World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(RESEARCH ARTICLE)

Check for updates

The strategy for controlling the foot and mouth disease outbreak in dairy cattle farming centers in Java

Hestu Prastanti [1,*], Joko Mariyono [1] and Dian Wahyu Harjanti [2]

[1] *Departement of Agribusiness, Faculty of Animal Science and Agricultural Sciences, Diponegoro University, Indonesia.*
[2] *Departement of Animal Science, Faculty of Animal Science and Agricultural Sciences, Diponegoro University, Indonesia.*

World Journal of Advanced Research and Reviews, 2025, 28(03), 409-417

Publication history: Received 27 October 2025; revised on 04 December 2025; accepted on 06 December 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.28.3.4093

Abstract

Indonesia faced a new outbreak of Foot-and-Mouth Disease (FMD) in 2020, which was subsequently brought under control by 2022. Although the outbreak was successfully managed, the resulting losses were substantial, severely impacting the dairy cattle industry. Consequently, the social impact and FMD spread control strategies in Java require further investigation. This research aims to analyze the FMD control policy strategy in Java. The study activities will be conducted from January to March 2024 across the provinces of West Java, Central Java, and East Java. The research methodology employed is descriptive qualitative, utilizing secondary data. The data analyzed include the total number of FMD cases in cattle, comprising new, active, and recovered cases across various regions in Java. To understand the spatial distribution patterns, case locations are mapped based on regency or city administrative areas. Treatment, immunization, and restriction of livestock movement constitute components of the FMD control policy. The analysis of these policy strategies encompasses tracing the actions undertaken and the costs incurred from the initial outbreak until the achievement of the Zero Reported Case status. Effective control strategies involve preventive actions such as vaccination, enhancement of on-farm biosecurity, and strict supervision and monitoring of livestock movement. Cooperation among the government, farmers, and the private sector is key to accelerating the handling of this epidemic. Several strategies have been implemented by the government and stakeholders to curb the FMD outbreak in Java, including mass vaccination, livestock movement control, biosecurity and farmer education, as well as aid and compensation.

Keywords: Foot and Mouth Disease; Dairy Cattle; Disease Control; Milk Supply; Food Security

1. Introduction

Foot and Mouth Disease (FMD) is a highly contagious animal disease that has significantly detrimental effects on the livestock sector, particularly the dairy cattle industry. In Indonesia, milk production primarily originates from dairy farms, the majority of which are situated on the island of Java. Although Foot and Mouth Disease (FMD) was officially declared eradicated in 1986, the emergence of FMD cases in 2022 indicates that the disease continues to pose a serious threat to animals, despite Indonesia previously being declared FMD free by the World Organisation for Animal Health (OIE). The recurrence of FMD constitutes a major threat to animal health, diminishes productivity, jeopardizes the availability of milk supply, and presents significant challenges for regional policy making regarding FMD control.

Following the reintroduction of FMD into Indonesia in 2022, its spread has been successfully contained and significantly reduced. Data released by the Ministry of Agriculture indicates that the national vaccination program had a substantial impact on mitigating the disease among FMD susceptible livestock in 2022. Consequently, the number of FMD cases decreased drastically, registering a reduction of up to 99.70% in December 2022 compared to its peak in May. Similarly, the total number of livestock affected by FMD has continued to decline since peaking in June 2022, achieving a decrease

* Corresponding author: Hestu Prastanti

of 99.98% by December. Furthermore, eleven provinces were designated as having Zero Recorded Case status, signifying that no new FMD cases had been recorded for a minimum of fourteen days.

The consequences of the FMD outbreak are extensive and interconnected. Research findings (Purwadi and Prasetyo, 2024), indicate a 55% decline in dairy livestock productivity, which subsequently impacts the availability and distribution of milk products. The government implemented various strategic measures to contain the spread of the FMD outbreak, primarily through restrictions on livestock movement and other targeted interventions. These actions also had an indirect effect, leading to a rise in milk prices aimed at offsetting increased production costs (Saniyyah et al., 2024). This scenario of economic and social pressure affects the sustainability of dairy farmers as they navigate significant uncertainty.

