



FMD: Global FMD Situation and Risks July 2026

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FAO World Reference Laboratory for FMD

WOAH Reference Laboratory for FMD

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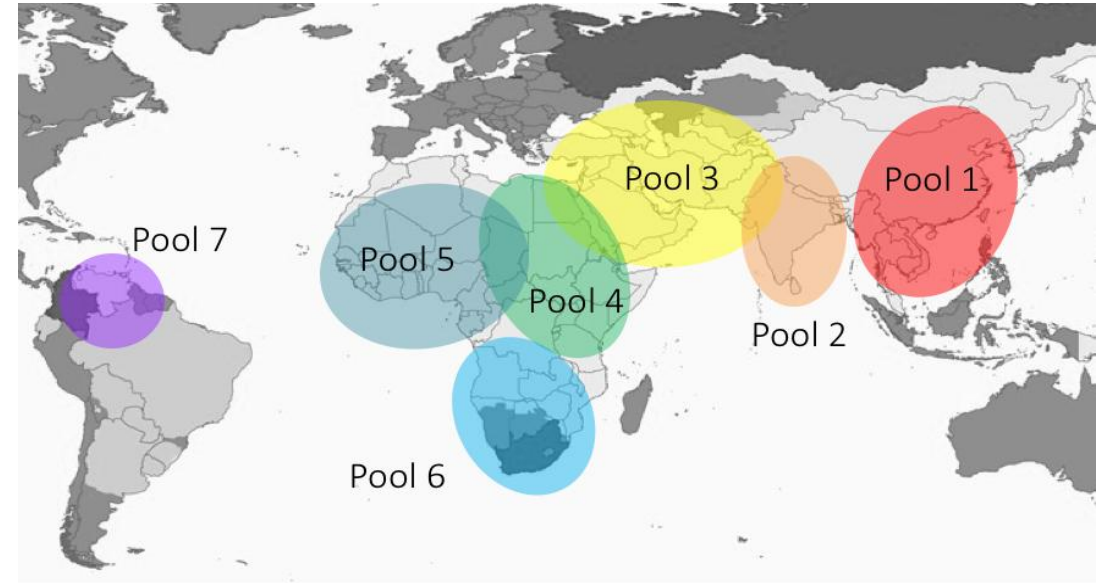
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FMD epidemiology: background

The epidemiology of FMD is dynamic, defined by:

- Seven virus ecosystems (Pools) that maintain specific FMDV strains requiring tailored diagnostics and vaccines
- Six circulating FMDV serotypes with an unequal distribution
 - Serotype C has not been detected globally since 2004
 - Serotype O is globally the most dominant serotype



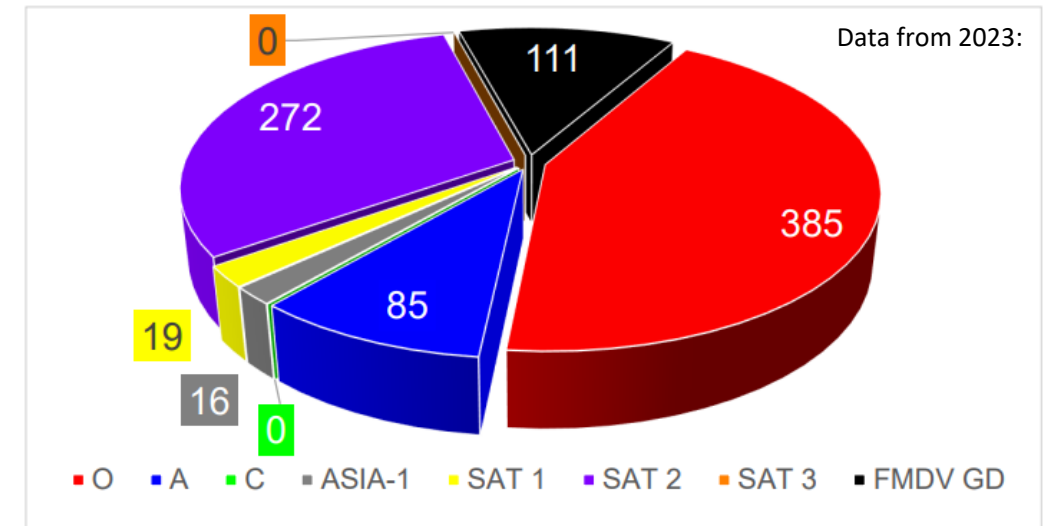
FMD control has led to FMD freedom in South America (except Venezuela)



