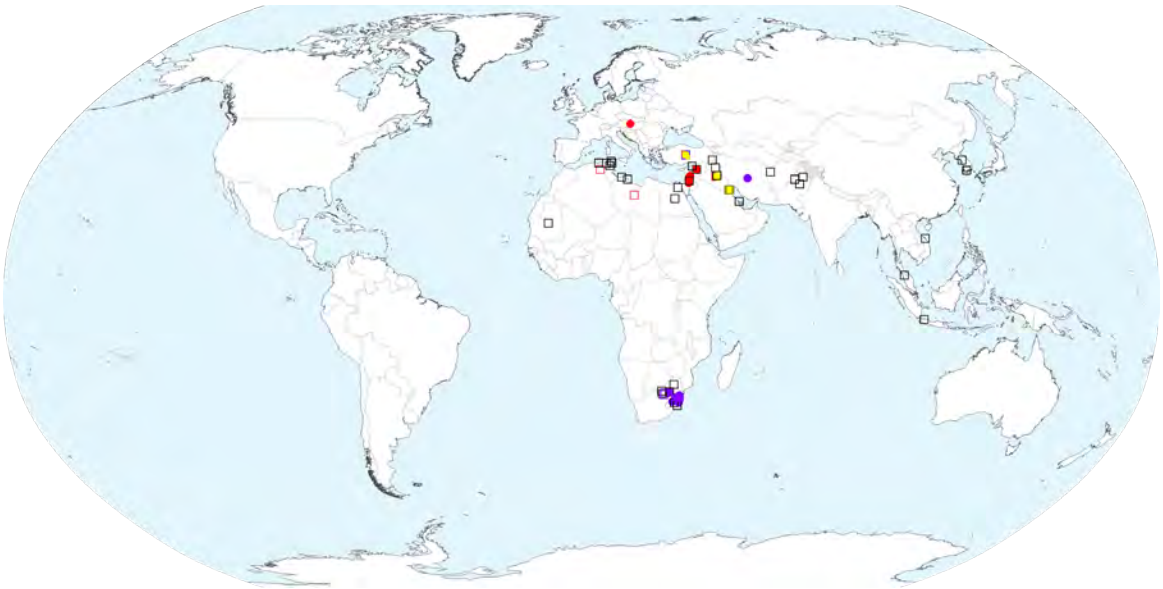


Figure 1: Samples tested by WRLFMD or reported in this quarter. ● indicates samples analysed; × indicates outbreaks reported/updated to the WOAH this quarter; □ indicates reports of FMD from other sources. Shape colours define the serotype detected ●O; ●A; ●C; ●Asia1, ●SAT1, ●SAT2, ●SAT3, ● serotype undetermined/not given in the report, ○ FMD not detected.

Source: WRLFMD. Map conforms to the United Nations World map, June 2020.

Note: in the sections below, there are references to ProMED posts, where the title of the post is indicated. ProMED is now a subscription service, so access to the post may be restricted.

3.2. Pool 1 (Southeast Asia/Central Asia/East Asia)

The Republic of Indonesia		
	FMD - Indonesia (11): post mentions cattle supply, proactive measures to secure safety	ProMED post: 8724543

The Republic of Korea

During this period, a further 14 **FMD type O** outbreaks have reported in South Korea related to the cases of O/ME-SA/Ind-2001e that were first detected in March 2025. There are now 19 outbreaks reported in the country during 2025.

WAHIS event ID: 6345

Additional ProMED posts cover: FMD - South Korea: (South Jeolla) swine, quarantine; FMD - South Korea (06): (South Jeolla) cattle markets reopen; FMD - South Korea (07): cattle, swine, serotype O, WOAH

ProMED posts: 8723773 8723974, 8724024

Malaysia

FMD - Malaysia: (Kedah) cattle, movement restriction, control

ProMED post: 8724852

3.3. Pool 2 (South Asia)

No new outbreaks of FMD were reported in South Asia.

3.4. Pool 3 (West Eurasia and Near East)

FAO Alert - Near East and West Eurasia regions

Food and Agriculture Organization of the United Nations

FAO is recommending urgent biosecurity measures and enhanced surveillance following the recent detection of foot-and-mouth disease (FMD) serotype SAT1 in the Near East. This serotype is exotic to the region, raising serious concerns about the potential spread of the virus within the Near East and to West Eurasia. The most important and immediate risks for FMD virus spread are associated with animal movements: intensified trade and movement of livestock; transhumance of ruminants to summer pastures; and international and national trading of animals, especially with mixing of animals at live animal markets, holding areas, and during transport. FAO urges countries to increase awareness, strengthen biosecurity, and improve preparedness at national, subnational, and community levels to safeguard livestock and livelihoods. Specific recommendations are described within the alert. **Until livestock populations are immunized with a suitable SAT1 vaccine, only rapid and effective biosecurity measures can limit the spread of the SAT1 virus.**

FAO Alert (English, Arabic/ العربية, Français)

The Islamic Republic of Afghanistan

FMD - Afghanistan: (Herat) livestock, alarming spread, fatal

ProMED post: 8724830

Armenia

Passive and active surveillance for FMD is used in Armenia, as well as awareness-raising activities for farmers and the veterinary services. During this quarter, over 200000 large ruminants and almost 335000 small ruminants have been vaccinated using a pentavalent vaccine (serotypes O, Asia-1, SAT2 and two lineages of A).

EuFMD FAST Report

The Republic of Azerbaijan

During April to June, over 1.65 million large and 5.24 million small ruminants were vaccinated. Active and passive surveillance is in place to monitor for outbreaks of FMD.

EuFMD FAST Report

Georgia

300 000 large ruminants and 495 000 small ruminants have been vaccinated against FMD this quarter. SP and NSP sero-monitoring is planned for the coming quarter.

EuFMD FAST Report

The Republic of Iraq

In reports issued on 5th May via WAHIS, 19 new cases of **FMD type O** were detected in Al-Anbar, Al-Basrah, At-Ta'mim, Diyala governorates and 352 new cases of **FMD type SAT 1** were detected in Babil, Baghdad, Diyala, Ninawa, Sala ad-Din & Wasit governorates in cattle and buffaloes.

WAHIS event IDs: 6290, 6448 & 6449

Over 70 outbreaks (serotypes O and SAT 1) have been reported this quarter. Surveillance data has been collected from 15 veterinary hospitals from across Iraq and passive surveillance is in use in the Kurdistan region.
Vaccination was last implemented in 2024, though there was reluctance on behalf of some farmers to have their animals vaccinated. This may be a factor in explaining the numbers of FMD cases this year.

EuFMD FAST Report

Additional ProMED posts cover: FMD - Iraq (09) (Baghdad) livestock, WOAH, serotype O confirmed; FMD - Iraq (10) (Kirkuk) suspected, water buffalo, mortality, request for information; FMD - Iraq (11): Mesopotamian Marshes, water buffalo, spread

ProMED posts: 8723285, 8723902, 8724395

The State of Israel

A total of 8 **FMD type O** sequences for phylogenetic analysis were received from the Kimron Veterinary Institute, Israel, in April and June. The sequences were from samples collected between January and May 2025 from cattle (n=5) and sheep (n=3). Genotyping showed that they all to belong to O/ME-SA/SA-2018 lineage (see below).

26 **FMD type O** cases in cattle in April and May 2025 were reported via WAHIS from locations in Haifa and HaTzafon in a report during this quarter. The lineage of FMD responsible has been identified as O/ME-SA/SA-2018.

WAHIS event ID: 6176

The Hashemite Kingdom of Jordan

Passive surveillance for FMD is established and a pilot initiative for syndromic surveillance for the early detection of FAST diseases is ongoing. Over 40 000 animals have been vaccinated this quarter using a vaccine containing serotypes O, A & SAT 2.

EuFMD FAST Report

the State of Kuwait

A **FMD type SAT 1** sequence for phylogenetic analysis was received from Animal Health Department, PAAF, Kuwait, on 28th May 2025. The sequence was from a sample collected in 2025. Genotyping showed that it belongs to the SAT 1/I topotype (see below).

In reports to WAHIS during April and May 2025, 11 696 dairy cattle were identified as being infected with **FMD type SAT 1** from farms in Al Jahrah Governorate.

WAHIS event ID: 6445.

FMD type SAT 1 was reported from Sulaibiya Farms, Al Jahrah by the national authorities. There were 1161 cases of FMD in cattle, resulting in 4 deaths and 1 animal destroyed.

Empres-i+ event IDs: 405852

Additional ProMED posts cover: FMD - Kuwait (Al Jahra) request for information; FMD - Kuwait (02) (Al Jahrah) cattle, serotype SAT1 confirmed, WOAH; FMD - Kuwait (03) (Al Jahrah) cattle, spread, additional fatal cases; FMD - Kuwait (04) cattle, spread, additional fatal cases; FMD - Kuwait (05) cattle, vaccination

ProMED post: 8723832, 8723876, 8724184, 8724499, 8724709

The Lebanese Republic

No outbreaks of FMD were reported between May and July 2025 and active and passive surveillance the disease is in place in the country. The last vaccination campaign in Lebanon was implemented in 2023-2024 and achieved a coverage of 70%.

EuFMD FAST Report

Palestine

Two outbreaks of FMD were reported between June and July 2025 and passive surveillance is in place for the detection of FMD. So far this year 35,000 large and 550,000 small ruminants have been vaccinated. Vaccination is free, with large ruminants being vaccinated twice a year (March & September) and small ruminants once a year (January to March).

EuFMD FAST Report

The Islamic Republic of Pakistan

ProMED posts: Undiagnosed deaths, cattle - Pakistan (02) (Punjab) FMD suspected, request for information; FMD - Pakistan: (Khyber Pakhtunkhwa) livestock, spreading; FMD - Pakistan (02): (Punjab) livestock, spread

ProMED posts: 8723458, 8723463, 8723625, 8723650, 8724936

The Syrian Arab Republic

A total of 8 **FMD type O** sequences for phylogenetic analysis were received from the Şap Enstitüsü, Türkiye, on 25th June 2025. Genotyping showed that they all belonged to the O/ME-SA/SA-2018 lineage (see below).

Outbreaks of FMD are suspected in several governates. Passive surveillance is being conducted nationwide and active surveillance is being conducted in Hama, Damascus and Aleppo governorates for exports to Persian Gulf countries. Almost 400 000 cattle and sheep have been vaccinated this quarter. However, there is a lack of vaccine for a second vaccination campaign planned for September.

EuFMD FAST Report

ProMED posts: FMD - Syria: (Idlib) cattle, sheep, spread, request for information; FMD - Syria: (Idlib) cattle, sheep, spread, request for information

ProMED post: 8723575 8723606

Türkiye

A total of 6 **FMD type O** and 3 **FMD type SAT 1** sequences were received for phylogenetic analysis from the Şap Enstitüsü, Türkiye, on 25th June 2025. Genotyping showed that the type O sequences all belonged to the O/ME-SA/SA-2018 lineage, while the type SAT 1 sequences belonged to the SAT 1/I (Northwest Zimbabwe) topotype (see below).

There is active and passive surveillance for FMD in the country and outbreaks of FMD types O (n=81), A (n=3), SAT 1 (n=24) and SAT 2 (n=49) and untyped (n=15) have been reported this quarter. The spring vaccination campaign (large ruminants nationwide and small ruminants only in the Thrace region) has been completed. Additionally, in response to the new outbreaks of SAT 1 in the area, all susceptible animals in Hakkari Province and large ruminants in Van Province have been vaccinated using a vaccine containing SAT 1.

EuFMD FAST Report

In reports to WAHIS from May and June 2025, **FMD type SAT 1** was reported in 4 sheep and 11 cattle from Van Province and 2 sheep and 9 cattle from Hakkâri Province in the extreme west of the country near the Iraqi and Iranian borders.

WAHIS event ID: 6470

Türkiye has reported 15 outbreaks of foot-and-mouth disease this quarter. SAT 2 accounted for 14 outbreaks and one outbreak was untyped or pending.

Animal Disease Information System (ADIS)

SAT 1 detected in Hacıbey-Başaklı village, near (approximately 2 km) the Iraqi border. Samples were taken at the end of April, during the spring vaccination campaign, and reported 12 days later after laboratory analysis.

