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SEACFMD Bulletin

Foot and Mouth Disease Situation
January to December 2020

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Summary

- The present issue SEACFMD Bulletin summarises the foot-and-mouth disease (FMD) outbreaks in the SEACFMD region in 2020 as well as the FMD viruses (FMDVs) serotypes and strains detected in the region.
- In total, 556 FMD outbreaks were reported in mainland South-East Asia and China.
- Only 188 out of 556 outbreaks were serotyped out of which all these outbreaks are due to Serotype O. Serotypes A and Asia-1 were not reported.
- The most prevailing strain was O/ME-SA/Ind-2001.
- Samples were not collected from nearly 50% (273 out of 556) of the reported FMD outbreaks.
- FMD outbreaks are reported throughout the year with the increasing number of outbreaks in later part of the year (September to December).
- Significant epidemiological events in 2020 included: 1) no serotype A FMDVs reported, and 2) O/ME-SA/Ind-2001 reported in Cambodia for the first time.

Introduction

1. Aims

Following the previous issues of SEACFMD Bulletin presenting the regional FMD situation in the years from 2015 to 2019[1], the current issue was developed to summarise the FMD situation in the entire year of 2020 in the SEACFMD region, which includes 10 ASEAN nations, PR China and Mongolia. The SEACFMD bulletins aim to update SEACFMD countries, partners and stakeholders on the regional FMD situation on a regular basis and to facilitate the formulation of risk-based strategies and more effective FMD control and prevention measures.

2. Reporting period

January 1st - December 31st, 2020

3. Data source

Sources of information in this report include data submitted by members to OIE through the World Animal Health Information Systems (WAHIS), the WAHIS Regional Core for South-East Asia/ ASEAN Regional Animal Health Information System (ARAHIS), reports from OIE FMD Reference Laboratories in Pirbright (UK) and Lanzhou (China) and ASEAN Regional Reference Laboratory for FMD in Pakchong (Thailand), country reports presented at the 23rd OIE SEACFMD National Coordinators Virtual Meeting held in June 2020[2], as well as the SEACFMD LabNet and EpiNet surveys conducted in November 2020.

A FMD outbreak is defined as the occurrence of FMD in one or more animals in an epidemiological unit (refer to a commune in Vietnam, a sub-district in Cambodia, or village/farm in the other SEACFMD countries with a defined epidemiological relationship that share approximately the same likelihood of exposure to FMD virus). All cases within 2 weeks from the previous case are considered as part of the same outbreak.

4. Data analysis

The descriptive analysis was performed based on what had been reported by the SEACFMD countries during the period. While the aim of this report is to understand the status of FMD in the SEACFMD countries, underreporting of the outbreaks is still important and this report only includes the FMD outbreaks officially reported by SEACFMD countries. MS Excel programme was used for the data management and to describe the temporal patterns. QGIS programme was used to map the spatial distribution of FMD and circulating FMD virus serotypes.

[1] https://rr-asia.oie.int/en/projects/fmd/seacfmd-bulletin/
[2] OIE Virtual Meeting Series of 23rd SEACFMD National Coordinators - OIE - Asia

Outbreaks of FMD in SEACFMD Countries in 2020

1. Overview of the regional situation in 2020

In 2020, FMD outbreaks have continued to affect traditionally endemic countries (China, Myanmar, Vietnam, Thailand, Cambodia, and peninsular Malaysia). However, Lao PDR and Mongolia did not report any new outbreaks (Figure 1). Of the total 556 outbreaks reported, 188 were due to serotype O; the remaining 368 were not typed due to absence of/insufficient samples collected or delayed laboratory testing. Samples were not collected from nearly 50% (273 out of 556) of the reported FMD outbreaks. Cattle were reportedly affected in 530 outbreaks, buffaloes in 38, pigs in 5, and goats in 2 outbreaks. Infection involving more than one species was mainly noted in Cambodia, Thailand and Vietnam. More outbreaks were reported from September to December (Figure 2). This seasonal trend was observed in Cambodia and Thailand which reported highest FMD outbreaks during the period.