2025: FMD incursions into Europe (O and SAT 1)



Loss of FMD free status in Indonesia (2022) and countries in southern Africa (2021 -)



Headline global status for FMD (April 2026)

Greece

Mar 2026
SAT 1

Cyprus

Dec 2025
SAT 1/III

Germany

Jan 2025
O/ME-SA/SA-2018

Hungary, Slovakia

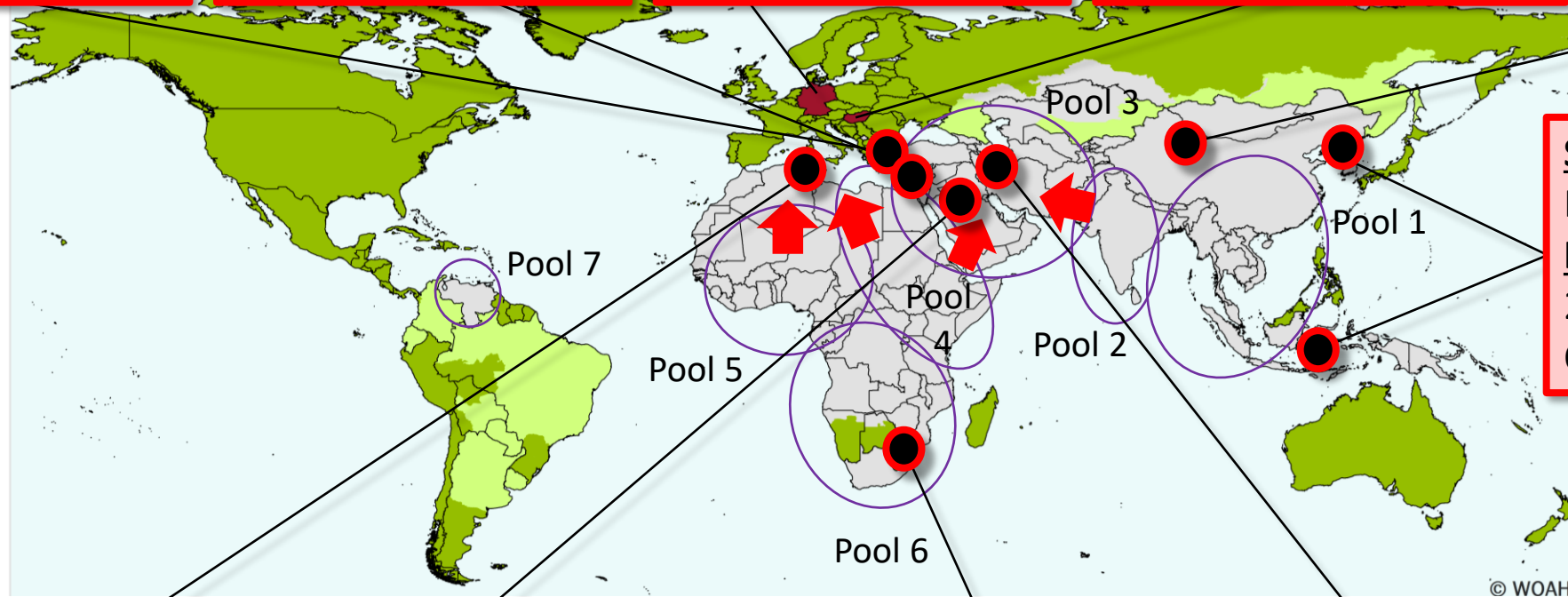
Mar 2025
O/ME-SA/PanAsia-2^{PUN-16}

China

April 2026
SAT 1

KEY

- O
- SAT2
- SAT1



South Korea

Mar 2025, Mar 2026
Indonesia
2024-25
O/ME-SA/Ind-2001e

Maghreb (2025)

O/EA-3

Algeria (2023/4)

SAT2/V

Middle East (2025)

SAT1/I and SAT1/III

Middle East (2023)