The success of FMD control in the Java provinces is attributable not only to technical measures but also to strategic policies and robust institutional support. The containment methods implemented in Indonesia generally encompass critical actions aimed at preventing disease spread, reducing infection rates, and ensuring the stability of livestock production. Cross-sectoral synergy, defined as the collaboration among various sectors or organizations to resolve common issues, becomes a necessity to maintain the smooth execution of activities and ensure that all stakeholders clearly understand their respective roles (Wibowo, 2025).

Despite the fact that control methods have drastically reduced FMD cases, domestic supply remains insufficient to meet demand. Food security and the welfare of farmers are negatively affected due to the increased reliance on milk imports. Based on these conditions, it is evident that the policy strategy for FMD management in major dairy cattle production centers requires a comprehensive evaluation. Considering these circumstances, this study adopts a literature review approach to examine policy measures for FMD management across the dairy production centers in the provinces throughout Java. This study is expected to offer a more flexible and effective policy basis, in addition to strengthening the preparedness of the Java island livestock sector in addressing future outbreaks of highly contagious animal diseases.

2. Material and methods

The research design employs a qualitative descriptive approach. This study will be conducted in West Java, Central Java, and East Java provinces during the period of January to March 2024. These specific provinces were selected due to their designation as the major dairy cattle farming centers in Indonesia.

The data utilized in this study are derived from secondary sources. The secondary data are presented in various formats, including tables, figures, and online resources. Data for the descriptive analysis were obtained from diverse secondary materials, such as previous research findings, government and private institutions, and reports from other researchers. Through this literature analysis, the policy strategy under examination will be analyzed in detail, covering all implemented actions and the costs incurred from the onset of the outbreak until the achievement of the Zero Reported Case status.

3. Results and discussion

3.1. FMD Control Strategy

Indonesia had been declared FMD-free since 1986, as stipulated by the Decree of the Minister of Agriculture No. 260/Kpts/TN.510/5/1986. The national goal was to fulfill the domestic demand for meat and animal protein from within the country. To this end, various policies were implemented to strengthen domestic beef production, encompassing regulations on beef cattle breeding, livestock movement control (traffic control), and standards for Slaughterhouses (RPH) consistent with animal health principles. These policies were further reinforced, notably in 2016, when the government issued Ministerial Regulations regarding the import of livestock and their derived products. Key regulations underpinning this framework include:

- Law Number 18 of 2009 concerning the Amendment to Law Number 18 of 2009 on Animal Husbandry and Animal Health.
- Law Number 16 of 1992, which was subsequently reinforced by Law Number 21 of 2019 on Animal, Fish, and Plant Quarantine.
- Government Regulation Number 82 of 2000 on Animal Quarantine.
- Minister of Agriculture Regulation (Permentan) Number 101 of 2014 on Beef Cattle Breeding.
- Permentan Number 13 of 2010 on Requirements for Ruminant Slaughterhouses and Meat Cutting Plants.

- Permentan Number 17/Permentan/PK.450/5/2016 on the Importation of Boneless Meat in Certain Cases Originating from a Country or Zone within a Country of Origin.
- Permentan Number 34/Permentan/PK.210/7/2016 on the Importation of Carcasses, Meat, Offal, and/or Processed Products into the Territory of the Republic of Indonesia.

Prior to the re-entry of FMD in 2022, the government had continuously undertaken fundamental measures to prevent the introduction and spread of the disease domestically, primarily through intensive monitoring of livestock movement (traffic) originating from abroad and their derived animal products.

Following the onset of FMD in 2022, the government swiftly implemented emergency control efforts by issuing critical policy instruments. These included the Decree of the Minister of Agriculture Number 500.1 of 2022 and the Decree of the Minister of Agriculture Number 652 of 2022 concerning the Designation of Foot and Mouth Disease Outbreak Zones, alongside the Circular Letter (SE) of the Minister of Agriculture Number 01 of 2022 regarding the Control and Mitigation of Foot and Mouth Disease. In managing the FMD crisis, the Government has executed various comprehensive efforts and actions aimed at prevention and control.