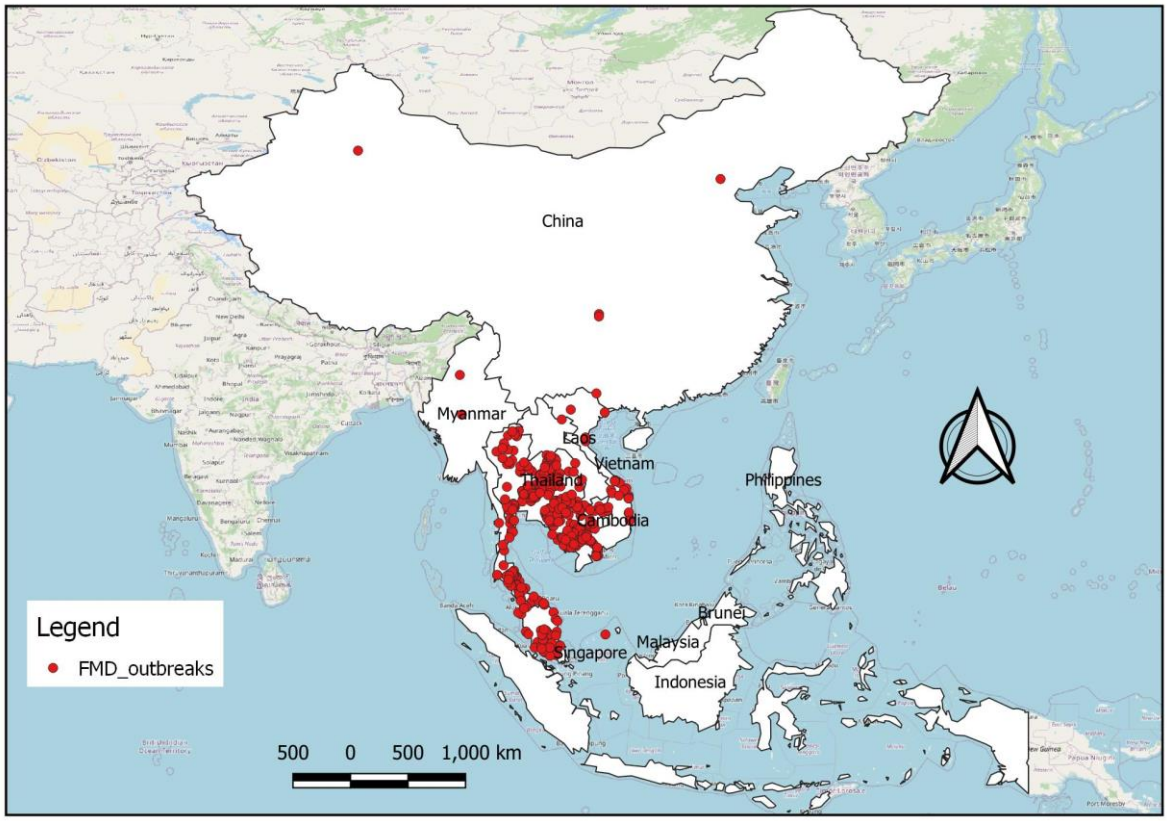

Figure 1. Distribution of FMD outbreaks in SEACFMD countries (2020).

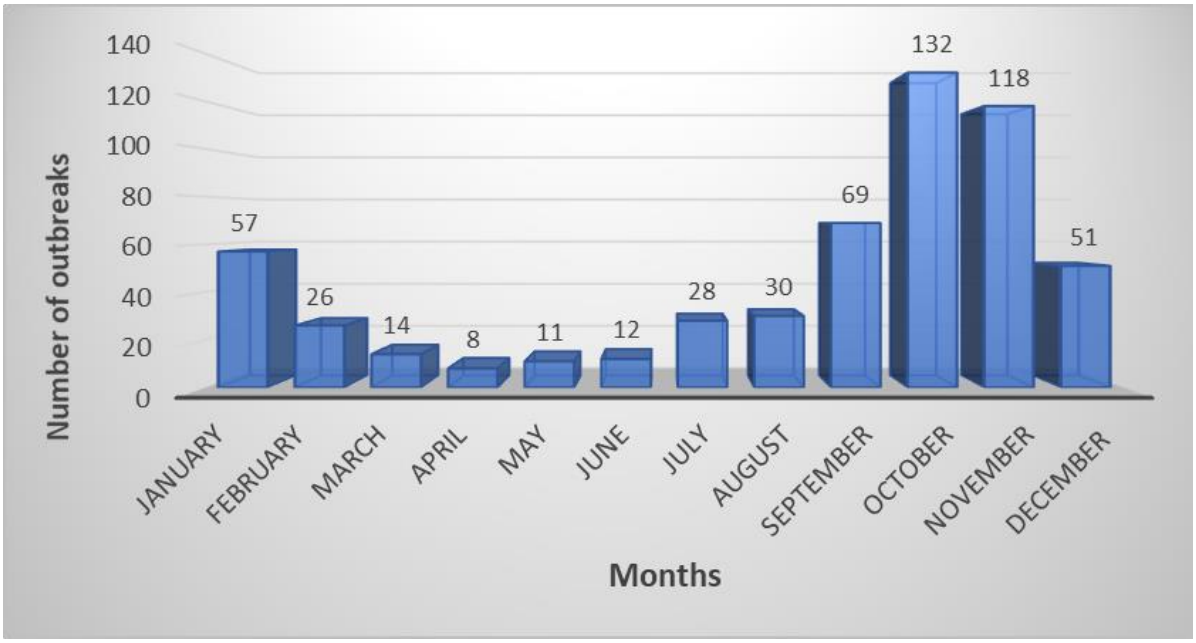

Figure 2: Monthly FMD outbreaks in SEACFMD countries in 2020

2. FMD situation in SEACFMD countries

Cambodia

Cambodia reported 248 FMD outbreaks across the country in 2020[3], with Northwest and Southeast being most severely affected (Figure 3). This is a significantly increase since 2019 (32 reported outbreaks). More outbreaks were reported from September to December showing seasonal trend (Figure 4). Affected animal species included cattle and buffaloes. Ten outbreaks were characterized as due to serotype O, and the Ind-2001 strain was reported for the first time in the country. Samples were not collected in the majority of the reported outbreaks. The causes for the increased number of reported outbreaks in 2020 have not been fully investigated, while increased animal movements were noted and possibly played a significant role in the disease spread. Detail epidemiological investigation along with collection of samples to identify the circulating virus is critical for an outbreak with such magnitude.