SAT2/XIV

Southern Africa

Serotype SAT2
(and SAT1 & SAT3)

Eswatini

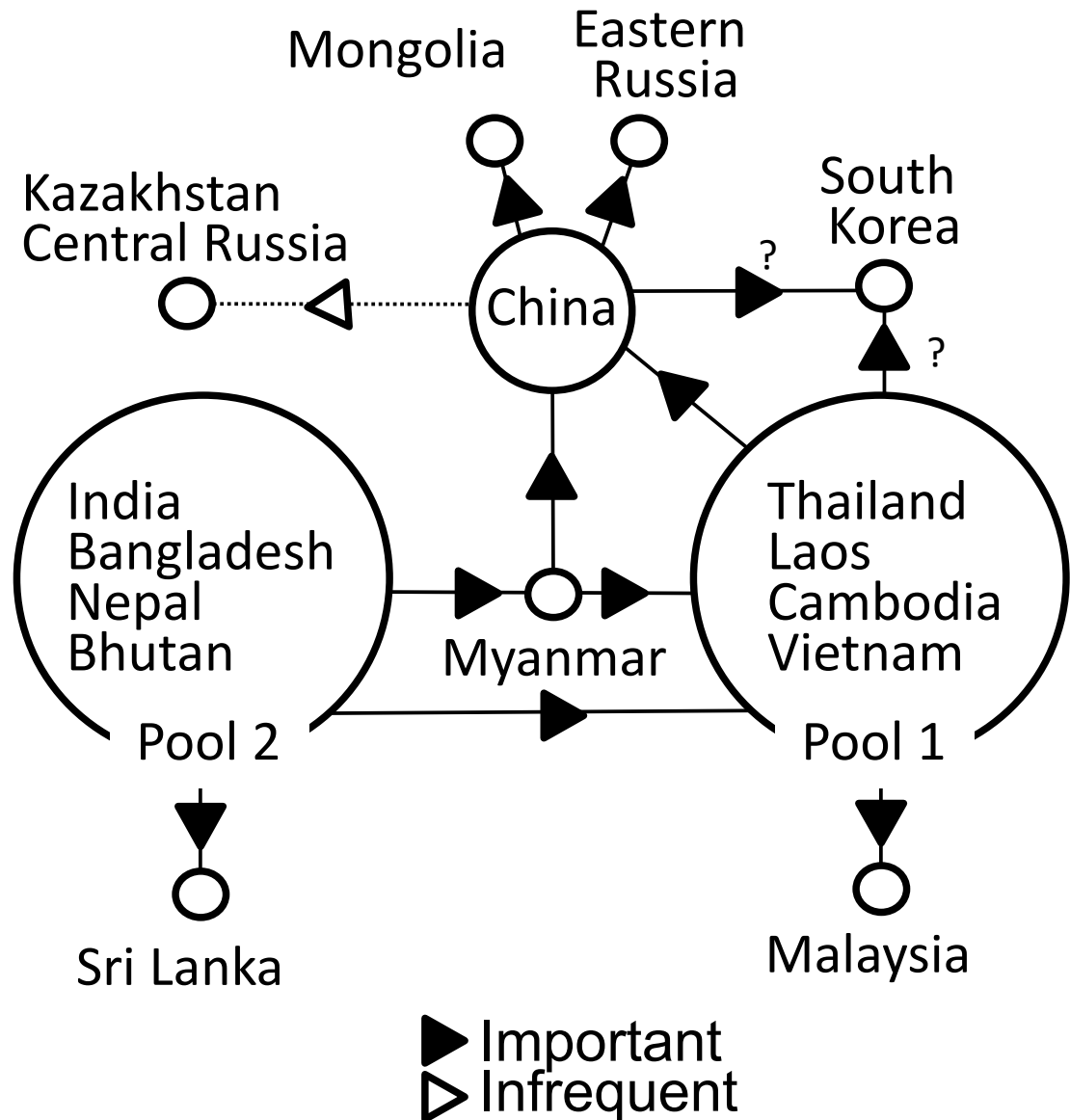
SAT2

Iran, Iraq, Syria, Türkiye, Palestine, Pakistan, Israel

2023-2025

O/ME-SA/SA-2018

Conjectured FMDV connections: South Asia, Southeast/East Asia



Viral sequences highlight most frequent connections between countries (reflect trade and animal movements)