3.2. Establishing Regulations/Policies

The role of the government in establishing regulations is a key component in the prevention and control of livestock disease outbreaks. Regulatory capacity and the speed of policy implementation influence the effectiveness of the epidemiological response and mitigate the economic impact on farmers (Kuchipudi et al., 2022; Pake et al., 2022). Regulations enacted as part of the Foot and Mouth Disease (FMD) control efforts in 2022 include:

- Decree of the Minister of Agriculture (Kepmentan) No. 405 of 2022 concerning the FMD Handling Task Force.
- Kepmentan No. 500.1 of 2022 concerning the Designation of FMD Outbreak Zones.
- Circular Letter (SE) of the Minister of Agriculture No. 01 of 2022 on FMD Control and Mitigation.
- SE of the Minister of Agriculture No. 02 of 2022 on the Arrangement of Animal Traffic, Animal Products, and Other Animal Disease Carriers in FMD Outbreak Zones.
- SE of the Minister of Agriculture No. 03 of 2022 on the Implementation of Qurban (Sacrificial Slaughter) and Animal Slaughter during the FMD Outbreak Situation.
- SE of the Minister of Agriculture No. 04 of 2022 on FMD Control at the Sub-district (Kecamatan) Level.
- Circular Letter of the Minister of Religious Affairs No. 10 of 2022 concerning Guidelines for the Implementation of Eid al-Adha Prayers and Qurban Slaughter in 1443 H/2022 M.
- MUI Fatwa (Edict) No. 32 of 2022 concerning the Law and Guidance for the Implementation of Qurban Worship during the FMD Outbreak Condition.

3.3. Strengthening Institutions And Human Resources

Strengthening institutional capacity and developing human resources in the animal health sector are critical points for an effective epidemic response (Craig et al., 2025). Several efforts have been undertaken to reinforce institutional capacity and HR, primarily through the establishment of dedicated task forces and local veterinary centers.

3.3.1. FMD Handling Task Force/Crisis Center (177 Units)

Operational measures for FMD management included the formation of a Task Force (Gugus Tugas) system, ranging from the central level down to district/city levels in the affected regions. There are currently 177 Task Force units in operation. The establishment of these task forces commenced immediately after the FMD outbreak was declared in two initial provinces: East Java and Aceh. Currently, beyond the technical function of these task forces, the FMD Task Force operates as a collaboration between the Ministry of Agriculture (Kementan) and the National Disaster Management Agency (BNPB), involving various ministries and institutions, including the Indonesian National Armed Forces (TNI) and the Indonesian National Police (Polri). The Ministry of Agriculture issued several regulations serving as the basis for field control implementation, including: Designation of FMD Outbreak Zones in Several Districts in East Java and Aceh Provinces. Formation of the FMD Handling Task Force. Control and Mitigation of FMD in Livestock. Arrangement of Traffic for Susceptible Animals, Animal Products, and Other Disease Carriers in FMD Outbreak Zones. Implementation of Qurban (Sacrificial Slaughter) and Animal Slaughter during the FMD Outbreak Situation. The most recent regulation is related to the Designation of Foot and Mouth Disease Outbreak Zones across 19 Provinces. In addition to these task forces, the Government also established a Crisis Center spanning from the central level to the districts, alongside the integration of the ISIKHNAS data system with the BLC (referring to a local data system/center).

3.3.2. Animal Health Centers (Puskeswan)

There are currently 1,588 Animal Health Center (Puskeswan) units distributed across 34 Provinces, 461 Districts/Cities, and 1,588 Sub-districts. Of these, 1,009 units are located within the 19 affected provinces. The role of Puskeswan in FMD control and mitigation includes:

- Animal Health Services: Implementing animal health improvements through promotion, prevention, curative care, rehabilitation, and reproductive management, in accordance with established procedures under FMD outbreak conditions.
- Veterinary Public Health Services: Providing veterinary public health services by assisting with risk analysis and quality testing, accompanied by health certificates for animal products, to ensure the safety of animal-derived food.
- Epidemiological Implementation: Conducting surveillance and mapping of animal diseases within their working areas.
- Veterinary Information and Emergency Preparedness: Performing integrated data processing for analysis and reporting on the animal health situation within their working areas.
- Veterinary Professional Services: Providing specialized services by Veterinarians.