Defra Outbreak Assessment

Foot & mouth disease - Türkiye: (Hakkari) cattle, serotype SAT1, ProMED post: 8724299
WOAH

3.5. Pool 4 (North and Eastern Africa)

The People's Democratic Republic of Algeria

10 new **FMD type O** outbreaks were reported to WOAH-WAHIS in addition of the 2 initially notified in February. The 10 new outbreaks represent cases in cattle (n=37), sheep (n=33) and goats (n=5) from provinces across the north of Algeria on 14th May 2025.

WAHIS event ID: 6236

NB: Sequence data for these cases is urgently required to determine the genetic identity of the causative virus.

There is passive surveillannce for FMD in the country and a vaccination campaign targetting cattle using a O & A bivalent vaccine and a monovalent SAT 2 vaccine began at the end of April.

EuFMD FAST Report

Foot & mouth disease - Algeria (09): (Jijel) cattle ProMED post: 8724204

The Arab Republic of Egypt

During this quarter, there have been 7 outbreaks of FMD reported (serotype O and A/AFRICA/G-IV have been detected) and over 3 million animals vaccinated against FMD. More than 100 markets, 1400 villages and 18 000 homes were visited in a clinical survey conducted this quarter.

EuFMD FAST Report

The State of Libya

There is passive surveillance for FMD in the country, and one outbreak (due to O/EA-3) was reported during this quarter. A vaccination campaign has been implemented in the east of the country in May 2024 with more than 1.8 million animals vaccinated against serotypes O, A & SAT 2. In the West, a new and ongoing vaccination campaign started in March 2025, using serotypes O & A, vaccinated approximately 20 000 sheep.

EuFMD FAST Report

The Islamic Republic of Mauritania

Sporadic cases of FMD have been detected in Mauritania where passive surveillance is used to monitor FMD.

EuFMD FAST Report

The Kingdom of Morocco

Mass vaccination of cattle against FMD is ongoing during this quarter, and active surveillance started.

EuFMD FAST Report

The Republic of Tunisia

Vaccination against FMD started this quarter. Active and passive surveillance are in place.

EuFMD FAST Report

Additional ProMED posts: FMD - Tunisia (03) (Siliana) cattle, spread, ProMED post: 8723630, FMD - Tunisia (04) (Bizerte) cattle, spread, fatal. 8723648, 8723833

3.6. Pool 5 (West/Central Africa)

Burkina Faso

A further 4 cases of FMD (all in cattle) were reported at the beginning of April from Centre Region in the outbreak that started in February. Previously untyped, this outbreak has now been determined to be caused by **FMD type SAT 1**. **NB: Sequence data for these cases is urgently required to determine the genetic identity of the causative virus**

WAHIS event ID: 6296

3.7. Pool 6 (Southern Africa)

The Kingdom of Eswatini

A single **FMD type SAT 2** sequence was received for phylogenetic analysis on 6 June 2025. Genotyping showed that it to belonged to the SAT 2/I topotype (see below).

An outbreak of **FMD type SAT 2** was identified in 20 cattle from Sikhwebezi, Shiselweni, Eswatini in a report to WAHIS on 20th May 2025. Sikhwebezi is a diptank area along the southern frontier of the country, with animals that are free-range and herded during the day and kraaled at night. By the end of June, a total of 1415 cattle have been identified as contacting FMD from Shiselweni, Matsanjeni South, Somntongo and Hosea tinkhundla.

WAHIS event ID: 6487

The Republic of Mozambique

A **FMD type SAT 2** outbreak in cattle was reported via WAHIS from Chibotane, Massingir, Gaza Province in a report on 16th June 2025.

WAHIS event ID: 6554

The Republic of South Africa

A batch of 6 **FMD type SAT 2** sequences were received for phylogenetic analysis on 6 June 2025. Genotyping showed that they all to belong to SAT 2/I topotype (see below).

This quarter, new **FMD type SAT 2** outbreaks were reported in Gauteng, Kwazulu-Natal, Mpumalanga & North West Province via WAHIS.

WAHIS event ID: 3738

FMD type SAT 2 was reported from the regions of Dr Kenneth Kauda District and Ventersdorp in domestic animals by the national authorities.

Empres-i+ event IDs: 409253 & 409254

Additional ProMED posts: FMD - South Africa (Kwazulu-Natal) cattle, serotype SAT 2; FMD - South Africa (North-West, Kwazulu-Natal) cattle, serotypes SAT 2, SAT 3; FMD - South Africa (03) (North-West, Kwazulu-Natal, Gauteng, Limpopo) cattle, spread

ProMED post: 8724770, 8725165, 8725253

The Republic of Zimbabwe

FMD type SAT 2 cases in cattle were reported via WAHIS from locations in Manicaland (n=15) and Masvingo (n=190) provinces. These outbreaks occurred in villages adjacent to the conservancy with resident buffaloes. Affected cattle from different age groups shared the same grazing and watering area.

WAHIS event ID: 6425

3.8. Pool 7 (South America)

No new outbreaks of FMD were reported in South America.

The Plurinational State of Bolivia
The Federative Republic of Brazil


The entire territories of Bolivia and Brazil have been declared free of FMD without the use of vaccination at WOAH's 92nd General Session.

WOAH article

3.9. Europe

Hungary

A batch of 1 sample was received on 9th April 2025. It was identified as **FMD type O** (O/ME-SA/PanAsia-2PUN-16) (see below).

Outbreaks of FMD were confirmed in 3 further farms during April (bringing total to 5 outbreaks). Extensive surveillance in the region has detected no further cases in Hungary since 17th April. Genome analysis confirms a single source for the outbreak in Hungary and Slovakia. Wind-borne transmission & human factors (visits, construction and farm workers, milk tank collections) have been implicated in the further spread of FMDV between the affected farms. Austria has conducted active surveillance in the region close to the border with Hungary and Slovakia, which has revealed no evidence of FMD. Austria has also closed 23 small border crossings, with disinfection and checks taking place at major border crossing points.

EU PAFF Animal Health and Welfare committee meetings

WAHIS event ID: 6317

The Slovak Republic

Two further outbreaks of FMD were confirmed during end of March/beginning of April (bringing the total to 6 outbreaks). Extensive surveillance in the region has detected no further cases in Slovakia since 4th April. Genome analysis confirms a single source for the outbreaks in Hungary and Slovakia. Wind-borne transmission & human factors (visits, construction and farm workers, milk tank collections) have been implicated in the further spread of FMDV between the affected farms.

EU PAFF Animal Health and Welfare committee meetings

WAHIS event ID: 6359

3.10. Extent of global surveillance

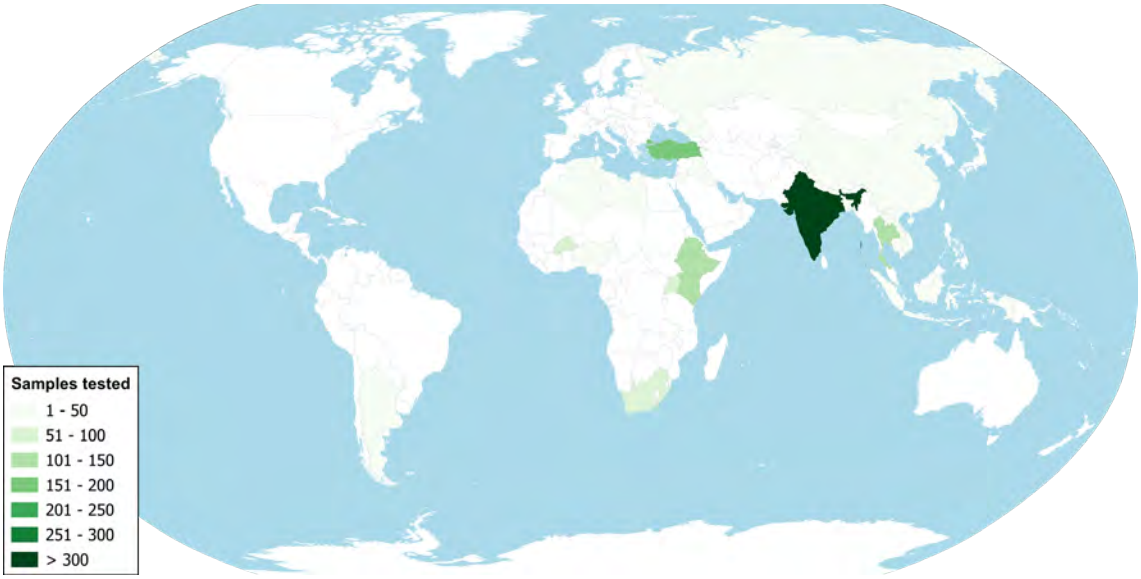


Figure 2: Review of samples received to WOAH/FAO FMD laboratories during 2024 from FMD outbreaks (routine surveillance that is undertaken in countries that are FMD-free without vaccination is not shown). (https://www.foot-and-mouth.org/Ref-Lab-Network/Network-Annual-Meeting).
Source: WRLFMD. Map conforms to the United Nations World map, June 2020.

In regions where FMD is endemic, continuous evolution of the virus generates geographically discrete lineages that are genetically distinct from FMD viruses found elsewhere. This report displays how different FMD lineages circulate in different regions; these analyses accommodate the latest epidemiological intelligence to assess the relative importance of the viral strains circulating within each region (see Table 1, below).

Table 1: Conjectured relative prevalence of circulating FMD viral lineages in each Pool (last updated October 2024). These scores can be used to inform the PRAGMATIST tool (see Annex 3:).

Lineage	South-east / Central / East Asia [Pool 1]	South Asia [Pool 2]	West Eurasia & Near East [Pool 3]	North Africa	Eastern Africa [Pool 4]	West / Central Africa [Pool 5]	Southern Africa [Pool 6]	South America [Pool 7]
O/ME-SA PanAsia-2			33					
O/ME-SA PanAsia	10							
O/SEA Mya-98	17							
O/ME-SA Ind2001	40	41	3	0				
O/ME-SA/SA-2018		40	2					
O/EA or O/WA			1	60	53.5	55	16	
O/EURO-SA								90
O/CATHAY	15							
A/ASIA Sea-97	18							
A/ASIA Iran-05	0	1	28					
A/ASIA G-VII		15	2					
A /AFRICA				28	12	15		
A/EURO-SA								10
Asia1	0	3	13					
SAT 1			1		15	1	15	
SAT 2			17	12	19	29	50	
SAT 3					0.5		19	
C								

Note: For each of the regions, data represent the relative importance of each viral lineage (prevalence score estimated as a percentage [percent] of total FMD cases that occur in domesticated hosts). These scores are reviewed at the annual WOAH/FAO FMD reference laboratory network meeting. Changes to increase risks are shown in **red**, while a reduction in risk is shown in **green**.

A number of outbreaks have occurred where samples have not been sent to the WRLFMD or other laboratories in the WOAH/FAO FMD Laboratory Network. An up-to-date list and reports of FMD viruses characterised by sequencing can be found at the following website: http://www.wrlfmd.org/country-reports/country-reports-2025.

Results from samples or sequences received at WRLFMD (status of samples being tested) are shown in Table 2 and a complete list of clinical sample diagnostics made by the WRLFMD from April - June 2025 is shown in Annex 1: (Summary of submissions). A record of all samples received by WRLFMD is shown in Annex 1: (Clinical samples).

Table 2: Status of sequencing of samples or sequences received by the WRLFMD from April - June 2025.

WRLFMD Batch No.	Date received	Country	Total No. samples	Serotype	No. of samples	No. of sequences	Sequencing status
WRLFMD/2025/000009	09/04/2025	Hungary	1	O	1	1	Finished
Totals			**1**		**1**	**1**	

Table 3: VP1 sequences submitted by other FMD laboratories to the WRLFMD from April - June 2025.