Potential risk pathways:

- Legal and illegal imports
- Import of fodder
- Overseas workers
- Returning travellers
- Wildlife

Pool 1: Status in 2025

Characterisation of different FMD virus lineages

Based on data from WRLFMD, RRLSEA, the WOA/FAO Lab Network, publications* and reported @SEACFMD



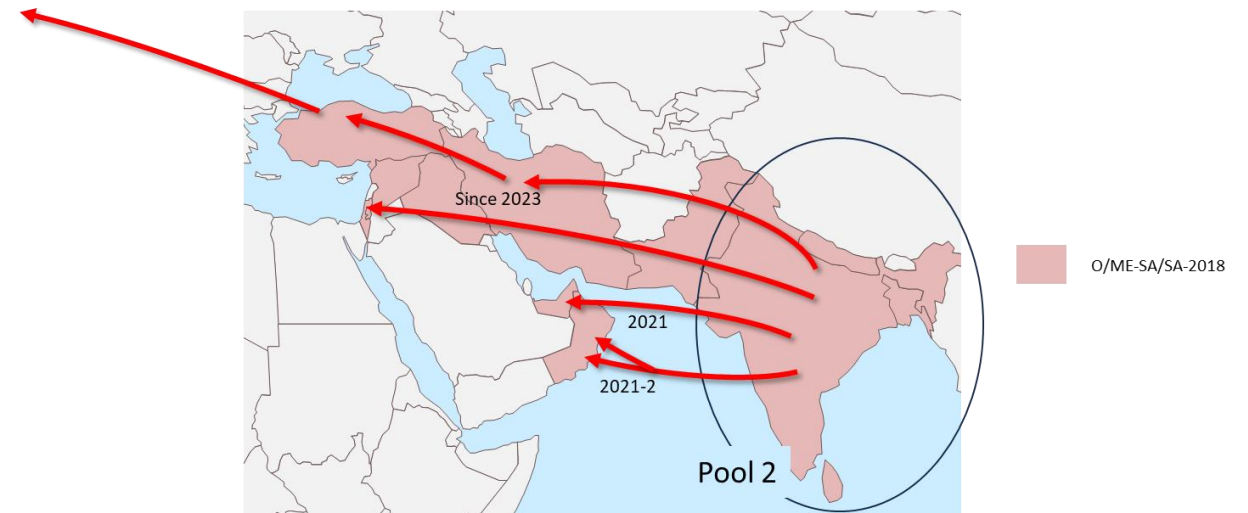
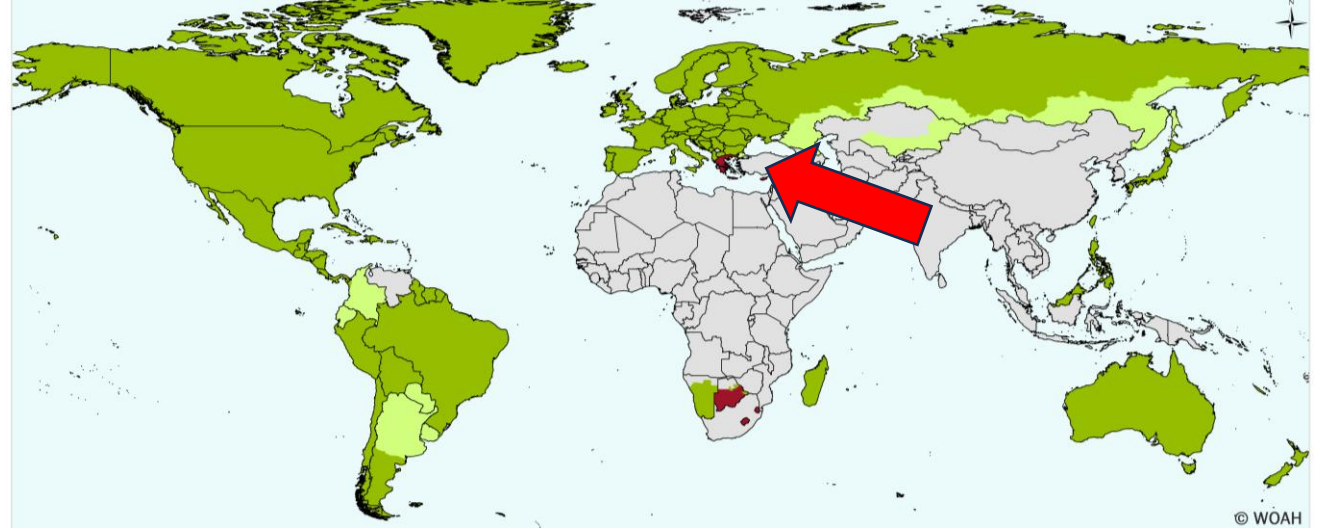
Country	O					A		Asia-1
	ME-SA/Ind-2001e	SEA / Mya-98	CATHAY	ME-SA / PanAsia	ME-SA/ PanAsia-2	ASIA / Sea-97	ASIA/Ind	
Cambodia	2024	2016	2005	2024	2009	2016	2010	2017
Laos	2024	2017		2024		2018		
Malaysia	2024	2016		2023		2023		
Myanmar	2022	2021				2021		
Thailand	2024	2018	2012	2019		2022		
Vietnam	2025	2024	2018	2024		2017		2007
PR China	2025	2020	2024	2019		2019		2009
Indonesia	2025							
Mongolia	2026	2018		2017		2016		