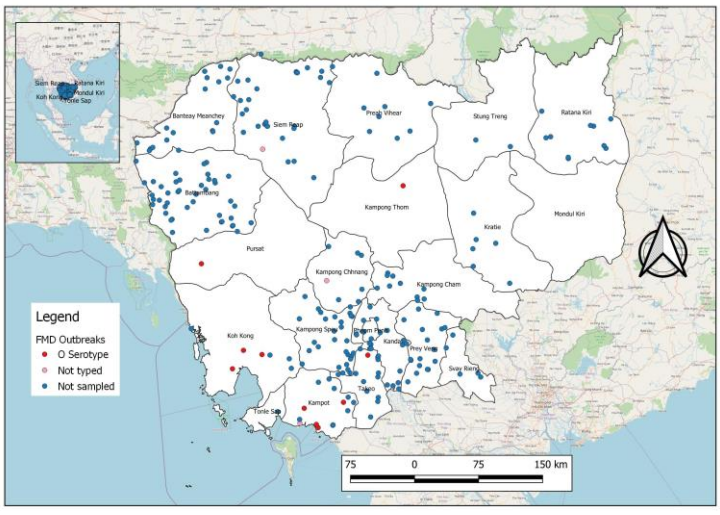

Figure 3: Distribution of FMD Outbreaks in Cambodia (2020)

[3] Data from ARAHIS

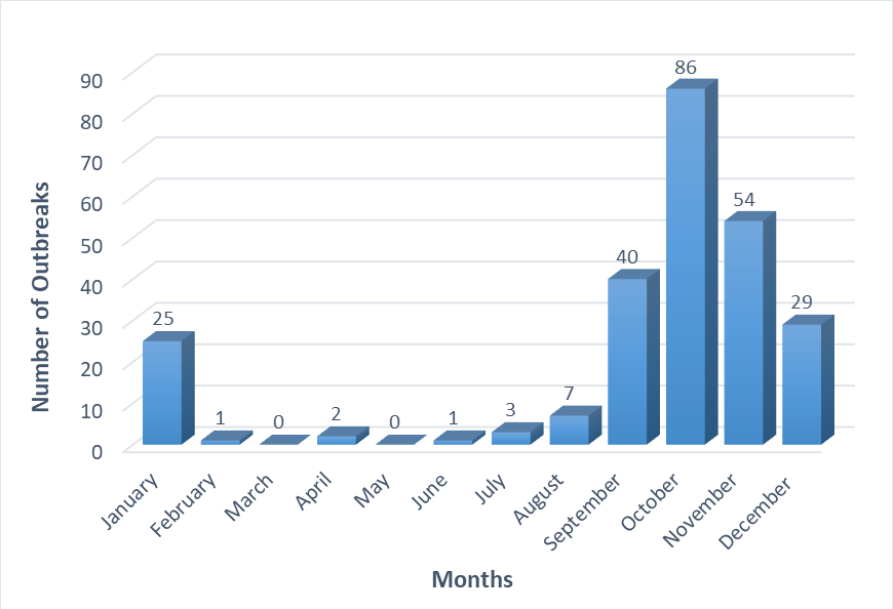

Figure 4: Month wise report of FMD outbreaks in Cambodia (2020)

China

In 2020, China reported 4 new FMD outbreaks from 3 provinces/municipalities (Figure 5) in May, July, October and November[4]. All the outbreak were due to serotype O viruses, with cattle and pigs affected (two outbreaks each).

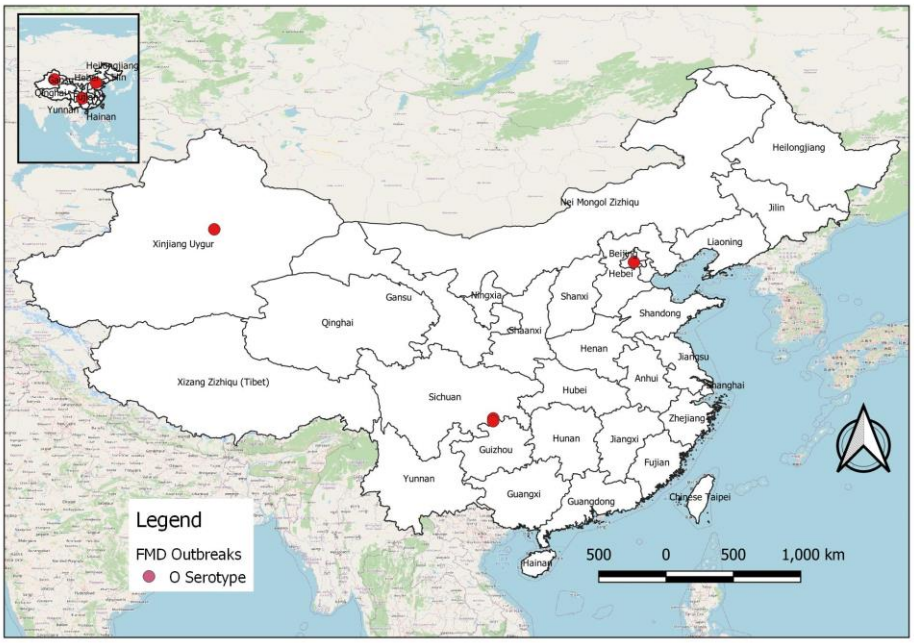

Figure 5: Distribution of FMD Outbreak in PR China (2020)

Lao PDR

Lao PDR did not report any new FMD outbreaks in 2020, while two outbreaks in Oudomxai that started in December 2019 lasted till January 2020.