WRLFMD Batch No.	Date received	Country	Serotype	Date Collected	No. of sequences	Submitting laboratory
WRLMEG/2025/000011	17/04/2025	Israel	O	January – April 2025	7	Kimron Veterinary Institute, Israel
WRLMEG/2025/000014	28/05/2025	Kuwait	SAT 1	2025	1	Animal Health Department, PAAF, Kuwait
WRLMEG/2025/000016	06/06/2025	South Africa	SAT 2	February – April 2025	6	ARC-OVR, South Africa
WRLMEG/2025/000017	06/06/2025	Eswatini	SAT 2	13/05/2025	1	ARC-OVR, South Africa
WRLMEG/2025/000019	25/06/2025	Türkiye	O SAT 1	2025 2025	6 3	Şap Enstitüsü, Türkiye
WRLMEG/2025/000020	25/06/2025	Syria	O	2025	9	Şap Enstitüsü, Türkiye
WRLMEG/2025/000015	04/06/2025	Israel	O	24/05/2025	1	Kimron Veterinary Institute, Israel
				Total	**27**	

4. Detailed analysis

4.1. Pool 1 (Southeast Asia/Central Asia/East Asia)

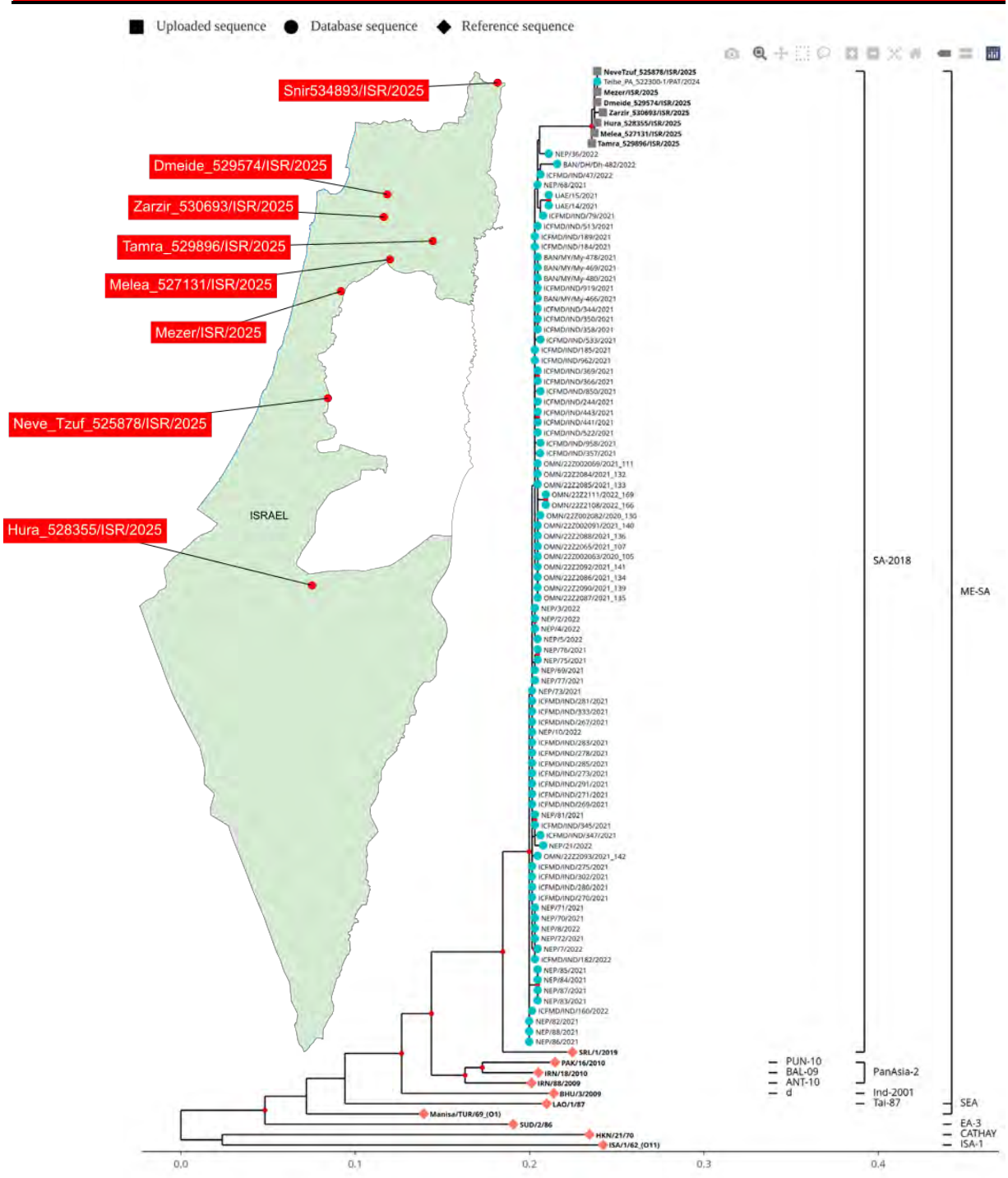
No samples/sequences received.

4.2. Pool 2 (South Asia)

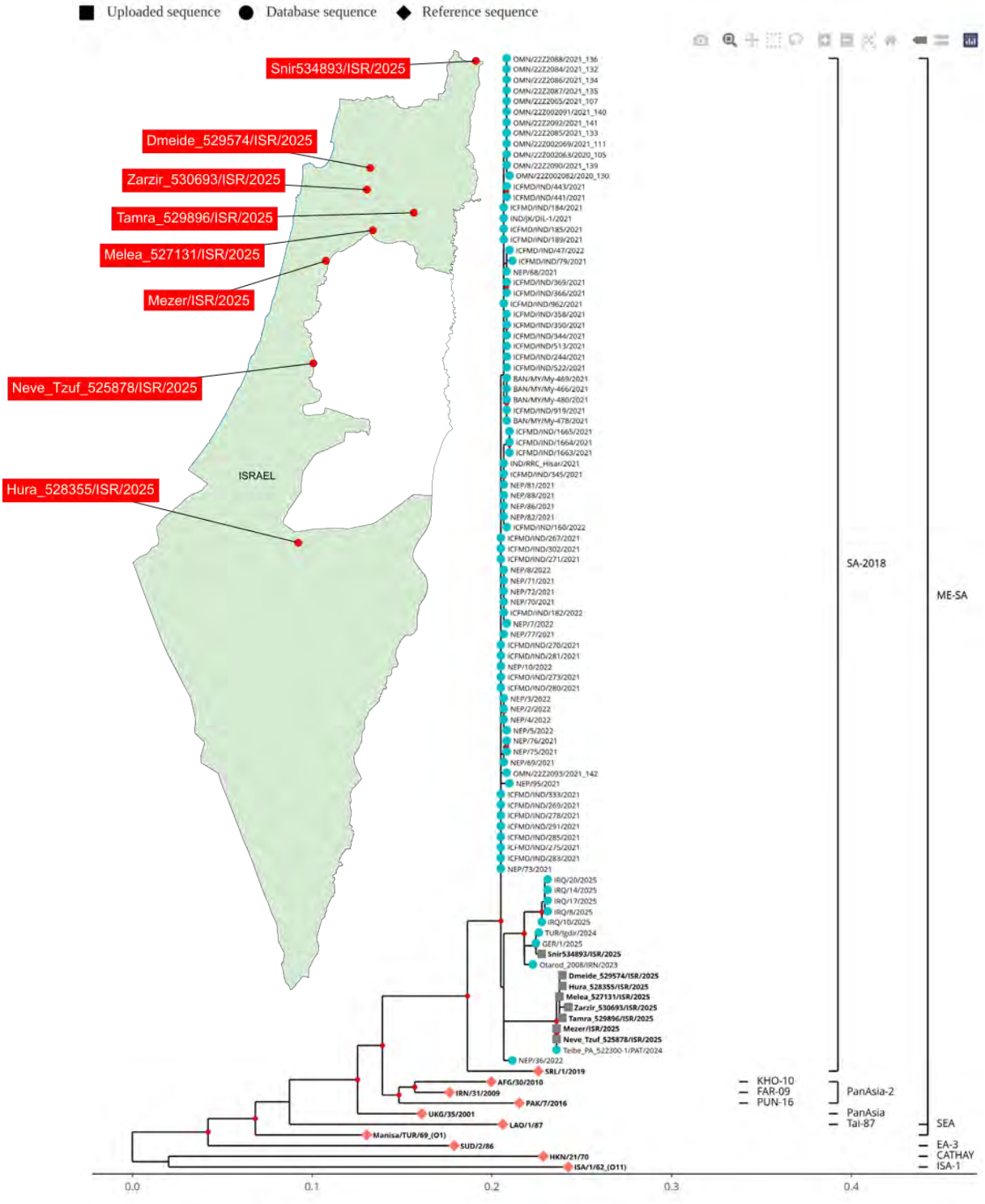
No samples/sequences received.

4.1. Pool 3 (West Eurasia and Near East)

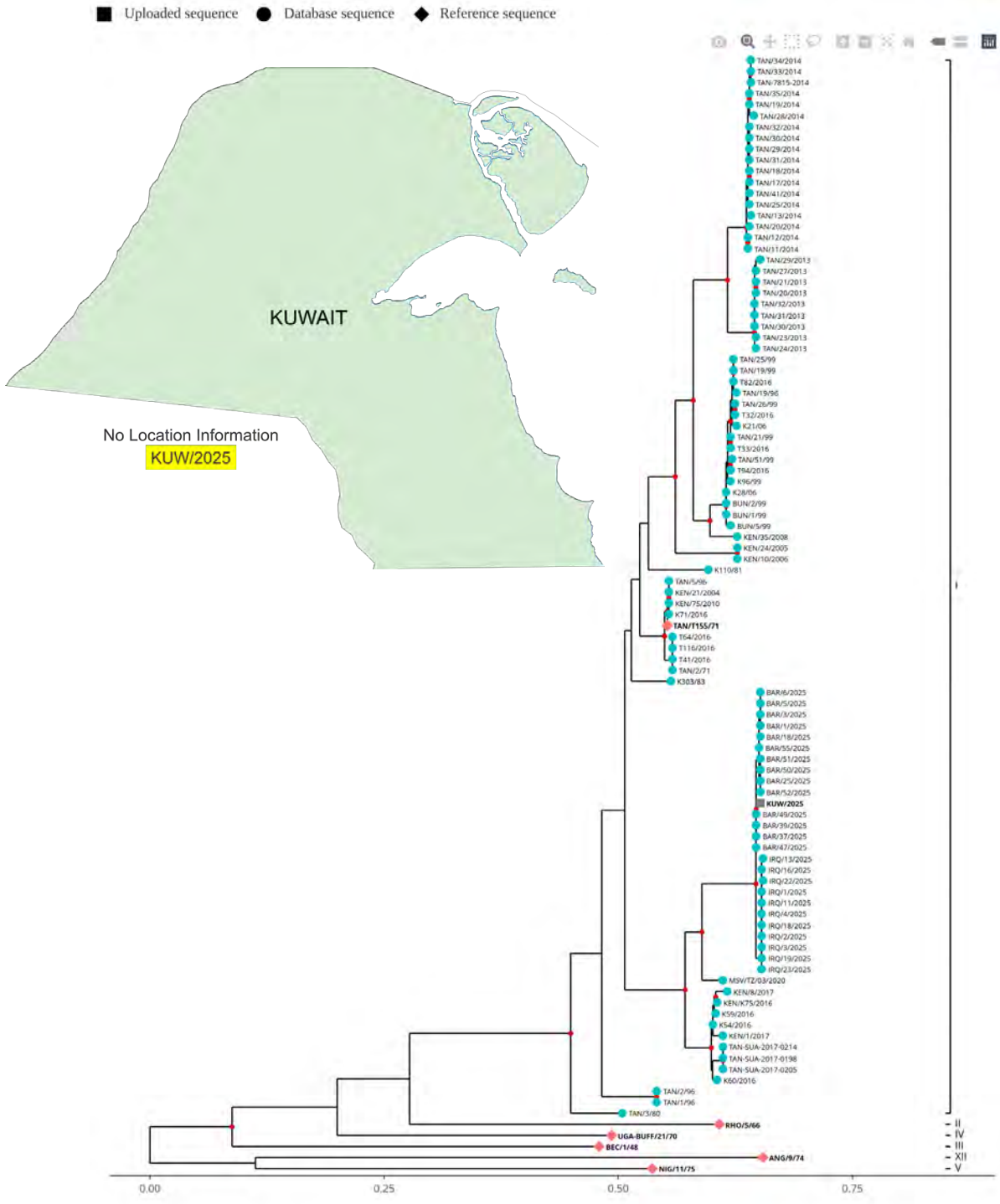
The State of Israel	
Batch:	WRLMEG/2025/000011
Samples/sequences provided by:	Kimron Veterinary Institute, Israel
Date Received:	17 April 2025
Number Of Samples:	7
O (O/ME-SA/SA-2018)	7



