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SEACFMD Laboratory Network Meeting

**Current FMD Laboratory Activities in [Malaysia]**

[Norzufikal binti Zulkifly, Head Section of National FMD Laboratory, DVS Malaysia]

24-25 October 2023
Lanzhou, China

FMD SITUATION :

2021
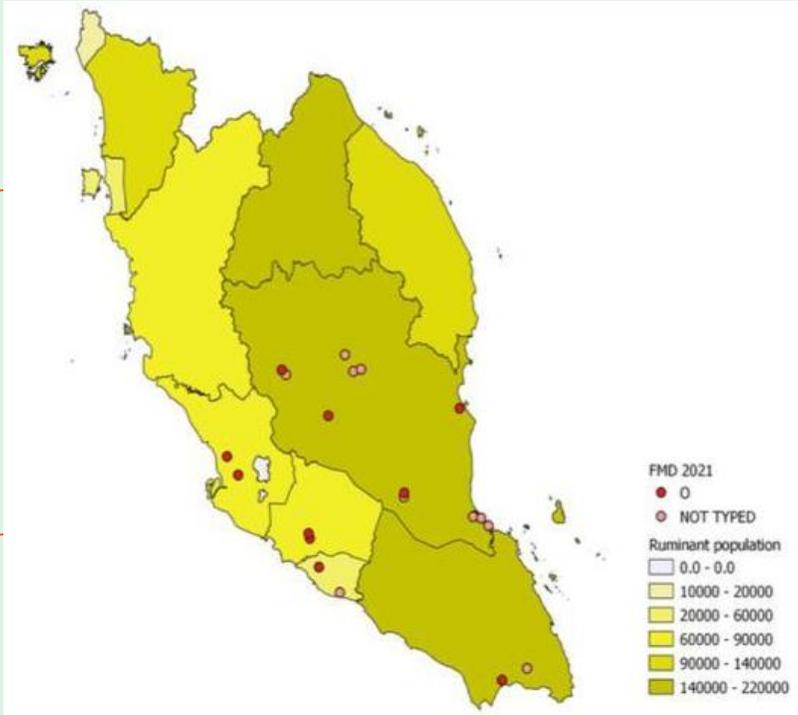
2022
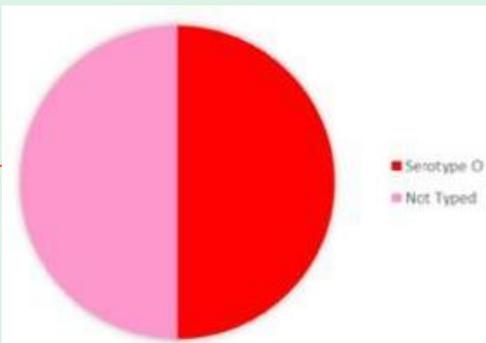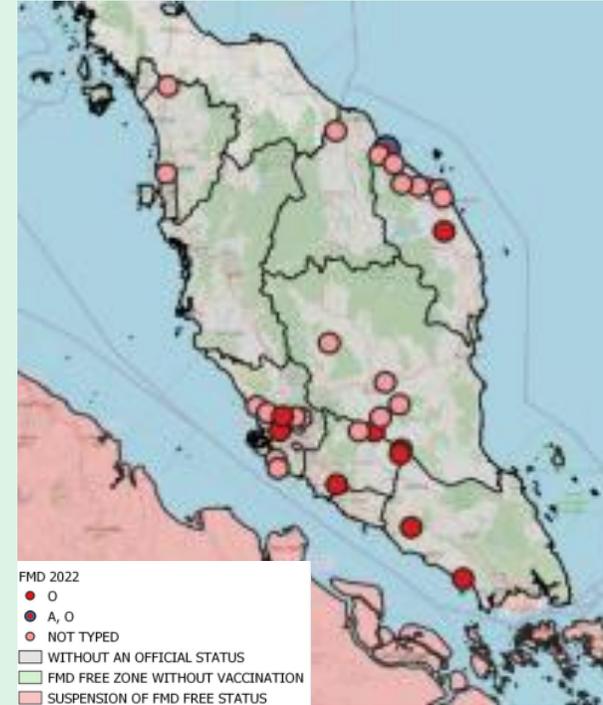
Species	Outbreaks
BOVINE	23
CAPRINE	1
BUFFALO	2