[4] Data from WAHIS

Malaysia

Malaysia reported 52 FMD outbreaks across the peninsular region[15], with cattle being the only species affected. Nine outbreaks were typed as due to serotype O viruses and the remaining outbreaks (43) were not characterized (Figure 6). FMD outbreaks were reported throughout the year with more numbers in the month of November and January (Figure 7).

Sabah and Sarawak remain FMD free zones without vaccination.

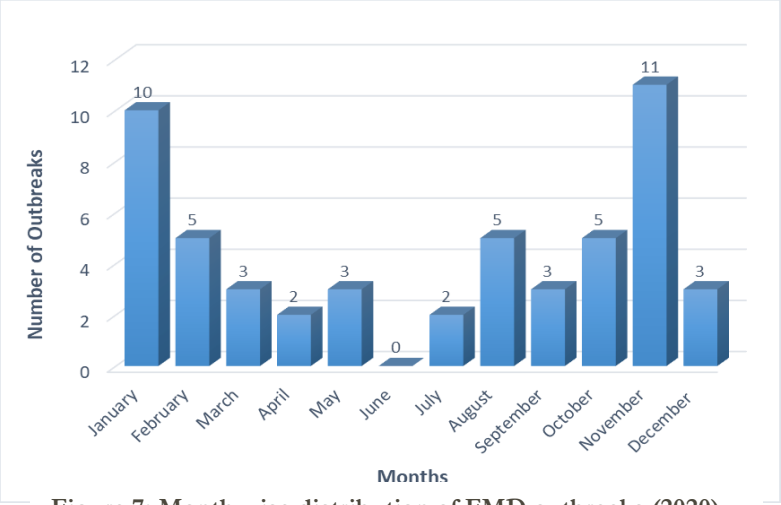

Figure 7: Month wise distribution of FMD outbreaks (2020)

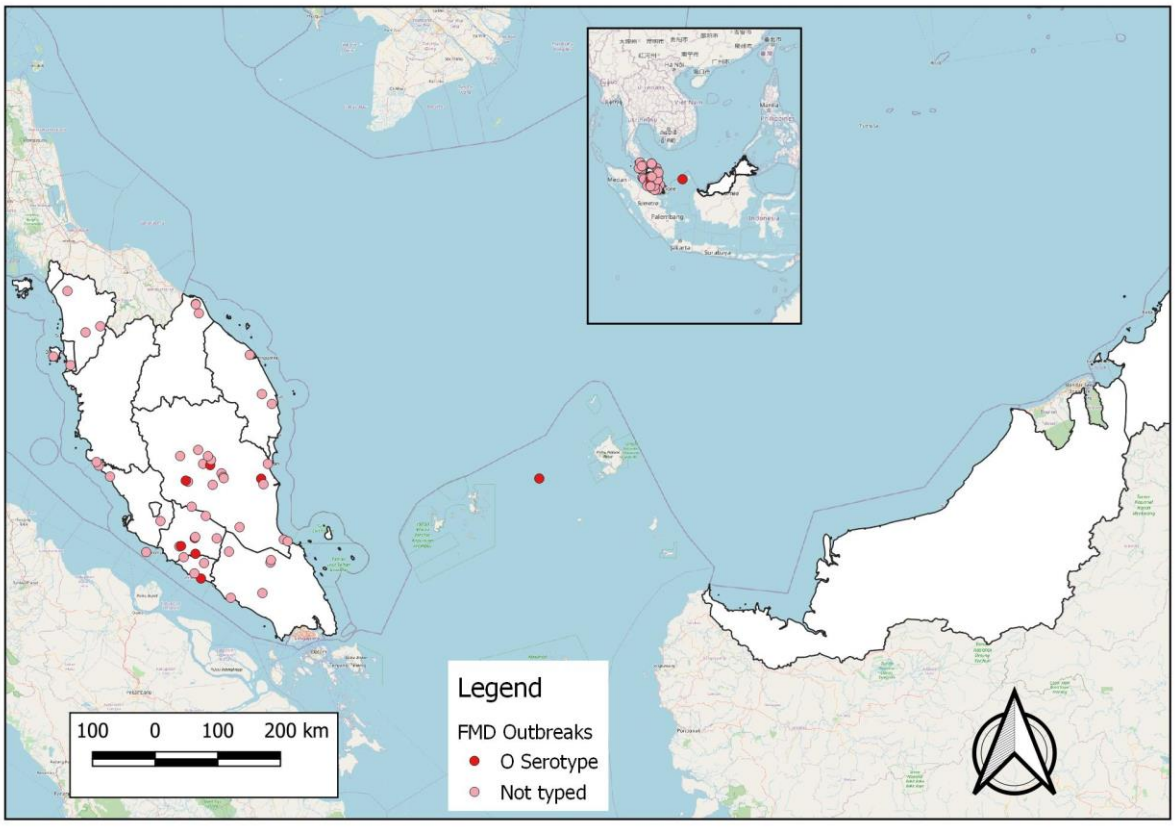

Figure 6: Distribution of FMD Outbreak in Malaysia (2020)

[5] Data from ARAHIS

Mongolia

Mongolia did not report any FMD outbreak in 2020.