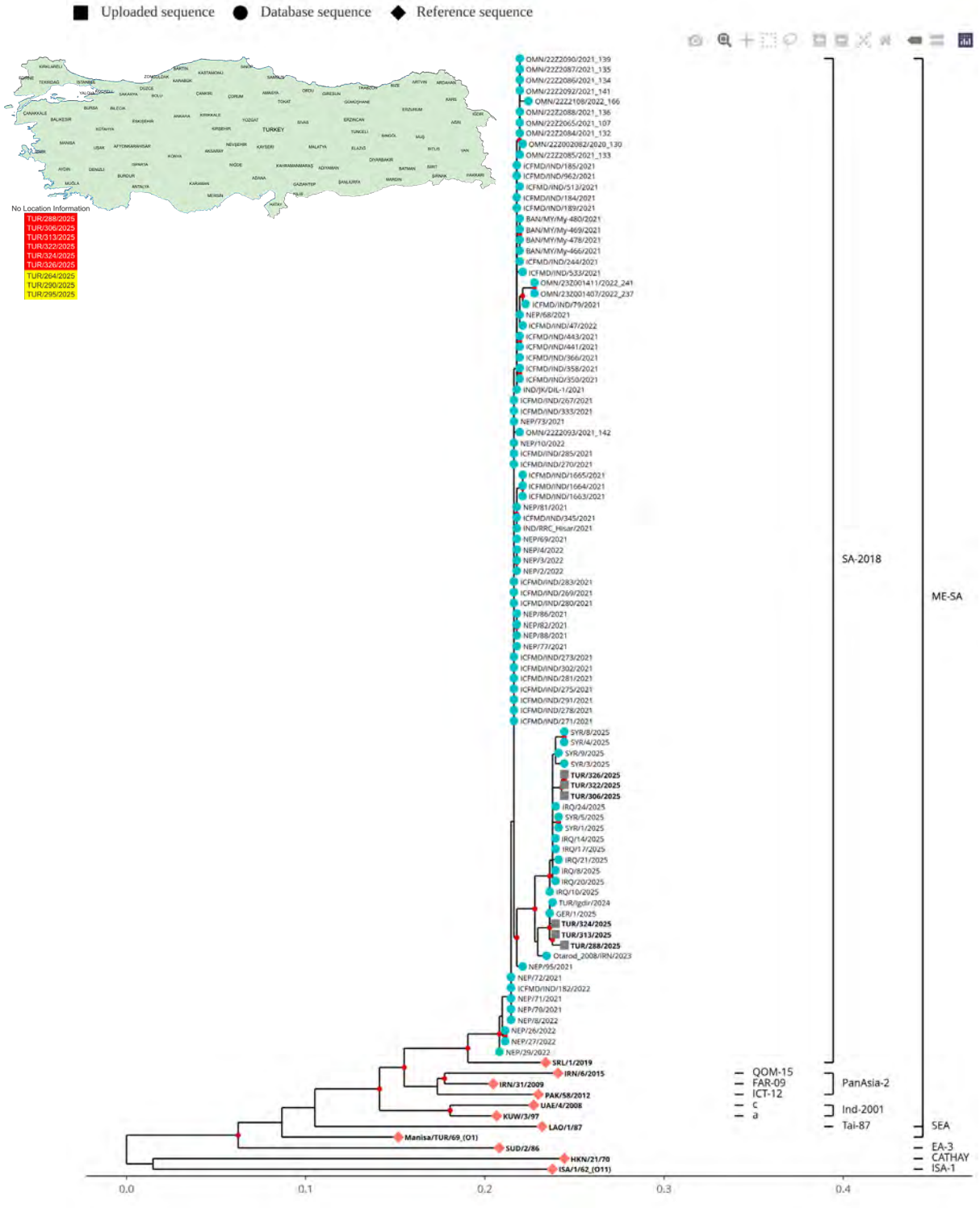
The State of Israel	
Batch:	WRLMEG/2025/000015
Samples/sequences provided by:	Kimron Veterinary Institute, Israel
Date Received:	04 June 2025
Number Of Samples:	1
O (O/ME-SA/SA-2018)	1



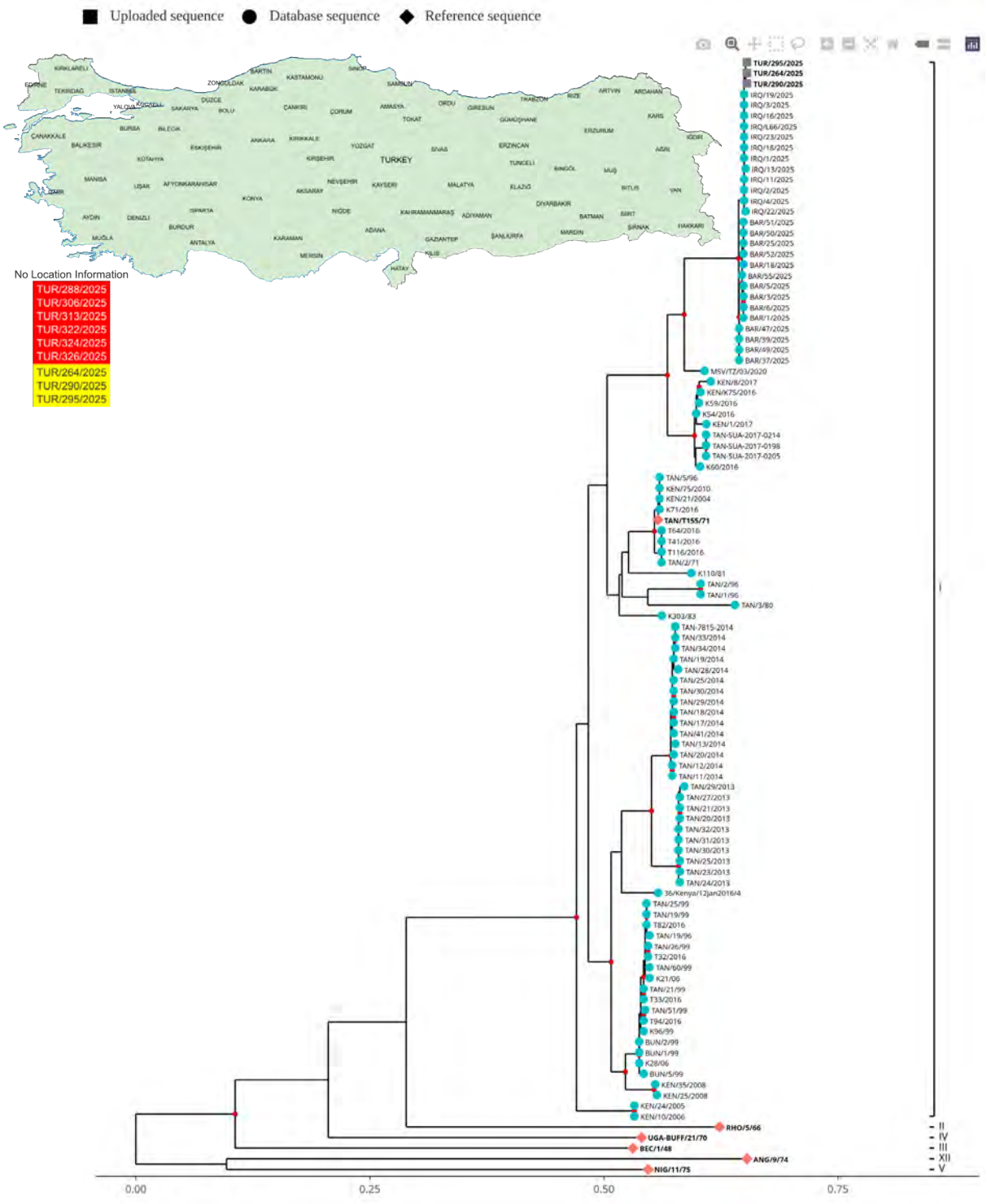
The State of Kuwait	
Batch:	WRLMEG/2025/000014
Samples/sequences provided by:	Animal Health Department, Public Authority if Agriculture Affairs and fish Resources (PAAF), Kuwait
Date Received:	28 May 2025
Number Of Samples:	1
SAT 1 (SAT 1/I (NWZ))	1



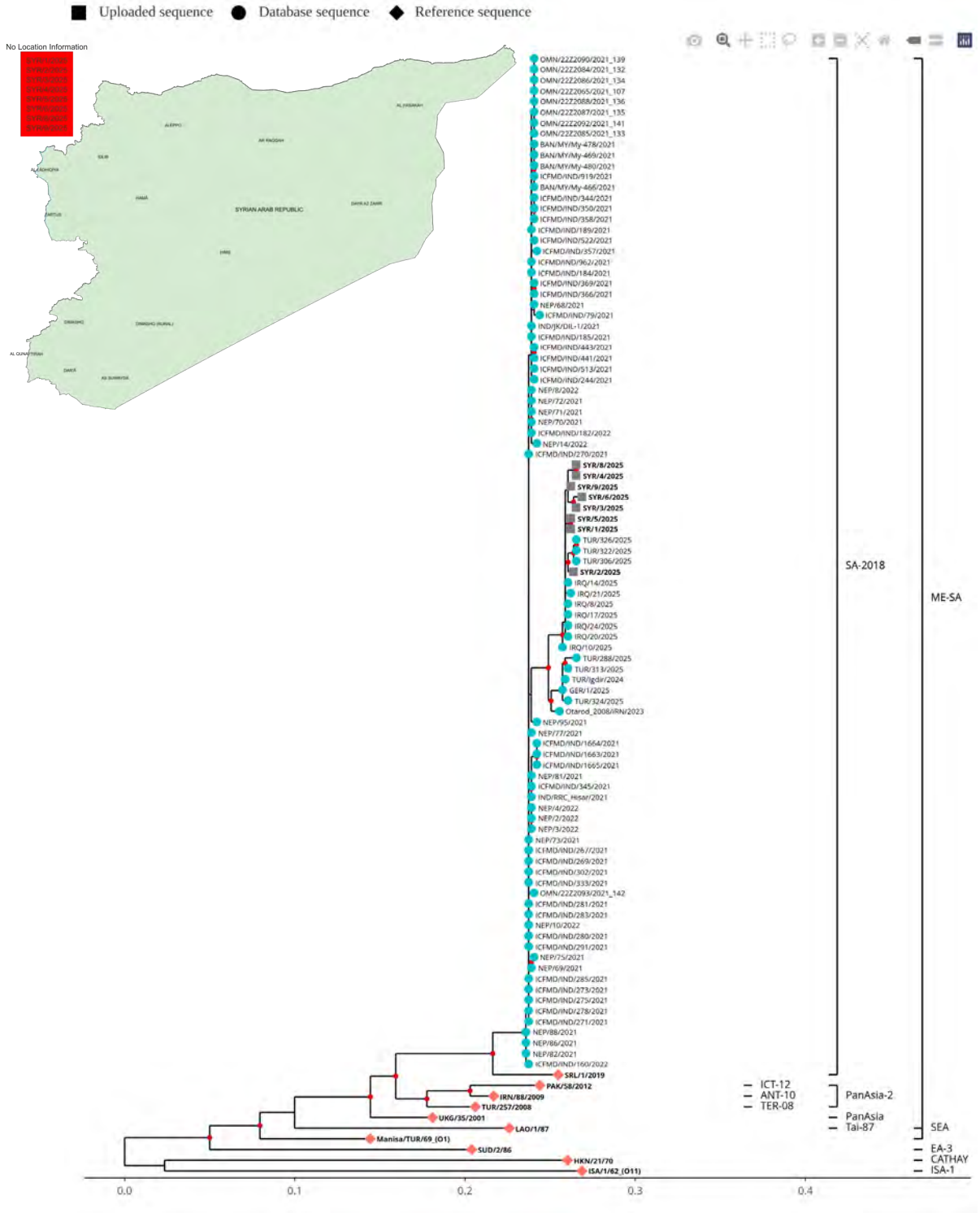
The Republic of Türkiye	
Batch:	WRLMEG/2025/000019
Samples/sequences provided by:	Şap Enstitüsü, Türkiye
Date Received:	25 June 2025
Number Of Samples:	6
O (O/ME-SA/SA-2018)	6