SPECIES	OUTBREAKS
BOVINE	28
CAPRINE	1
SWINE	2

FMD SITUATION :
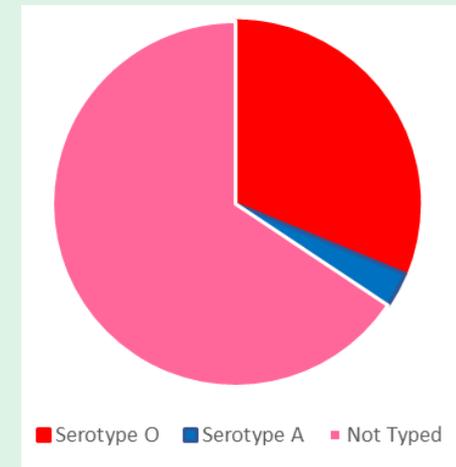
2023
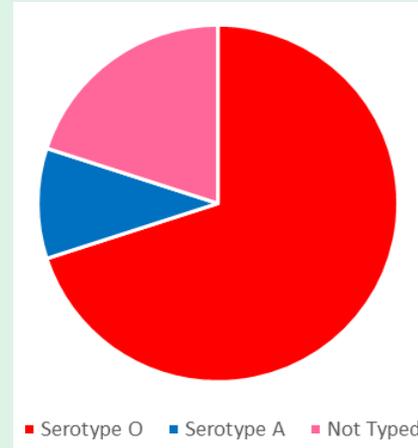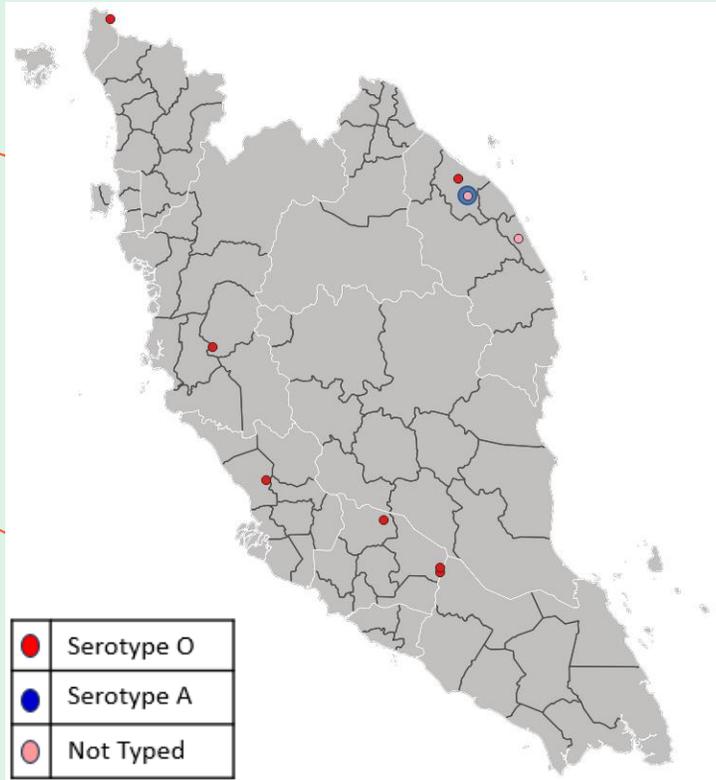
SPECIES	OUTBREAKS
BOVINE	10

TEST METHODS IN NATIONAL FMD LABORATORY :