Myanmar

Myanmar reported 3 FMD outbreaks in January 2020 in 3 states[6], all due to serotype O (Figure 8). Cattle was the only species affected.

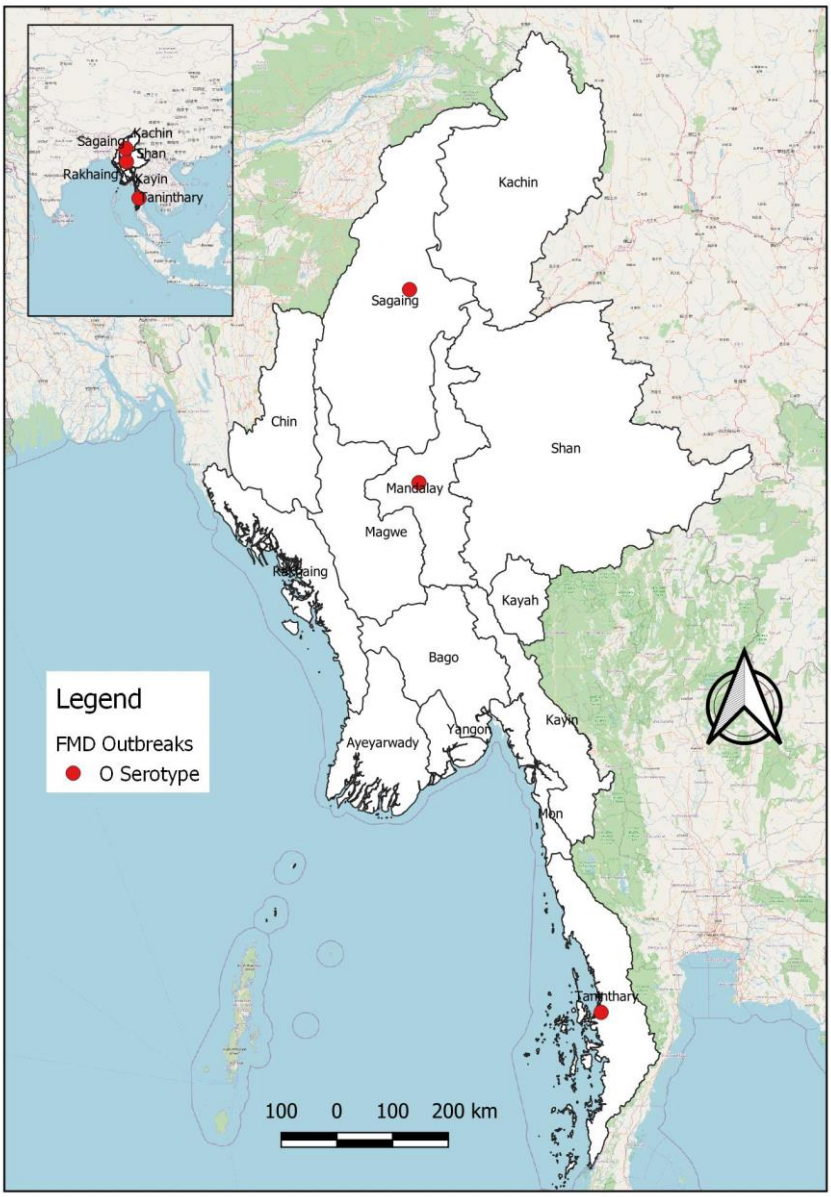

Figure 8: Distribution of FMD Outbreak in Myanmar (2020)

[6] OIE Virtual Meeting Series of 23rd SEACFMD National Coordinators - OIE - Asia

Thailand

In 2020, Thailand reported 218 FMD outbreaks across the country except for Region 2 (Eastern Thailand)[7]. Affected animals included cattle, buffaloes and goats. Of all the reported outbreaks, 145 have been confirmed as caused by serotype O (48 samples not typed). Samples were not collected from 25 reported outbreaks. FMD outbreaks were reported throughout the year with increased numbers during the second half of the year (Figure 10).