3.3.3. Human Resources Requirement For Vaccination

The Human Resources (HR) requirement for Phase I vaccination (14.5 million doses) was calculated to be 12,500 personnel (based on an assumption of each vaccinator inoculating 40 animals per day for 30 days). The availability of trained HR is sufficient to meet this demand. Currently, there are 23,368 trained personnel across 34 Provinces (including Medical staff, Paramedics, Inseminators, and Extension Workers). Specifically, in the 21 affected provinces, the available HR totals 19,822 personnel (indicating adequate Vaccinator HR). For FMD control activities, especially vaccination, the recorded number of trained Animal Health personnel currently stands at 23,368 individuals. This number is expected to be augmented by the involvement of health personnel from the Indonesian National Armed Forces (TNI) and the Indonesian National Police (Polri), who are potentially assigned to assist with FMD management, particularly field vaccination, following the necessary training and assignment process in accordance with prevailing laws and regulations.

3.3.4. Sacrificial Animal Monitoring Team

A Sacrificial Animal Monitoring Team was established at the central, provincial, and district/city levels. Currently, 1,721 personnel have been appointed as Qurban animal monitoring officers. This team comprises: 106 personnel from the Central level, consisting of veterinarians and paramedics. 1,615 personnel from academia, drawn from 8 Faculties of Veterinary Medicine across Indonesia, encompassing both lecturers and students

3.4. Field Implementation And Operational Strategy

Field implementation, including mass vaccination, treatment/supportive care for infected cattle, disinfection of enclosures, and the enhancement of biosecurity, proved to be an integral part of the response to the FMD outbreak.

3.4.1. Distribution of Medicines and Logistics

The government ensured the rapid deployment of essential materials to support field operations. The logistics distributed to the 19 affected provinces included: Medicines: 203,000 doses were made available and distributed. Disinfectant: 2,640,000 liters were distributed to the affected provinces. Vaccination and Treatment Logistics: Supplementary logistics, including 800,000 syringes (pcs) and 2,000 Hand Sprayer units, were also distributed.

Vaccination Implementation. The Ministry of Agriculture (Kementan) distributed vaccines in a phased manner, prioritizing target populations that included asset livestock and high-economic-value animals, such as dairy cattle/buffaloes, breeding stock, and cattle with a high potential for inter-provincial movement (traffic) across the 19 affected provinces. Vaccine Availability and Distribution: The initial supply comprised 800,000 doses, of which 669,400 doses had been distributed. Progress: Vaccination operations were underway, and as of July 5, 2022, a total of 296,973 animals had been vaccinated. Domestic Production: Development and production of a domestic vaccine by Kementan's technical implementation unit, Pusvetma, remained in progress, with the target for the first production batch set for the fourth week of August 2022.

The circulating FMD virus strain in Indonesia is identified as O/ME-SA/Ind-2001, with the following classification: Serotype: O, Topotype: ME-SA, Lineage: Ind-2001, and Sublineage: e. The standard vaccination technique is as follows: 1 dose (2 milliliters/animal) is administered to the livestock. Post-vaccination, the animal is marked with a barcoded

ear tag (eartag), which is connected to the iSIKHNAS system. Vaccination is applied to the entire cattle and buffalo population in affected and high-risk islands (such as Bali), as well as to high-risk breeding stock of goats, sheep, and pigs.

Livestock that have been infected with FMD are not vaccinated for 6 months (calculated after recovery, due to the natural formation of antibodies). Vaccination priority in the 19 affected provinces focuses primarily on Breeding Cattle and Buffaloes at Central and Regional Breeding Technical Units (UPT Perbibitan), Dairy Cattle owned by farmers and cooperatives, and Breeding Cows/Buffaloes (Indukan) and Calves (Anakan).

The planned FMD Vaccine requirement for 2022 is 29,551,000 doses, which will be divided into two phases and implemented in the 19 affected provinces. Assuming the Human Resources (HR) requirement for vaccination per phase (14.5 million doses) is 12,500 personnel, and given the availability of 18,407 Vaccinator HR in the 19 affected provinces, the vaccination implementation is expected to proceed effectively. To accelerate implementation, vaccination efforts will involve the FMD Task Force (Satgas PMK), the Indonesian National Armed Forces (TNI), the Indonesian National Police (Polri), university students, and the community.

FMD vaccine supply is sourced from Imports and Domestic Production via Pusvetma. Furthermore, the government is currently exploring potential collaborations, namely: (i) Cooperation for the production of bulk products (ruahan) from foreign private entities, to be processed by Pusvetma under license (under licensed); and (ii) Cooperation for the production of bulk products with domestic private entities, to be processed by Pusvetma via a toll manufacturing mechanism.