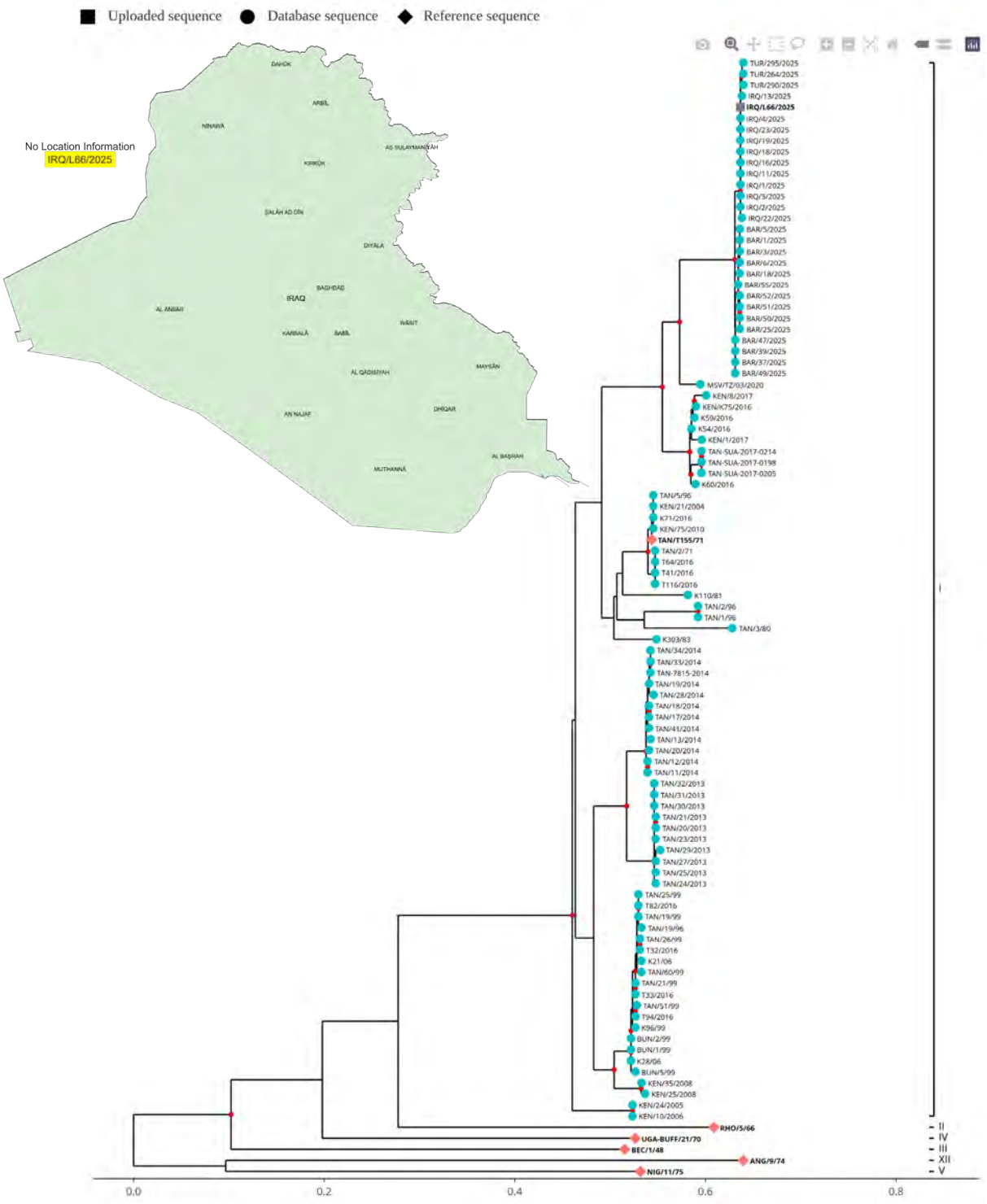
The Republic of Türkiye	
Batch:	WRLMEG/2025/000019
Samples/sequences provided by:	Şap Enstitüsü, Türkiye
Date Received:	25 June 2025
Number Of Samples:	3
SAT 1 (SAT 1/I (NWZ))	3



The Syrian Arab Republic	
Batch:	WRLMEG/2025/000020
Samples/sequences provided by:	Şap Enstitüsü, Türkiye
Date Received:	25 June 2025
Number Of Samples:	9
O (O/ME-SA/SA-2018)	9



The Republic of Iraq	
Batch:	WRLMEG/2025/000021
Samples/sequences provided by:	Şap Enstitüsü, Türkiye
Date Received:	25 June 2025
Number Of Samples:	1
SAT 1 (SAT 1/I (NWZ))	1



4.2. Pool 4 (North and East Africa)

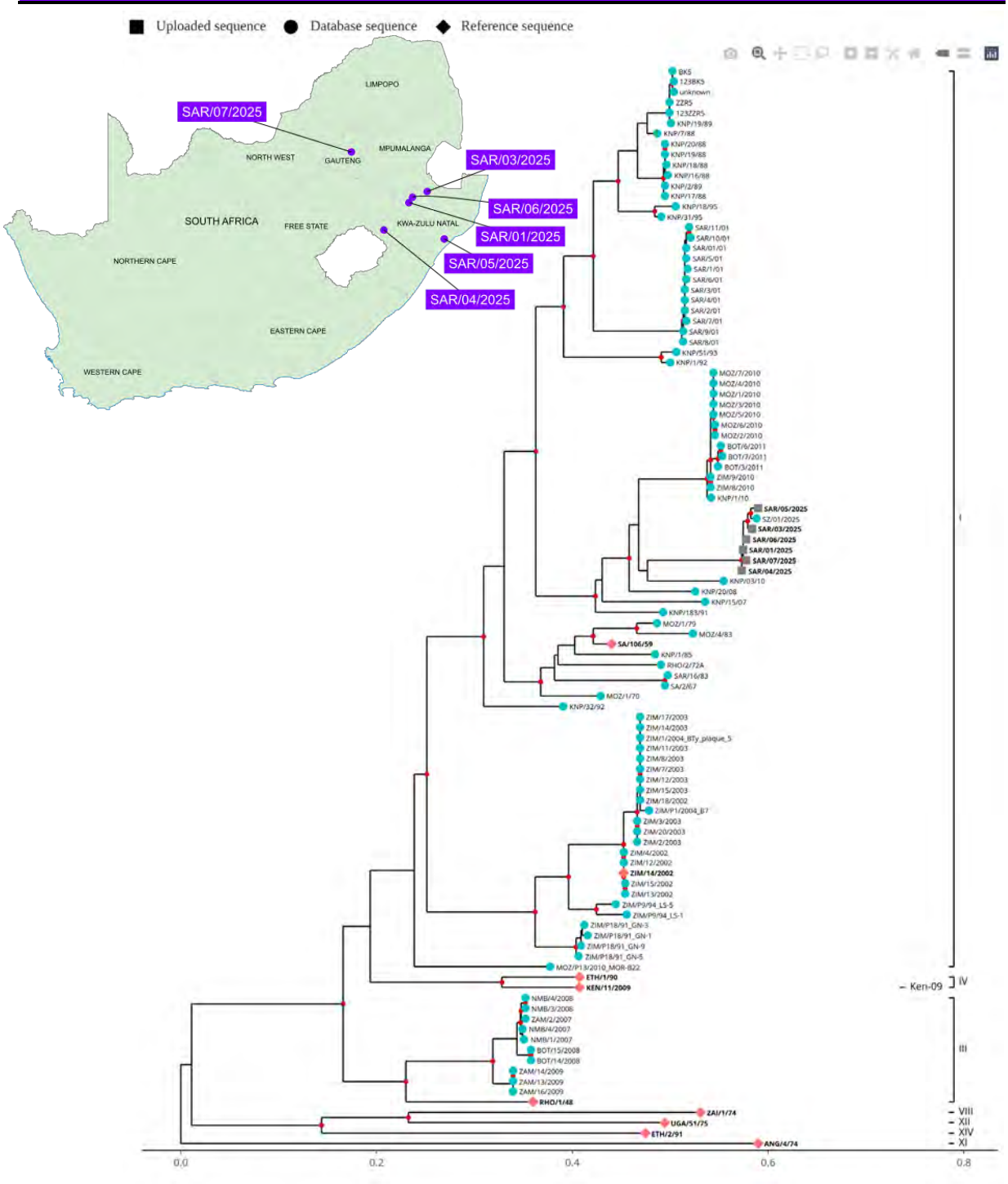
No samples/sequences received.

4.3. Pool 5 (West/Central Africa)

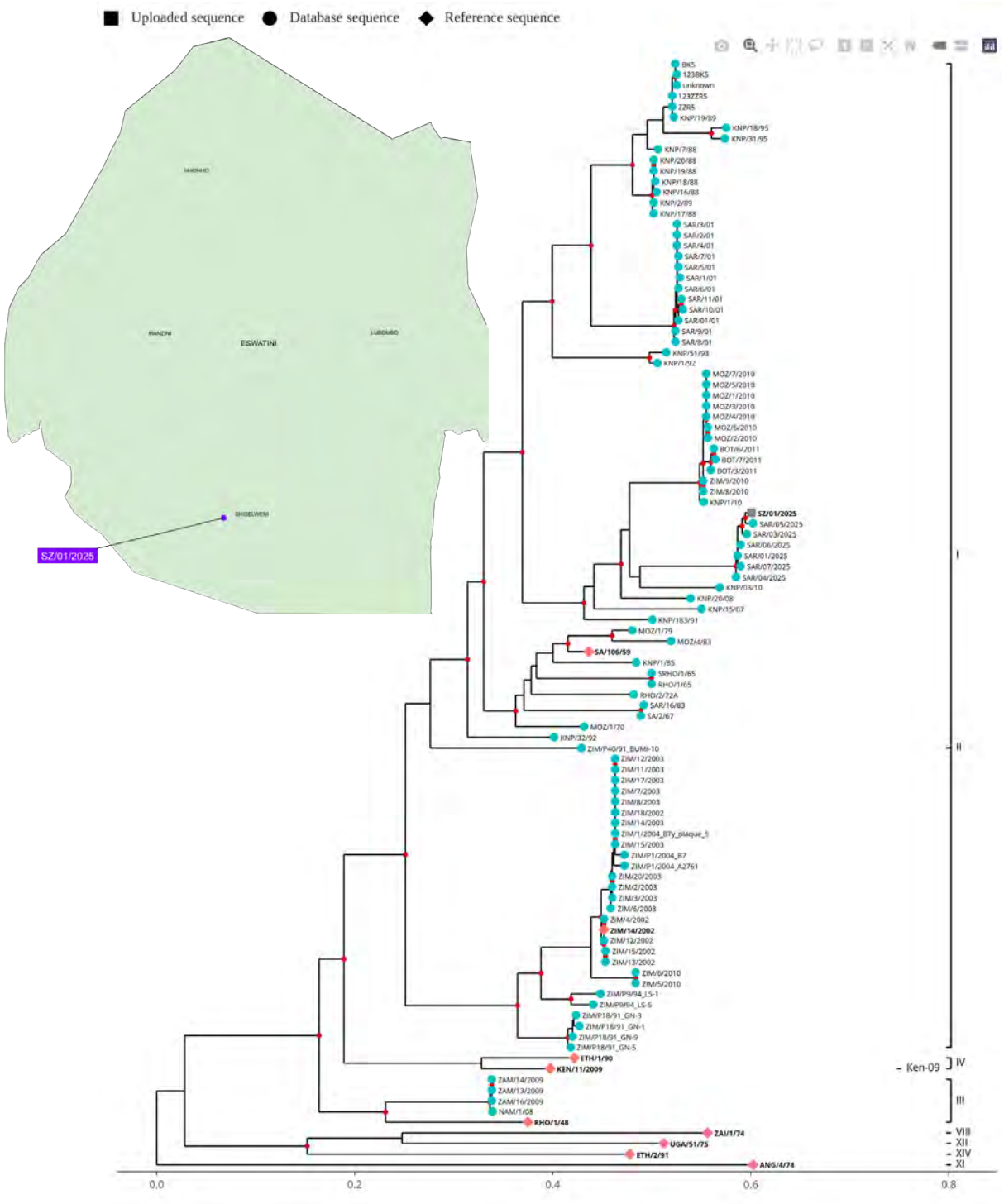
No samples/sequences received.