No.	Test method	Purpose
1.	Non-Structural Protein (NSP) FMDV ELISA	Surveillance and Post Vaccination Monitoring (PVM) Programme
2.	Virus Neutralization Test (VNT)	Post Vaccination Monitoring (PVM) Programme
3.	Real-Time RT-PCR	Detection and identification
4.	RT-PCR for FMD virus characterization	Detection and identification
5.	Virus isolation using cell line	Detection and identification
6.	Antigen detection ELISA	Detection and identification

FMD VIRUS CHARACTERIZATION:

Year	No. of samples received at National Laboratory	No. of samples tested	No. of positive samples	No. of serotype O viruses	No. of serotype A viruses	No. of serotype Asia 1
2021	51	51	27	13	0	0
2022	68	68	12	7	1	0
2023	43	43	21	12	2	0
Total	162	162	60	32	3	0

*One outbreak case send more than one sample

FMD VIRUS CHARACTERIZATION :

Year	Number of samples send to RRL and WRLFMD	O/ Mya-98	O/ PanAsia	O/ Cathay	O/ Ind2001e	A/ SEA-97	Asia 1
2021	32 (WRLFMD)	0	1	0	31	0	0
2022	15 (WRLFMD)	0	0	0	15	0	0
2023	2 (WRLFMD)	0	2	0	0	0	0
Total	49	0	3	0	46	0	0

* Share VP1 sequences for verification

QUALITY ASSURANCE

Proficiency testing during the past 5 years

Type of test	Type of programme	Organiser	Participating date/year
Serology (NSP FMDV ELISA)	Proficiency testing	RRL Pakchong, Thailand	2023
Real-Time RT-PCR for FMD virus detection & Antigen ELISA for serotyping	Proficiency testing	RRL Pakchong, Thailand	2023
Serology (NSP FMDV ELISA) –between six regional veterinary laboratory & Veterinary Research Institute (VRI) in Malaysia	Inter-Laboratory Comparison (ILC)	NFMDL, DVS Malaysia	2022
Serology (NSP FMDV ELISA)	Competency test among technical personnel in NFMDL	NFMDL, DVS Malaysia	Every year

Qualification MS ISO:17045/2017

Type of test	Standard test method	Participating date/year
Detection of antibodies against Non-Structural Protein (NSP) of FMD virus	PrioCHECK FMDVNS Thermo Fisher Scientific, Prionics Lelystad B.V. The Netherlands Commercial ELISA Kit	2018
Competitive ELISA for the detection of anti-Foot and Mouth Disease Virus (anti-FMDV) Nonstructural Protein (NSP) antibodies	ID Screen FMD NSP Competition. Innovative Diagnostics, FMDV ELISA Kit	2021

POST VACCINATION MONITORING ACTIVITIES

Species	Geomean P1		Geomean P2		Geomean Booster	
	O(Ind2001e)	A(Sea-97)	O(Ind2001e)	A(Sea-97)	O(Ind2001e)	A(Sea-97)
Cattle & buffalo	1.901	1.922	2.230	2.081	2.697	2.354
Goats & sheep	1.931	1.926	2.106	2.015	2.138	2.032
Pigs	1.684	1.723	2.209	2.342		