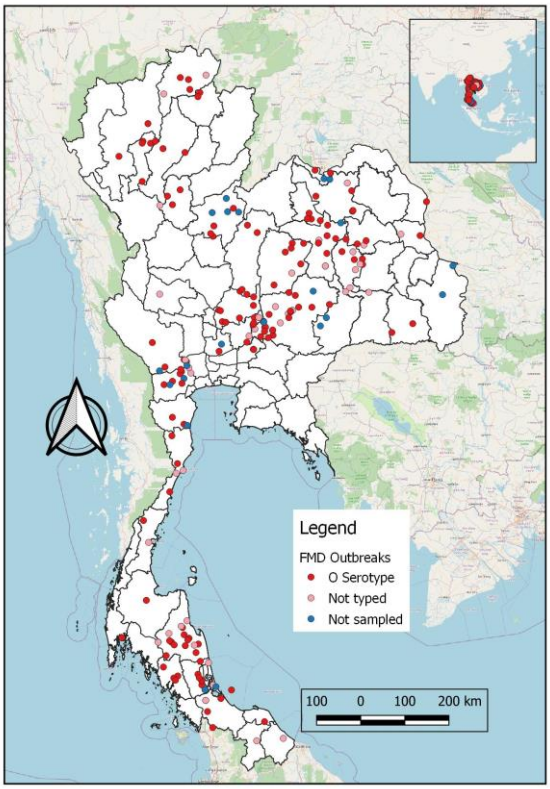

Figure 9: Distribution of FMD Outbreak in Thailand (2020)

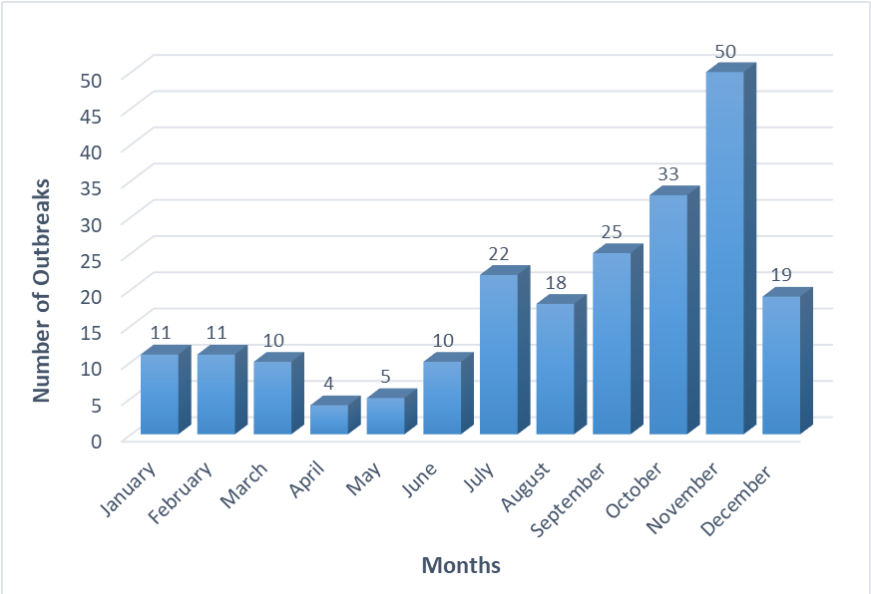

Figure 10: Month wise distribution of FMD outbreaks (2020)

[7] Data from ARAHIS

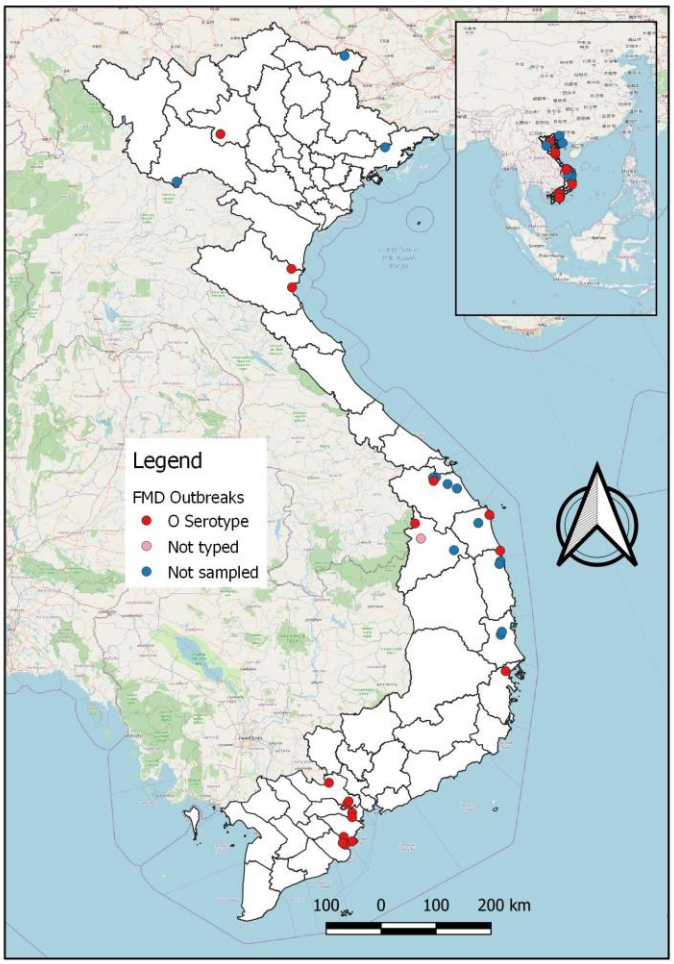

Figure 11: Distribution of FMD Outbreak in Vietnam (2020)

Viet Nam

Vietnam reported 31 FMD outbreaks in the North, central highlands and the South [8]. Cattle, buffaloes, and pigs were affected. Causative viruses were characterised in 17 outbreaks, all due to serotype O viruses (Figure 11). Samples were not collected from 13 reported outbreaks and one sample was not typed. More outbreaks were reported in the month of January, February and October (Figure 12).