*Recent papers: Khanh et al., (2025)

FMD headline events – 2026: incursions from South Asian countries

- History tells us that pandemic serotype O lineages can emerge from South Asia (Pool 2)
- The **O/ME-SA/SA-2018** lineage is frequently detected in India, Nepal, Bangladesh and Sri Lanka
- Since 2021: increasingly detected in the Gulf States and West Asian countries via multiple incursions
- Caused outbreak in Germany in 2025
- Scope to spread more widely – into **Southeast Asia** following similar pathways for O/ME-SA/Ind-2001

WOAH Members' official FMD status map (April 2026)



FMD headline events – 2026: exotic serotypes from East Africa

2022

SAT2/XIV in Iraq, Jordan, Türkiye, Oman and Bahrain

Early 2025

SAT1/I in Iraq and Bahrain - spread to Kuwait, Türkiye and Egypt

Late 2025

Detection of **SAT1/III** in Iran and Türkiye closely related to a vaccine strain (>99% identity)

2025-2026

SAT1/III outbreaks in Europe (Cyprus and Greece)

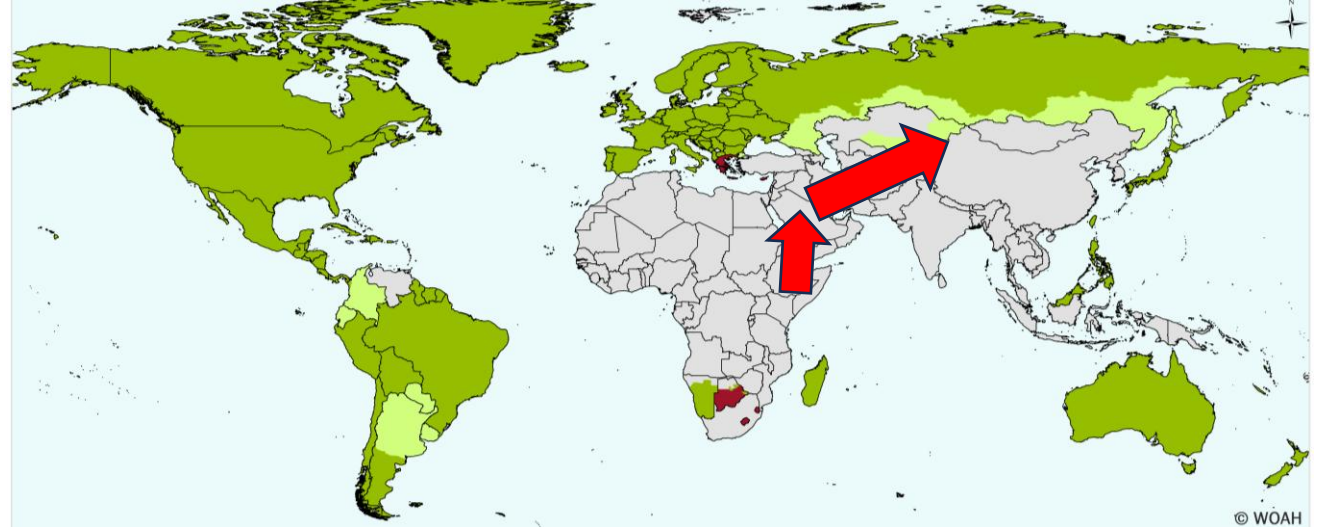
Mar/Apr 2026

SAT1/III cases reported in China (two provinces)