Vaccinated livestock are fitted with a barcoded Eartag that is directly connected to the system (similar to Peduli Lindungi), and a vaccine certificate can be printed, serving simultaneously as a national livestock data collection effort. Vaccination implementation officially commenced on June 14, 2022, in Sidoarjo, East Java.

3.5. Implementation of Zoning

The Ministry of Agriculture is concurrently pursuing FMD control through a zone-based approach, which is expected to facilitate disease spread prevention and case reduction. The initial step taken for FMD control and management is the identification and data collection process used to define zones based on province, district (kabupaten), sub-district (kecamatan), village (desa), or enclosure (kendang) levels, thereby determining their respective Infected/Outbreak or FMD-Free status. The specific zoning criteria, based on the FMD Task Force Circular Letter Number 4 of 2022, are presented in Figure 1.

Figure 1 Criteria Zoning

The government is actively working to enhance control measures and strengthen the biosecurity of trade routes for inter-regional livestock movement across Indonesia, as well as traffic to and from foreign countries. The government is also evaluating the importation of beef or buffalo meat from countries that are not yet officially free from FMD. The zoning discussed above will be followed up with the surveillance and regulation of livestock movement between zones, as illustrated in Figure 2.

LALU LINTAS TERNAK DAN PRODUK TERNAK

Prinsip Pembagian Zona:

1. Zona Berbasis Pulau (status pulau hanya ada merah dan hijau)
2. Zona dalam satu daratan (Status daerah merah, kuning dan hijau)

1. LALULINTAS TERNAK DAN PRODUK TERNAK ANTAR PULAU

ZONA		KE	
		HIJAU	MERAH
DARI	HIJAU	Boleh, syarat disinfeksi alat transportasi	Boleh, syarat disinfeksi alat transportasi
	MERAH	Lock down	Boleh dilalulintaskan hanya dari Sumatera ke Jawa untuk dipotong dengan SKKH

2. LALULINTAS SUSU SEGAR ANTAR DESA DALAM SATU PULAU

ZONA		KE			PERSYARATAN TEKNIS
		HIJAU	KUNING	MERAH	
DARI	HIJAU	Boleh	Boleh	Boleh	
	KUNING	Boleh	Boleh	Boleh	
	MERAH	Boleh	Boleh	Boleh	- Dari ternak yang sehat oleh petugas - Hanya boleh untuk dikirim ke IPS Disinfeksi diperketat

3. ANTAR DESA DALAM SATU PULAU (TERNAK RUMINASIA DAN BABI, DAGING SEGAR DAN KULIT)

ZONA		KE			PERSYARATAN TEKNIS
		HIJAU	KUNING	MERAH	
DARI	HIJAU	Boleh Desinfeksi alat transportasi	Boleh Desinfeksi alat transportasi	Boleh Dipotong Desinfeksi alat transportasi	SKKH atau Sertifikat Veteriner (klinis)
	KUNING	Boleh Desinfeksi alat transportasi	Boleh Desinfeksi alat transportasi	Boleh Dipotong Desinfeksi alat transportasi	SKKH atau Sertifikat Veteriner (Uji Lab/Klinis)

Figure 2 Surveillance and Regulation of Livestock Movement Between Zones

The surveillance of livestock movement (traffic) between zones is conducted collaboratively by the FMD Task Force (Satgas PMK), the Indonesian National Police (Polri), the Indonesian National Armed Forces (TNI), and local regional governments. Surveillance and restrictions on livestock movement are anticipated to be easier to control, particularly in preventing the transfer of animals from outbreak areas to FMD-free territories. This effort involves the police and relevant parties to assist with livestock traffic supervision, especially at designated checkpoints.

3.6. Implementation of Communication, Information, and Education (CIE)

In relation to the availability of FMD-related information for the public, the Ministry of Agriculture (Kementan) is continuously intensifying the dissemination of positive information about FMD and providing various information series through social and print media, including infographics and videographics. Furthermore, Kementan is actively propagating information regarding FMD by conducting socialization efforts about the disease and its management to various stakeholders, including the wider community.