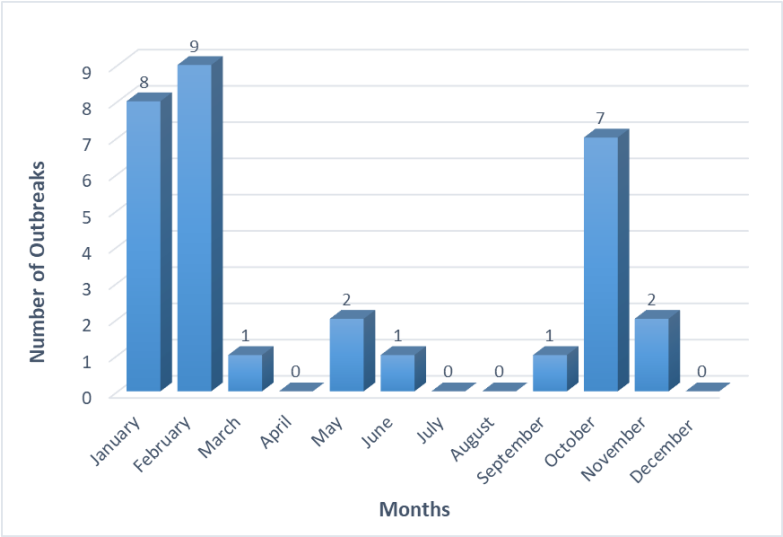

Figure 12: Month wise distribution of FMD outbreaks (2020)

[8] Data from ARAHIS

Characterization of FMDVs in SEACFMD Countries

In 2020, some FMDVs were sequenced in the VP1 coding region, by which the following strains were detected (Table 1):

- Serotype O: O/SEA/Mya-98, O/ME-SA/PanAsia, O/ME-SA/Ind-2001 and O/Cathay

Table 1. FMDV strains detected in SEACFMD Member Countries in 2020.

Country	Serotype O	Topotype…				Serotype A	Serotype Asia-1
		SEA/ Mya-98	ME-SA/ PanAsia	ME-SA/ Ind-2001	Cathay	ASIA/ Sea-97	Asia/ G-VIII
Cambodia	+	+	+	+			
China	+	+		+	+		
Lao PDR[a]	+			+			
Myanmar	+						
Malaysia	+			+			
Mongolia							
Thailand	+			+			
Vietnam	+	+	+	+			

+: the FMDV lineage present in the country.
[a]: continued outbreaks from December 2019 till January 2020
Note: data were based on the genotyping reports of the World Reference Laboratory for FMD (WRL) http://www.wrlfmd.org/country-reports and RRL-Pakchong, and country reports presented at the 23nd OIE SEACFMD National Coordinators Virtual Meeting held in June 2020, as well as the SEACFMD LabNet survey conducted in November 2020.

In 2020, serotype O continued to be the dominant serotype, with the Ind-2001 strain (e sublineage) being the most prevailing. The Ind-2001 strain was the only genotype detected in Thailand, Malaysia and Lao PDR, and it was reported in Cambodia for the first time.

Serotype A was detected at low frequencies from 2015 to 2019, with a short upsurge in Thailand observed during late 2017 and early 2018, but it was not reported anywhere in 2020.

Serotype Asia-1 has not been reported by any SEACFMD member countries since its last detection in Rakhine state of Myanmar in 2017.

FMD related activities

1. Preparation and endorsement of the SEACFMD Roadmap 2021-2025

SEACFMD countries were involved in and actively contributed to each phase of the development of this document. The SEACFMD Sub-Commission provided strategic guidance for the 2021–2025 Roadmap and was regularly consulted before the endorsement of the Roadmap, including via the SEACFMD Steering Committee. Similarly, the SEACFMD National Coordinators contributed to all phases of the Roadmap's development including the preparation of different steps of roadmap development and validation process; development of roadmap outline; evaluate progress made against the SEACFMD Roadmap 2016-2020; and provide comment on the draft roadmap.

Although the physical meetings and consultations were not possible due to restrictions caused by COVID-19 pandemics, the participatory approach was facilitated through the use of new technologies such as Zoom, Mentimeter and related polls, which enabled the gathering of information and feedbacks. The SEACFMD Roadmap 2021-2025 was endorsed by 25th Meeting of the OIE Sub-Commission for Foot and Mouth Disease Control in South-East Asia, China and Mongolia on 15th December 2020.

The SEACFMD countries and OIE SRR-SEA is collaborating closely to prepare and finalize the national and regional level roadmap implementation plan.

2. Progression of Lao PDR and Myanmar from FMD-PCP Stage 1 to PCP Stage 2

In line with the FMD Progressive Control Pathway (PCP) guideline, the Lao PDR and the Myanmar developed the Risk Based Strategic Plan (RBSP) for FMD control. Following the endorsement of the respective RBSP by the SEACFMD Steering Committee, the 25th SEACFMD Sub-Commission meeting on 15 December 2020, formally accepted the successful progression of Lao PDR and Myanmar from FMD PCP stage 1 to PCP Stage 2.