May 2026

SAT1/III cases in Mongolia (Bayan-Olgii Province)

WOAH Members' official FMD status map (April 2026)



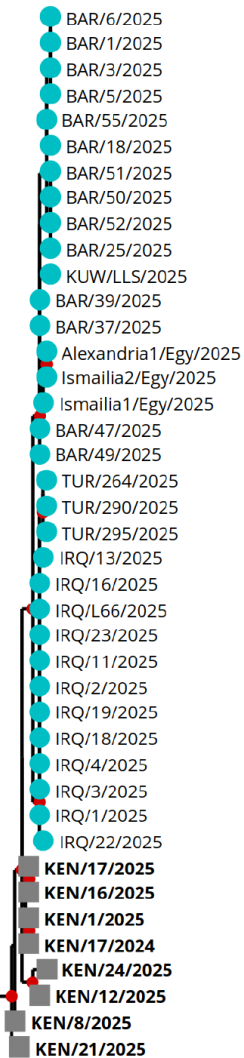
Affected Provinces in China:



Co-circulating SAT 1 topotypes

SAT1/I

- Close identity to viruses from Kenya
- Source from East Africa

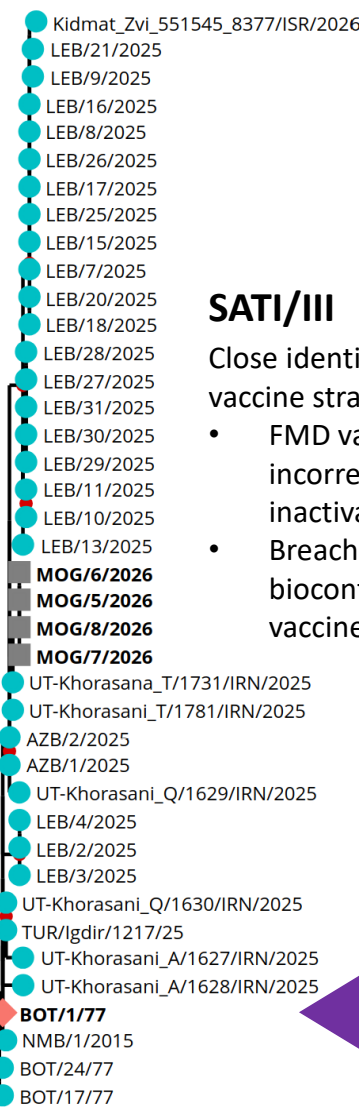


Country reports
(earliest dates):

Country	SAT 1/I	SAT 1/III
Bahrain	January 2025	
Iraq	February 2025	
Kuwait	April 2025	
Türkiye	May 2025	November 2025
Iran	*	*
Egypt	July 2025	
Azerbaijan		October 2025
Lebanon		November 2025
Israel		January 2026
Cyprus		Dec 2025/Feb 2026
Syria		January 2026*
China		March 2026
Greece (Lesvos)		March 2026
Mongolia		May 2026

April 2026: topotype - not yet reported
July 2026: topotype not yet reported

Vaccine escape?



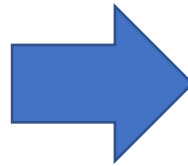
SAT1/III

Close identity to BOT/1/77 vaccine strain

- FMD vaccine incorrectly inactivated?
- Breach of biocontainment at vaccine plant?