4.4. Pool 6 (Southern Africa)

The Republic of South Africa	
Batch:	WRLMEG/2025/000016
Samples/sequences provided by:	ARC-OVR, South Africa
Date Received:	6 June 2025
Number Of Samples:	6
SAT 2 (SAT 2/I)	6



The Kingdom of Eswatini	
Batch:	WRLMEG/2025/000017
Samples/sequences provided by:	ARC-OVR, South Africa
Date Received:	6 June 2025
Number Of Samples:	1
SAT 2 (SAT 2/I)	1

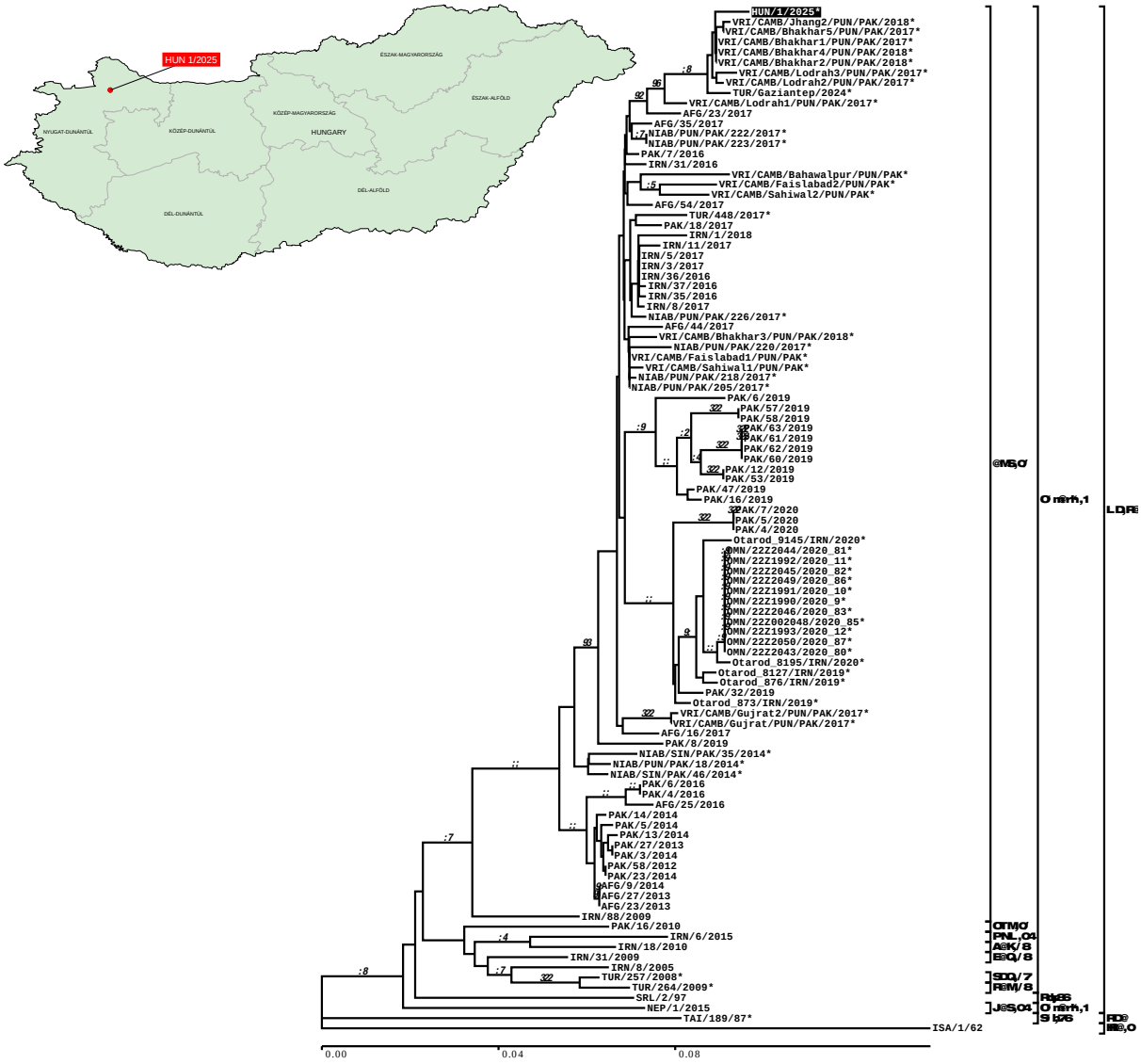


4.5. Pool 7 (South America)

No samples/sequences received.

4.6. Europe

Hungary	
Batch:	WRLFMD/2025/000009
Samples/sequences provided by:	Hungarian NRL for FMD EURL for FMD (ANSES)
Date Received:	9 April 2025
Number Of Samples:	1
O (O/ME-SA/PanAsia-2^{ANT-10})	1



4.7. Vaccine matching

Antigenic characterisation of FMD field isolates by matching with vaccine strains by 2dmVNT from April - June 2025.

NOTES:

1. Vaccine efficacy is influenced by vaccine potency, antigenic match and vaccination regime. Therefore, it is possible that a less than perfect antigenic match of a particular antigen may be compensated by using a high potency vaccine and by administering more than one vaccine dose at suitable intervals. Thus, a vaccine with a weak antigenic match to a field isolate, as determined by serology, may nevertheless afford some protection if it is of sufficiently high potency and is administered under a regime to maximise host antibody responses (Brehm, 2008[1]).
2. Vaccine matching data generated in this report only considers antibody responses in cattle after a single vaccination (typically 21 days after vaccination). The long-term performance of FMD vaccines after a second or multiple doses of vaccine should be monitored using post-vaccination serological testing.

Table 4: Summary of samples tested by vaccine matching.

Serotype	O	A	C	Asia 1	SAT 1	SAT 2	SAT 3
Bahrain					2		
Iraq					2		
Hungary	1						
Total	**1**	**0**	**0**	**0**	**4**	**0**	**0**

Abbreviations used in tables

For each field isolate the r_1 value is shown followed by the heterologous neutralisation titre (r_1-value / titre). The r_1 values shown below, represent the one-way serological match between vaccine strain and field isolate, calculated from the comparative reactivity of antisera raised against the vaccine in question. Heterologous neutralisation titres for vaccine sera with the field isolates are included as an indicator of cross-protection.

[1] Brehm, *et al.* (2008). High potency vaccines induce protection against heterologous challenge with foot-and-mouth disease virus. *Vaccine*, **26**(13):1681-7. doi: 10.1016/j.vaccine.2008.01.038.

M	**Vaccine Match** *r_1 = ≥ 0.3 - suggests that there is a close antigenic relationship between field isolate and vaccine strain. A potent vaccine containing the vaccine strain is likely to confer protection.*
N	**No Vaccine Match** *r_1 = < 0.3* - suggest that the field isolate is antigenically different to the vaccine strain. Where there is no alternative, the use of this vaccine should carefully consider vaccine potency, the possibility to use additional booster doses and monitoring of vaccinated animals for heterologous responses.
NT	**Not tested against this vaccine**

NOTE: A "0" in the neutralisation columns indicates that for that particular field virus no neutralisation was observed at a virus dose of a 100 $TCID_{50}$.

NOTE: This report includes the source of the vaccine virus and bovine vaccinal serum. Vaccines from different manufactures may perform differently and caution should be taken when comparing the data.

Table 5: Vaccine matching studies for O FMDV

Serotype O			O 3039 *Boehringer Ingelheim*		O Campos *Boehringer Ingelheim*		O_1 Campos *Biogénesis Bagó*		O Manisa *Boehringer Ingelheim*		PanAsia 2 *Boehringer Ingelheim*		O/TUR/5/09 *MSD*	
Isolate	Topotype	Lineage	r_1	*titre*	r_1	*titre*	r_1	*titre*	r_1	*titre*	r_1	*titre*	r_1	*titre*
HUN 1/2025	ME-SA	PanAsia2	0.72	*1.93*	0.58	*2.25*	0.91	*2.69*	0.76	*2.39*	0.45	*2.29*	1.00	*2.41*

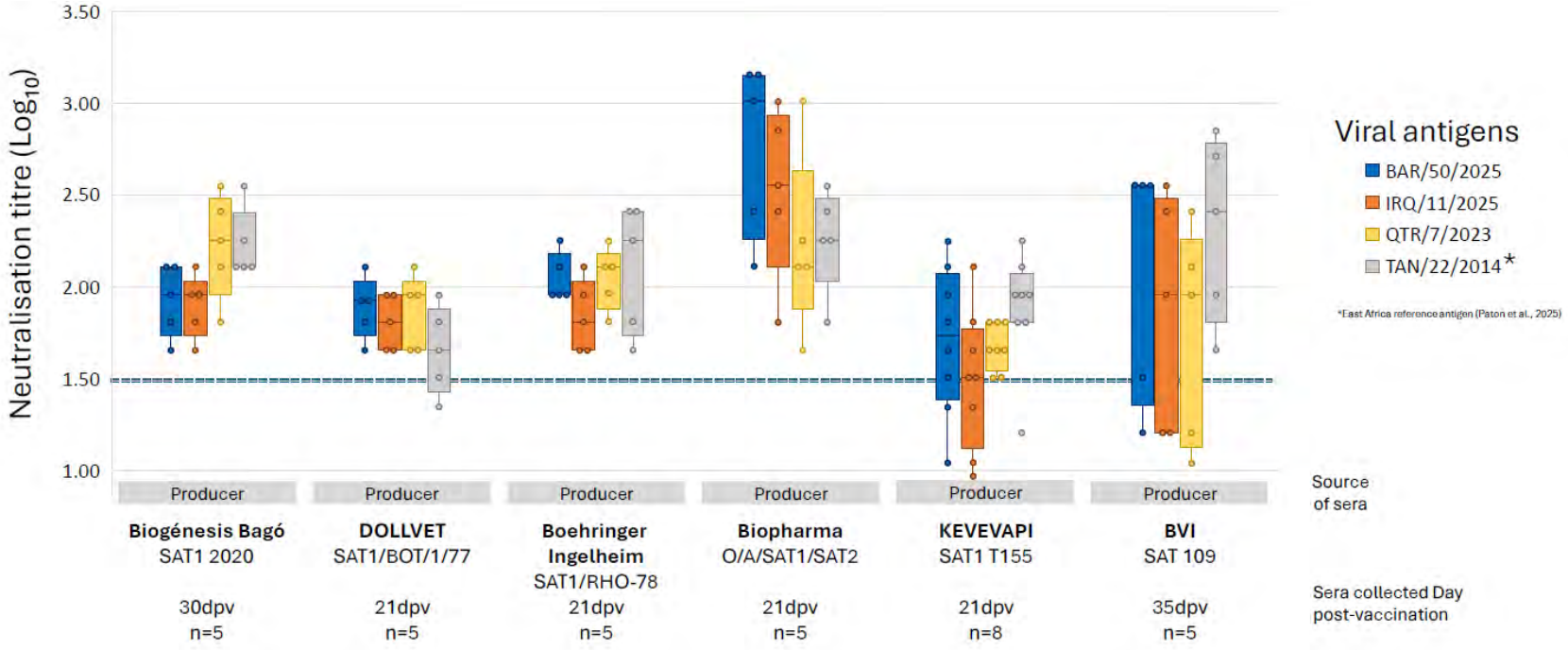
Table 6: Vaccine matching studies for SAT 1 FMDV

Isolate	Serotype SAT 1		SAT1 Rho78 *Boehringer Ingelheim*	
	Topotype	Lineage	r_1	*titre*
BAR 37/2025	I (NWZ)	-	0.31	*2.20*
BAR 50/2025	I (NWZ)	-	0.39	*2.30*
IRQ 1/2025	I (NWZ)	-	0.26	*2.13*
IRQ 11/2025	I (NWZ)	-	0.19	*2.00*

SAT 1 vaccines for the Middle East

The WRLFMD (with support of EuFMD) has recently completed work to assess the heterologous antibody responses of six SAT 1 FMD vaccines. This work was undertaken in response to the SAT 1 outbreaks that have been recently detected in the Middle East and involved four representative FMDV isolates from Bahrain, Iraq, Qatar and Tanzania using sera already available at the WRLFMD. These data are provided with the permissions of each FMD vaccine company. Some of the sera used for this testing was generated from vaccine trial-blends and therefore customers are advised to carry out in-country testing with the final formulated products to confirm that the responses in vaccinated animals achieve these levels of FMDV-specific antibody

NB: The dotted line denotes the heterologous cut-off in VNT previously defined by Gubbins *et al.*, 2022[2].



[2] Gubbins, *et al.* (2022). Predicting cross-protection against foot-and-mouth disease virus strains by serology after vaccination. *Frontiers in Veterinary Science*, **9**:1027006. doi: 10.3389/fvets.2022.1027006.