3. Maintenance of OIE-endorsed national FMD control programme

China, Mongolia and Thailand have maintained their OIE-endorsed national FMD control programmes. They have demonstrated progress with their FMD control as per their targets during the year.

4. Maintenance of freedom in officially FMD-free countries and zones

Brunei, Indonesia, the Philippines, and Singapore have maintained their officially recognized FMD free status without vaccination. In addition, Sabah and Sarawak, the eastern part of Malaysia on Borneo Island, have been recognised as an FMD-free zone without vaccination since 2003.

5. Regional Expert Group (REG) for FMD Laboratory

The FMD Regional Expert Group (REG) was initiated in 2019 on an *ad-hoc* basis with an aim to strengthen molecular epidemiological surveillance and improve FMD outbreak virus diagnosis in the FMDV global virus pool 1 (incl East Asia and South-East Asia). At the first REG meeting on 14-16 May 2019 in Bangkok, Thailand[9], a regional FMDV molecular diagnostic algorithm based on RT-PCR and real-time RT-PCR was developed, and it was subsequently tested and validated by the OIE FMD reference laboratories in Asia. In 2020, the molecular diagnostic algorithm was further tested in the national FMD laboratories in Vietnam and Malaysia, and the results will be presented at the future SEACFMD meetings.

6. NZ Government-supported FMD project in SE-Asia Project

Under the 'Regional Strengthening of Foot and Mouth Disease Control in South East Asia' project funded by the Ministry of Foreign Affairs and Trade (MFAT), Government of New Zealand, being implemented by the OIE SRR SE Asia, various capacity building initiatives have been initiated. These include training of district officers and Village Veterinary Workers (VVWs) on FMD control in Lao PDR; an online training session on 'web-based survey tools and EpiCollect5 application for field and laboratory officer in Myanmar to enhance digital animal health data collection capacity through a user-friendly application; training for 93 Community Animal Health Workers (CAHWs); and a virtual workshop organised by the OIE in partnership with Massey University (MU) on FMD modeling to estimate the effects of FMD vaccination and other control strategies on 8 December 2020.

[9] https://rr-asia.oie.int/en/events/regional-expert-group-meeting-on-foot-and-mouth-disease/

Conclusions and discussions

In 2020, a total of 556 FMD outbreaks were reported in the SEACFMD region, to be compared with the 387 outbreaks reported in 2019 and 458 in 2018. Serotype O was the only serotype detected in 2020, and the Ind-2001 strain was the most prevailing genotype.

This report is based on the FMD outbreak reports submitted by the SEACFMD countries. Considering the high proportion of under reporting of FMD outbreaks by the SEACFMD countries, this report may not provide full picture of FMD situation in the region. The SEACFMD Roadmap 2021-2025 aims to address these gaps, while continuing to strengthen the regional network and countries' capacities in FMD surveillance and reporting by: creating an enabling socio-political and legislative environment to encourage disease reporting; improving information flow within the veterinary Services; combining multiple surveillance approaches to improve knowledge of FMD epidemiology; and integrating surveillance network with other livestock health frameworks, and wildlife surveillance.

Only about one third (188/556) of the reported outbreaks were typed. The remaining 66% of the FMD outbreaks were not typed due to delayed/absence of outbreak investigation, insufficient quality/quantity of clinical samples collected, or delay in laboratory testing. Recurrent problems of under-reporting and the absence of virus characterisation in most reported outbreaks, remains the biggest challenge to get a better estimate of the prevalence of circulating virus serotypes. The SEACFMD Campaign continue to highlight the importance to carrying out detailed outbreak investigations and collection of samples to understand the disease epidemiology and circulating virus. This is critical to the monitoring and implementation of effective control measures in a timely fashion especially during the incursion of new virus types and strains. SEACFMD countries are encouraged to adapt the recommendations and standard operating procedures developed by the FMD Regional Expert Group for training and implementation in order to improve FMD field sampling, virus detection and genotyping, and serological testing.

Additional risks posed to the region include the recent introduction and spread of African swine fever (ASF). Since the first outbreak was reported in the PR China in August 2018, the ASF has been sweeping rapidly across Asia and affected most of the SEACFMD countries. In addition to its devastating impacts on pork production and consumption in the region, ASF also has significant implications for FMD control as the fund and resources earmarked for FMD activities is now diverted for ASF control. The SEACFMD region also faces challenges of other emerging diseases such as lumpy skin disease (LSD) and peste des petits ruminants (PPR). Recognizing the resource limitation faced by most SEACFMD countries, the new SEACFMD Roadmap 2021-2025 recommends countries to actively explore and deploy cost efficient synergies between FMD control and other livestock activities.

The situation is further aggravated with the ongoing COVID-19 pandemic which had serious effects on the livestock sector, including severe disruptions in the livestock value chain such as cross-border movements of animals and animal products, and sell of livestock. The disruptions of livestock value chain affected FMD control. Practical alternatives as well as cost-efficient synergies and strategies must be considered in order to maintain the momentum and not jeopardize the progress achieved in the preceding years.

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