3.7. Budget and Funding

The current budget ceiling allocated for the emergency mitigation of the FMD outbreak is sourced from the relocation of internal program/activity budgets within the Directorate General of Livestock and Animal Health, amounting to 58 Billion Rupiah (Rp. 58 Billion). The total budget required for FMD control in 2022 has been proposed at 4.6 Trillion Rupiah (Rp. 4.6 Trillion) and is currently undergoing review by the Ministry of Finance (Kemenkeu).

3.7.1. Inter-Ministerial/Agency Collaboration

Collaboration with other ministries and agencies is crucial for the integrated control of FMD:

- National Disaster Management Agency (BNPB): Pertaining to the operational aspects of FMD control.
- Indonesian Red Cross (PMI): Pertaining to the implementation of national disinfection efforts at farmer enclosures, sacrificial animal collection points, and livestock traffic entry points.
- Ministry of Religious Affairs (Kementerian Agama): Pertaining to the preparation and implementation of sacrificial animal slaughter during the FMD outbreak.
- Ministry of Home Affairs (Kemendagri): Pertaining to the acceleration of the utilization of the Unexpected Expenditure Budget (BTT) in regions.
- Indonesian National Armed Forces (TNI) and Indonesian National Police (POLRI): Pertaining to the surveillance of livestock movement (traffic).

The restriction and surveillance of livestock movement (traffic) during this period involve the Food Task Force (Satgas Pangan) and the Indonesian National Armed Forces (TNI). These bodies are actively engaged in surveillance and restriction efforts.

- Issuance of Ministerial Circular Letter No. 01 (May 18, 2022): Established the Circular Letter of the Minister of Agriculture to Governors and Regents/Mayors Number 01 of May 18, 2022, concerning the Control and Mitigation of Foot and Mouth Disease in Livestock.
- Regulation of Livestock Traffic: Implemented through the Circular Letter of the Minister of Agriculture to Governors and Regents/Mayors Number 02 of May 18, 2022, concerning the Arrangement of Traffic for Susceptible Animals, Animal Products, and Other Disease Carriers in FMD Outbreak Zones. Sacrificial animals being transported must be verified as being accompanied by a Veterinary Certificate (SV) or Animal Health Certificate (SKKH).
- Qurban Monitoring Appeal: Issued the Circular Letter of the Minister of Agriculture to Governors and Regents/Mayors Number 03 of May 18, 2022, urging regional governments to monitor the health of sacrificial animals and regulate slaughter practices during the FMD outbreak situation.
- Coordination with Religious Authorities: Conducted coordination and in-depth discussions (Audiensi) with the Majelis Ulama Indonesia (MUI) Fatwa Commission regarding FMD and the implementation of Qurban during the outbreak. This resulted in the issuance of MUI Fatwa Number 32 of 2022 concerning the Law and Guidance for the Implementation of Qurban Worship during the Foot and Mouth Disease Outbreak Condition.
- Socialization and Education: Carried out socialization efforts concerning the implementation of Qurban during the FMD outbreak through various online and offline activities targeting official staff, Qurban animal vendors, organizing committees, the general public, and other relevant stakeholders.
- Preparation of Field Guides: Prepared a handbook containing guidelines for the implementation of Qurban for official staff working in livestock and animal health functions.
- Communication Materials and Monitoring: Prepared Communication, Information, and Education (CIE) materials for dissemination via social media. A routine Central-level Qurban Implementation Monitoring Team was formed and collaborated with regional monitoring teams to supervise the Qurban execution and ensure the safety standards of the meat (ASUH: Safe, Healthy, Wholesome, and Halal).
- Pre-Slaughter Health Assurance: Ensured that livestock did not originate from FMD outbreak regions. Furthermore, clinical examination was required to confirm the health status of sacrificial animals. Physical examination ensured the animal was healthy and showed no FMD symptoms (mouth, nose, and hooves). Healthy livestock typically exhibit good appetite, agility, bright eyes, and lack hypersalivation. If no symptoms indicating illness are present, or if symptoms are inconclusive, further laboratory examination may be conducted.
- Diagnostic Surveillance: Veterinary Centers (Balai Besar Veteriner/Balai Veteriner) and provincial/district/city laboratories continuously conduct active and passive surveillance in major livestock centers and animal entry points to ensure that livestock being transported or introduced are healthy.
- Livestock Movement Requirements: For livestock traffic, animals must possess an Animal Health Certificate (SKKH) or Veterinary Certificate (SV) issued by the local agency responsible for livestock and animal health functions in the region of origin. Obtaining an SKKH/SV signifies that the livestock meets the animal health requirements for trade, including for Qurban purposes. Additionally, the destination region must have issued a recommendation for the entry of those animals.