Annex 1: Sample data

Summary of submissions

Table 7: Summary of samples collected and received to WRLFMD April - June 2025

Country	Nº of samples	Virus isolation in cell culture/ELISA								RT-PCR for FMD	
		FMD virus serotypes							No Virus Detected		
		O	*A*	*C*	*SAT 1*	*SAT 2*	*SAT 3*	*ASIA1*		*Positive*	*Negative*
Hungary	1	1	0	0	0	0	0	0	0	1	0
TOTAL	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Clinical samples

Table 8: Clinical sample diagnostics made by the WRLFMD April - June 2025

Country	Date		WRL for FMD Sample Identification	Animal	Date of Collection	Results		
	Received	Reported				VI/ELISA	RT-PCR	Final report
HUNGARY	09 Apr 2025	02 Jun 2025	HUN 1/2025	Cattle	01 Jan 2025	O	FMDV GD	O
Total			**1**					

Annex 2: FMD publications

Recent FMD Publications April - June 2025 cited by Web of Science.

1. (2025). Foot-and-mouth disease: massive wake-up call for Great Britain. *Fleischwirtschaft*, **105**(1-2): 84.
2. Akhter, R., K.A. Hossain, B. Kitab, Y. Sakoda, and K. Tsukiyama-Kohara (2025). Common host factors for internal ribosomal entry site-mediated translation of viral genomic RNA: An investigation in foot-and-mouth disease and classical swine fever viruses. *Virus Research*, **355**: 15. DOI: 10.1016/j.virusres.2025.199570.
3. Al-Hammadi, M.A. (2025). Current trends and challenges in the management of foot-and-mouth disease in Saudi Arabia: A review. *Open Veterinary Journal*, **15**(5): 1907-1933. DOI: 10.5455/OVJ.2025.v15.i5.6.
4. Berryman, S., F. Feenstra, A. Asfor, J. Coco-Martin, T. Jackson, and T.J. Tuthill (2025). Foot-and-mouth disease vaccines by design; production of capsid-modified foot-and-mouth disease viruses with improved cell culture growth. *Vaccines*, **13**(3): 25. DOI: 10.3390/vaccines13030281.
5. Biswal, J.K., R. Ranjan, J.K. Mohapatra, N.R. Sahoo, and R.P. Singh (2025). Pan-serotype reverse transcription loop-mediated isothermal amplification (RT-LAMP) assay targeting 2B-NSP coding region for colorimetric detection of *Foot-and-mouth disease virus* in clinical samples. *Virus Genes*: 8. DOI: 10.1007/s11262-025-02158-y.
6. Byamukama, B., A. Amin, F.N. Mwiine, and A.B. Ekiri (2025). Epidemiology and control strategies for foot-and-mouth disease in livestock and wildlife in Uganda: systematic review. *Veterinary Research Communications*, **49**(4): 20. DOI: 10.1007/s11259-025-10791-z.
7. Canbar, R. and M. Uslu (2025). Effects of coadministration of foot-and-mouth disease vaccine and inactivated parapoxvirus ovis on humoral immunity in cattle. *Polish Journal of Veterinary Sciences*, **28**(2): 225-231. DOI: 10.24425/pjvs.2025.154941.
8. Cardenas, N.C., T.C. de Menezes, A.M. Countryman, F.P.N. Lopes, F.H.S. Groff, G.M. Rigon, M. Gocks, and G. Machado (2025). Integrating epidemiological and economic models to estimate the cost of simulated foot-and-mouth disease outbreaks in Brazil. *Preventive Veterinary Medicine*, **242**: 11. DOI: 10.1016/j.prevetmed.2025.106558.
9. Dagnaw, G.G. and H. Dejene (2025). Seroprevalence of foot-and-mouth disease in cattle in East Africa between 2014 and 2024: a systematic review and meta-analysis. *BMC Veterinary Research*, **21**(1): 10. DOI: 10.1186/s12917-025-04834-5.
10. Dahiya, S.S., S. Subramaniam, S.S. Rautaray, M. Rout, J.K. Mohapatra, and R.P. Singh (2025). A *Foot-and-mouth disease virus* serotype O field strain from an outbreak in India has a three-codon deletion in the 3A coding region. *Archives of Virology*, **170**(5): 8. DOI: 10.1007/s00705-025-06286-6.
11. De Nardi, M., S. Kueker, S. Salah, I. Qtananni, F. Rosso, and S. Baiomy (2025). Animal health syndromic surveillance system in Jordan, a road map for a pilot model. *Frontiers in Veterinary Science*, **12**: 7. DOI: 10.3389/fvets.2025.1538347.

12. Di Nardo, A., A.E. Shaw, M. Gondard, J. Wadsworth, G. Girault, K. Parekh, A. Ludi, V. Mioulet, C. Bernelin-Cottet, H.M. Hicks, N. Polo, A. Bulut, U. Parlak, D. Gizaw, M. Ababneh, M. Al Ameer, L.M.S. Abdulrasool, F.S.A. Saloom, W.A. Al-Rawahi, N.J. Knowles, L. Bakkali-Kassimi, and D.P. King (2025). Eastern Africa origin of SAT2 topotype XIV *Foot-and-mouth disease virus* outbreaks, western Asia, 2023. *Emerging Infectious Diseases*, **31**(2): 368-372. DOI: 10.3201/eid3102.240395.

13. Dilawar, A., N. Hassan, S. Farooq, S. Bashir, A. Muhee, and T. Nazir (2025). Economic impact of Foot-and-mouth disease (FMD) on dairy farmers of the highlands. *Journal of Livestock Science*, **16**(3): 322-327. DOI: 10.33259/JLivestSci.2025.322-327.

14. Edwards, N., A.E. Shaw, A. Di Nardo, A. Sowood, H.M. Hicks, J. Wadsworth, K. Parekh, A. McCarron, P.L. Kumarawadu, Y.M. Eltahir, M.S. Mohamed, L.R. Dahal, K.R. Pandey, N. Poudel, E. Taylor, D.L. Horton, V. Mioulet, A. Ludi, N.J. Knowles, D.P. King, and L. Lasecka-Dykes (2025). *Foot-and-mouth disease virus* O/ME-SA/SA-2018: A new emerging threat posed by viruses circulating in Asia? *Infection Genetics and Evolution*, **132**: 5. DOI: 10.1016/j.meegid.2025.105771.

15. Ganter, M., K. Müller, J. Böttcher, K. Donat, J. Gethmann, M. Holsteg, J. Hilke, U. Truyen, S. Rautenschlein, and M. Bastian (2025). Guidelines for the vaccination of cattle and small ruminants - a summary. *Tieraerztliche Praxis Ausgabe Grosstiere Nutztiere*, **53**(03): 180-190. DOI: 10.1055/a-2556-7199.

16. Gardezi, S.A.M., M. Rabbani, M.H. Mushtaq, and M.Z. Shabbir (2025). Molecular characterization and epidemiological insights into serotypes of *Foot-and-mouth disease virus* in Pakistan. *Archives of Virology*, **170**(7): 14. DOI: 10.1007/s00705-025-06319-0.

17. Ghougal, K., A. Azizi, and S. Baghezza (2025). Determinants of Foot and Mouth Virus in Eastern Algeria. *Tropical Animal Health and Production*, **57**(3): 8. DOI: 10.1007/s11250-025-04413-8.

18. Gizaw, D., G. Beyene, H. Ashenafi, M. Legesse, and T. Kassa (2025). Spatial and temporal patterns of foot-and-mouth disease outbreaks (2011-2022) in cattle export-sourcing areas of southeastern Ethiopia. *BMC Veterinary Research*, **21**(1): 11. DOI: 10.1186/s12917-025-04772-2.

19. Graham, J., L. Hayes, J. Manyweathers, J. Fountain, and M. Hernandez-Jover (2025). Understanding how on-farm biosecurity perceptions and practices of New South Wales sheep producers have been impacted by the 2022 foot-and-mouth disease outbreak in Indonesia. *Australian Veterinary Journal*: 11. DOI: 10.1111/avj.13422.

20. Gritsok, D., M. Hedström, M. Montenegro, and C.G. Amorim (2025). Electrochemical molecularly imprinted polymer sensors in viral diagnostics: Innovations, challenges and case studies. *Biosensors & Bioelectronics*, **287**: 13. DOI: 10.1016/j.bios.2025.117678.

21. Gubbins, S., E. Brown, Y. Wungak, O. Oyekan, A.J. Adedeji, S.I. Ijoma, R.B. Atai, M.O. Oguche, M. Samson, B.B. Dogonyaro, F. Rosso, H. Hicks, B.A. Wood, J. Wadsworth, N. Knowles, D.P. King, A.B. Ludi, C. Colenutt, A.E. Shaw, G. Limon, and D.O. Ehizibolo (2025). Longitudinal study of *Foot-and-mouth disease virus* in Northern Nigeria: implications for the roles of small ruminants and environmental contamination in endemic settings. *Veterinary Research*, **56**(1): 16. DOI: 10.1186/s13567-025-01502-2.

22. Gunasekera, U., M.A. Alkhamis, S. Puvanendiran, M. Das, P.L. Kumarawadu, M. Sultana, M.A. Hossain, J. Arzt, and A. Perez (2025). Ecological niche modeling for surveillance of foot-and-mouth disease in South Asia. *PLoS One*, **20**(4): 17. DOI: 10.1371/journal.pone.0320921.

23. Gunasekera, U., K. Vanderwaal, J. Arzt, and A. Perez (2025). Foot-and-mouth disease reproduction number: a scoping review. *Frontiers in Veterinary Science*, **12**: 7. DOI: 10.3389/fvets.2025.1576974.

24. Gupta, V.K., T.K. Mohanty, M. Bhakat, R.K. Baithalu, N. Kumar, R.K. Dewry, D. Nain, A. Soe, and R. Arunkumar (2025). Meloxicam and levamisole administration ameliorates FMD vaccination stress on frozen semen attributes in Sahiwal bulls. *Scientific Reports*, **15**(1): 13. DOI: 10.1038/s41598-024-81460-5.

25. Harmsen, M.M., N. Gupta, Q. Dijkstra, S. van de Water, M. van Setten, and A. Dekker (2025). Single-domain antibodies that specifically recognize intact capsids of multiple foot-and-mouth disease serotype O strains. *Vaccines*, **13**(5): 26. DOI: 10.3390/vaccines13050500.

26. Hiremath, J.B., R. Bhat, G.B. Bhavana, S. Awati, S.B. Mannapur, M.R. Gundallahalli, S.S. Patil, S.P. Satheesha, D. Hemadri, K.P. Suresh, S. Subramaniam, R. Hegde, and H. Rahman (2025). Age- and agro-climatic zone-specific variations in post-vaccinal antibody responses to FMD vaccination in bovine populations: a longitudinal study from Karnataka, India. *Veterinary Research Communications*, **49**(3): 8. DOI: 10.1007/s11259-025-10737-5.

27. Ivani, Z., B. Hemati, N. Harzandi, S.M. Azimi, and M.M. Ranjbar (2025). Development of solid phase competitive enzyme-linked immunosorbent assay to detect *Foot-and-mouth disease virus* A serotype specific antibodies based on immunoglobulin Y antibody. *Veterinary Research Forum*, **16**(5): 285-292. DOI: 10.30466/vrf.2024.2025842.4226.

28. Jiao, J., H.H. Yang, Z.Q. Liang, Y.H. Pan, J.X. Yang, W.L. Zhang, and P. Wu (2025). A meta-analysis on the effectiveness of serotype O foot-and-mouth disease vaccines. *Scientific Reports*, **15**(1): 13. DOI: 10.1038/s41598-025-99518-3.

29. Jones, R., D.P. King, and V. Busin (2025). Retrospective analysis of submissions to the World Reference Laboratory for foot-and-mouth disease: What can these data tell us about the role of small ruminants in disease epidemiology? *Preventive Veterinary Medicine*, **239**: 12. DOI: 10.1016/j.prevetmed.2025.106526.