SAT 1 potential impacts and preparedness

- Wide range of susceptible species: reports of SAT1/III cases in cattle, small ruminants, pigs and yaks
- Most livestock in Asia are immunologically naïve
- Risk pathways in the region and to China/Mongolia are not well understood
- **Potential scope for rapid onward spread to other countries in the Middle East, Central Asia and East/Southeast Asia**
- High global demand for vaccines for a previously neglected serotype



- FAO has issued alerts to raise global awareness of these new risks
- Recent GF-TADs seminars on epidemiology and vaccines
- Importance of laboratory preparedness
 - Support from WOA and FAO reference laboratories
 - SAT1/I and SAT1/III lineage-specific real-time RT-PCRs developed (by ANSES and WRLFMD)
 - Sequencing approaches (primers) are also available
 - www.foot-and-mouth.org
 - Ag-ELISA (from IZSLER) detects and discriminates viruses from this topotype

Potential impacts of SAT 1

- Absence of pre-existing immunity in livestock to SAT 1
- Animals are naïve to this serotype - potential for rapid spread
- Cases can be expected to have high clinical impact
- Limited availability of SAT 1-specific vaccines
- Evidence gaps for disease epidemiology, species susceptibility and immune correlates

Selecting FMD vaccines: SAT 1/I

Isolate	SAT1/Rho78 ^{BI}	
	r1value	heterologous titre (log ₁₀)
BAR/37/2025	0.31	2.20
BAR/50/2025	0.39	2.30
IRQ/1/2025	0.26	2.13
IRQ/11/2025	0.19	2.00
EGY/3/2025	0.33	2.14
TUR/9/2025	0.30	2.15
KEN/3/2022	0.30	1.72
QTR/6/2023	0.42	2.34
QTR/7/2023	0.61	2.50

Selecting FMD vaccines: SAT 1/III

Isolate	SAT1/Rho78 ^{BI}		SAT1 2020 ^{BB}		SAT1 IRQ 2025 ^{DV}		SAT1/BOT/1/77 ^{DV}		SAT1/HWANGE/94 ^{DV}	
	r1value	heterologous titre (log ₁₀)	r1value	heterologous titre (log ₁₀)	r1value	heterologous titre (log ₁₀)	r1value	heterologous titre (log ₁₀)	r1value	heterologous titre (log ₁₀)
BOT/1/77	0.50	2.25								
AZB/1/2025	0.60	2.34								
AZB/2/2025	0.51	2.27								
LEB/8/2025	0.64	2.37								
LEB/9/2025	0.40	2.16								
LEB/10/2025	0.40	2.16								
TUR/22/2025	0.40	2.28								
TUR/24/2025	0.21	2.01								
MOG/5/2026	0.57	2.39			0.63	2.50	0.75	2.48		
MOG/7/2026	0.97	2.62			0.74	2.58	1.00	2.64		
SAR/6/2025	0.38	2.24	0.10	1.62	0.34	2.39	0.38	2.20	0.07	2.06
SAR/8/2025	0.38	2.24	0.08	1.51	0.26	2.27	0.32	2.13	0.08	2.09

From vaccine?

Field viruses in Southern Africa

Heterologous potency test recently conducted at Lelystad to demonstrate cross protection even though r1 value <0.3

Summary of global events (potential new FMD vaccine markets!)

- Emergence and spread of a new serotype O lineage (O/ME-SA/SA-2018) in the Middle East region
- **SAT1 in the Middle East** (Pool 3) – two co-circulating topotypes
 - SAT1/I sequences from Kenya – reinforce epidemiological connection between East Africa and the Middle East
 - SAT1/III sequences share close genetic identity to a vaccine strain (BOT/1/77)
 - Onward spread of SAT 1/III into Europe (Cyprus and Greece) and Central Asia (China and Mongolia, via poorly understood risk pathways)
- Detection of **O/EA-2** in Ethiopia for the first time
 - representing >80% of submitted samples
- A new incursion of **O/EA-3** in Algeria (December 2025)
- Upsurge of **SAT1** cases across Southern Africa – leading to the loss of FMD-free status in Botswana (two separate incursions) and Lesotho – other cases caused by SAT2 and SAT3
- New incursion of **O/ME-SA/Ind-2001e** into South Korea

Further 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 WOA/FAO FMD Laboratory Network (<http://foot-and-mouth.org/>)
 - OpenFMD (www.openfmd.org) – sequences, genotyping, vaccine selection and surveillance



Thanks:



- Collaborating FMD Reference Laboratories and field teams
- Partners within the WOA/FAO FMD Lab Network
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