1. Foot-and-mouth disease diagnostic: comparison of two Non-Structural Protein (NSP) ELISA Kit

CHALLENGES AND RECOMMENDED SOLUTION
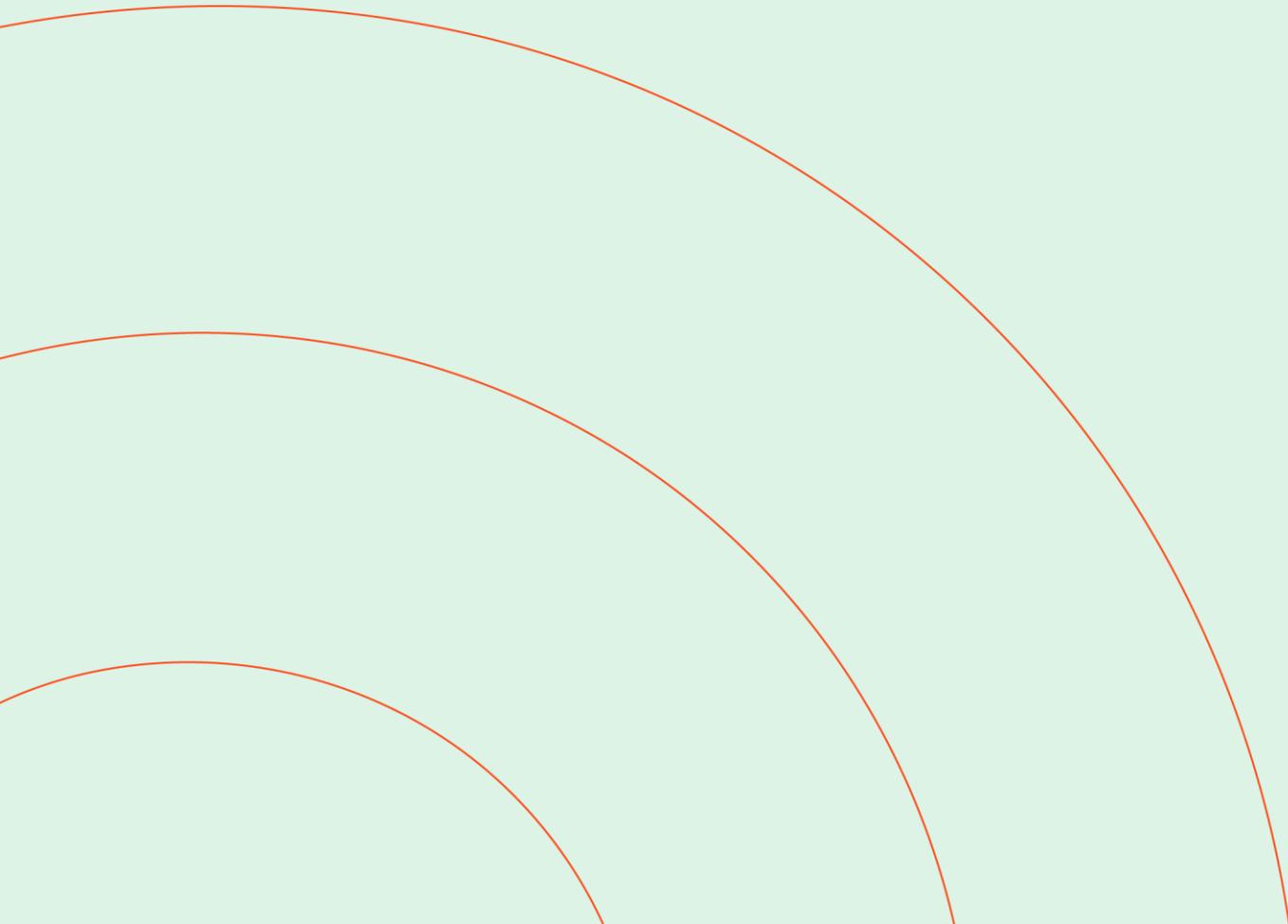
CHALLENGES	RECOMMENDED SOLUTION
Poor sample quality	1. More training for field personnel on sample collection 2. Revised guidelines for sample collection, submission and transportation for FMD. 3. Revised guidelines for transport media preparation among regional laboratory and Veterinary Research Institute (VRI)
Insufficient trained workforce	Increase number of trained workforce
Lack of specific training on diagnostic test of FMD	Suggest training for laboratory personnel by regional reference laboratory at least once a year
Continuous supply of reagents (companies changed reagents availability without prior notice)	Engage with sole agent distributor for continuous supply of reagents

WAY FORWARD

1. Development of BSL-3 and BSL-3 Ag for FMD (Twelfth Malaysia Plan,2021-2025)

2. Increase number of test method with MS ISO 17025 accreditation

3. Increase number of test method such as Solid Phase antibody ELISA, multiplex for serotyping and

   Whole Genome Sequence (WGS)

4. Follow through SEACFMD roadmap

Thank You