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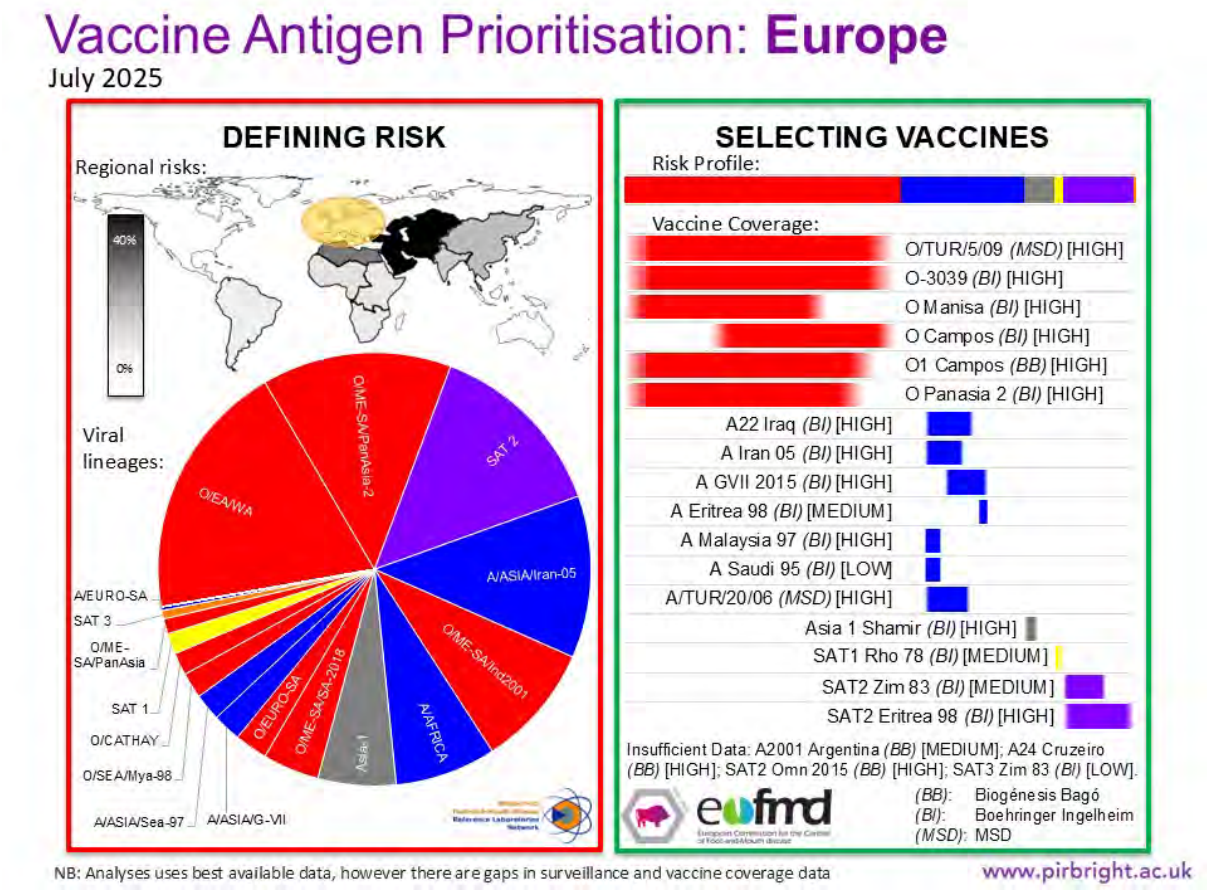
Annex 3: Vaccine recommendations

This report provides recommendations of FMDV vaccines to be included in antigen banks. These outputs are generated with a tool (called PRAGMATIST) that has been developed in partnership between WRLFMD and EuFMD (http://www.fao.org/3/cb1799en/cb1799en.pdf). These analyses accommodate the latest epidemiological data collected by the WOAH/FAO FMD reference laboratory network regarding FMDV lineages that are present in different *source regions* (see Table 1 in Section 3.10, above), as well as available *in vitro, in vivo* and field data to score the ability of vaccines to protect against these FMDV lineages.



Please contact WRLFMD or EuFMD for assistance to tailor these outputs to other geographical regions. An online version of the tool is available on https://www.openfmd.org/dashboard/pragmatist/.

NB: Vaccine-coverage data presented is based on available data and may under-represent the true performance of individual vaccines.

Further information about the PRAGMATIST system has been published in *Frontiers in Veterinary Science* - see: https://doi.org/10.3389/fvets.2022.1029075.

Annex 4: Brief round-up of EuFMD and WRLFMD activities

Courses & Training

- The EuFMD's open-access Courses provide convenient self-paced training which you may study anytime, anywhere, free of charge:
  - **Introduction to Foot-and-Mouth Disease** *(also available in French and German)*; This course introduces foot-and-mouth disease (FMD), its importance, diagnosis, outbreak investigation and the control measures that might apply in a previously free country experiencing an outbreak.
    This course is suitable for all of those with an interest in FMD control. No prior knowledge of FMD is required.
  - **Introduction to the socioeconomics of foot-and-mouth and similar transboundary animal diseases**; This course aims to introduce non-expert learners to the fundamental concepts required to understand the socioeconomic analysis of animal disease. It also forms the basis for further, in-depth training on socioeconomic impact assessment and practical cost-benefit analysis of FMD and similar transboundary animal diseases.
  - **Introduction to sheep pox and goat pox**; This short, open-access and self-directed course aims to provide an overview of sheep pox and goat pox, recognise or suspect the disease in the field, identify the correct samples to collect and the relevant control measures.
  - **Introduction to Lumpy Skin Disease** *(also available in French)*; This short module introduces lumpy skin disease, its distribution, impacts, aetiology, diagnosis epidemiology and control options.
    This course is suitable for all of those with an interest in LSD, in affected countries or those at-risk.
  - **Introduction to Rift Valley Fever** *(also available in French)*; This course introduces the diagnosis, prevention and control of RVF, and is suitable for those based in countries that are either endemic or at-risk. The course is designed to be easy to study on a smartphone.

    This course is suitable for anybody who would like to know more about RVF. It will be of particular interest to field veterinarians (public and private) and veterinary paraprofessions who are working in countries that are either endemic or at high risk of RVF. No prior knowledge of RVF is required.
  - **Introduction to Animal Health Surveillance**; This short, open access and self-directed course aims to provide an overview of the importance and key activities of animal health surveillance. It also forms the basis for further, in-depth courses on passive surveillance.
  - **What is the Progressive Control Pathway?** (also available in Arabic); This short e-learning module provides an overview of the Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD), the tool used to FMD control under the GF-TADs Global Strategy.

This course is suitable for all of those with an interest in FMD control in countries which are not free of the disease, and is a good introduction for those new to the PCP-FMD.

- **Introduction to the Risk Assessment Plan** *(also available in French)*; This course is part of a series of self-directed online courses that aim to support progress on the Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD).

  The Risk Assessment Plan describes how the country intends to embark on the PCP-FMD and gain an understanding of the epidemiology of FMD in the country. Ultimately, the country will use that knowledge to develop a risk-based plan to reduce the impact of FMD (Risk-Based Strategic Plan).

  This course will be of interest to anyone who is involved in control of FMD in countries which are not currently free of the disease. It is particularly aimed at veterinarians who are working with countries in PCP-FMD Stage Zero and beginning the process of developing a RAP.

- **Introduction to the Risk-Based Strategic Plan**; This course introduces the Risk-Based Strategic Plan (RBSP). The RBSP describes how a country will reduce the impact of FMD in at least one husbandry sector or geographical area. The RBSP applies the outputs and knowledge gained through the implementation of the activities in PCP-FMD Stage One. An accepted RBSP is required for countries to be recognized as in PCP-FMD Stage Two.

  This course will be of interest to anyone who is involved in control of FMD in countries which are not currently free of the disease. It is particularly aimed at veterinarians who are working with countries in PCP-FMD Stage One, and beginning the process of developing an RBSP.

- **Introduction to the Official Control Programme**; This course is part of a series of self-directed online courses that aim to support progress on the Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD).

  The OCP describes how the country will eliminate virus circulation of FMD in at least one zone of the country, to mitigate the risks of FMD to the point where an application to WOAH for official recognition of freedom from FMD may be successful and suitable. Completion of the OCP is the indicator outcome for entry into PCP-FMD Stage 3, as defined in the PCP-FMD guidelines.

  This course will be of interest to anyone who is involved in control of FMD in countries which are not currently free of the disease. It is particularly aimed at veterinarians who are working with countries in PCP-FMD Stage Two and beginning the process of developing an OCP.

- **Introduction to the FMD Minimum Biorisk Management Standards**; This course aims to provide an overview of the Minimum Biorisk Management Standards for foot-and-mouth disease laboratories (MBRMS), explaining the scope and the risks associated with the standards.

  This course is directed to National Competent Authorities, Institute directors for FMD facilities and biorisk managers in FMD free countries in the European region to ensure they are aware of the importance and implications of their role in ensuring that laboratories handling infectious FMD virus (Tier D) and performing FMD diagnostic tests without handling infectious FMD virus (Tier C) adhere to the FMD Minimum Biorisk Management Standards.

- **Simulation Exercises for Animal Disease Emergencies**; The Simulation Exercise for Animal Disease Emergencies online training course introduces simulation exercises as part of preparedness for animal disease emergencies and explains the processes involved in planning, conducting and evaluating simulation exercises. It also describes the various tools, approaches and strategies to support decision-making, as well as the different phases of an exercise.
  This course is designed for a range of stakeholders with an interest in learning about animal health emergency preparedness and planning.
- **Public Private Partnerships in the Veterinary Domain**; This online course has been developed under a partnership between EuFMD and the WOAH and is accessed on the WOAH e-learning platform. The course introduces the potential for partnership between public and private sectors in the delivery of veterinary services and discusses the typology and implementation of such partnerships.

- **Real time training - NTC37**; Nakuru, Kenya – 11-14 November 2025
  This is a four-day intensive course which allows to see foot-and-mouth in an endemic country, discuss with farmers, peers and expert trainers. The course is preceded by a six-hour virtual Learning induction course. It can give you the unique opportunity to visit farms with suspected FMD cases and carry out clinical and epidemiological investigations in real time.

Meetings

- **106th Session of the Executive Committee (EuFMD)**; Bratislava, Slovakia – 16-17 October 2025.
- **Standing Technical Committee (EuFMD)**; Berlin, Germany – 20-21 November 2025.
- **Open Session of the Standing Technical Committee of the EuFMD - OS26**; Location to be confirmed – 28 October 2026.
- **47th General Session of the EuFMD**; FAO HQ, Rome, Italy – 5-6 May 2027.
  The Commission's Member Nations meet in General Session every two years – most of the delegates are the Chief Veterinary Officers of their respective countries. At the General Session, the Member Nations review the activities of the previous biennium, agree a work plan and budget for the next biennium and elect an Executive Committee and a Standing Technical Committee.

Other sources of information from EuFMD

- EuFMD webpages (https://www.fao.org/eufmd/).
- EuFMD has a constantly updated series of short podcasts relating to the FAST world (http://www.fao.org/eufmd/resources/podcasts/).
- EuFMD Emergency Toolbox (https://www.fao.org/eufmd/resources/emergency-toolbox/en/) listing all open-access resources concerning FAST diseases, available in multiple languages.
- Leaflets on FMD in Arabic, Bosnian, Bulgarian, English, Greek and Montenegrin, Portuguese, Serbian and Turkish for the Thrace region (https://www.fao.org/publications/card/en/c/CB4903EN).
- Join the EUFMD Telegram channel to receive EuFMD updates (https://t.me/eufmd).

Proficiency test scheme organised by WRLFMD

The sample panels for the FMD PTS Phase XXXVI are being shipped to the participating laboratories. The results for some of the already shipped panels have been returned to the WRLFMD for analysis.

FAO four betters. Better life, better environment, better nutrition, better production.

EuFMD's programme, tools and initiatives

FAST
Foot-and-mouth And Similar Transboundary animal diseases

Dt
EuFMD digital transformation

Tom
EuFMD training management system

Microlearning
EuFMD micro learning

Vlearning
EuFMD virtual learning

SimExOn
Simulation exercises online

Get prepared
Emergency preparedness toolbox

Risk Comms
EuFMD risk communications

RMT-FAST
Risk monitoring tool for foot-and-mouth and similar transboundary animal diseases

Pragmatist
Prioritization of antigen management with international surveillance tool

EuFMDiS
European foot-and-mouth disease spread model

Vademos
FMD vaccine demand estimation model

GVS
Global vaccine security

PQv
Vaccine prequalification

PCP
Progressive control pathway

PSO
Pcp practitioner officers

PPP
Public private partnership

PROTECT
RESPOND
CONTROL

MOVE FAST

FAST, Foot-and-mouth
And Similar Transboundary
animal diseases.

EuFMD structure

Secretariat, Executive Committee, Standing Technical Committee (STC), Special Committee on Risk Monitoring, Integrated Surveillance and Applied Research (SCRISAR), Special Committee on Biorisk Management (SCBRM), Regional Groups for FAST Coordination, Standing Committee on Prequalification of Vaccines against FAST diseases (SCPQv), Steering Committee TOM (SCTOM).

EuFMD Secretariat

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Thinking of the environmental footprint

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SUSTAINABLE DEVELOPMENT GOALS