3.8. Establishment of the FMD Task Force

Foot and Mouth Disease (FMD) is an Airborne Disease characterized by extremely rapid dissemination and a high morbidity rate of 100%. Given the severe economic impact generated by the disease, the President demonstrated serious concern regarding FMD control, with the expectation that the disease and its consequences could be managed promptly. Considering the scope of the impact and the fact that FMD management and control involve multiple sectors/aspects, President Jokowi directed that the handling of FMD must be addressed through a cross-sectoral approach that necessitates collaboration among all stakeholders to ensure a more massive and accelerated response.

The formation of the FMD Task Force (Satgas PMK) through the Circular Letter Number 01 of 2022 serves as a vital tool and platform for the involvement of all stakeholders in FMD control. Drawing lessons learned from the success of the COVID-19 Task Force, and given the similar nature of FMD's management complexity to that of COVID-19, the establishment of the FMD Task Force, involving a majority of Ministries/Agencies (K/L), provides a strong rationale for FMD management in Indonesia.

The handling of FMD is viewed as a unified and complementary effort, where the actions undertaken by the Ministry of Agriculture will be supported by other Ministries and Institutions. Since FMD constitutes an outbreak and an emergency condition, administrative barriers must be delineated to allow for concerted, collective action. Administratively, the

Ministry of Agriculture remains responsible for its functional areas, which will be supported and complemented by other Ministries/Agencies in accordance with government policy.

4. Conclusion

An effective control strategy involves preventative actions such as vaccination, enhancing on-farm biosecurity, and strict surveillance and monitoring of livestock movement. Collaboration among the government, farmers, and the private sector is key to accelerating the management of this outbreak.

Several strategies were implemented by the government and stakeholders to control the FMD outbreak in Java, including:

- Mass Vaccination: The national vaccination program commenced in mid-2022. Over 15 million doses of the FMD vaccine were distributed, primarily in areas with high infection rates. In certain regions, such as Boyolali and Malang, vaccination coverage exceeded 80%, proving effective in reducing transmission.
- Livestock Traffic Control: Strict restrictions on livestock movement were imposed in 'red zones.' Animal markets were temporarily closed. Animal inspections at inter-district entry and exit points were intensified.
- Biosecurity and Farmer Education: Regional animal husbandry agencies carried out socialization efforts for biosecurity implementation. Farmers were encouraged to routinely disinfect their enclosures, isolate sick animals, and utilize separate tools for handling livestock.
- Assistance and Compensation: The government provided support in the form of vaccines, medicines, and compensation funds for farmers whose cattle died or were culled (*dipotong paksa*). However, the distribution of assistance was not always equitable and faced administrative constraints.

The management of the FMD outbreak underscores the importance of cross-sectoral collaboration among the central government, regional authorities, academia, and farmers. The success in achieving control in less than one year provides significant lessons.

A number of key lessons learned from the response include:

- The necessity for multisectoral collaboration involving the central government, regional authorities, academia, and dairy cattle farmers in FMD control.
- The need to strengthen real-time epidemiological data and reporting systems.
- The requirement to reduce reliance on imported vaccines.
- The importance of raising biosecurity awareness among dairy cattle farmers.

Integrated and sustained efforts are essential to realize a dairy cattle sector that is better prepared to face future threats from contagious animal diseases. Long-term recommendations include:

- Establishing a permanent rapid outbreak response system in major dairy cattle farming centers.
- Strengthening animal health units at the sub-district level.
- Developing digital quarantine and livestock tracking systems.
- The necessity of livestock insurance to protect farmers from outbreak losses.
- Defining the role of cooperatives and the private sector in supporting vaccination and education programs.
- Formulating a long-term national FMD control roadmap.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Craig, A. T., Japri, A. P., & Heryanto, B. (2025). Use of community-based surveillance to enhance emerging infectious disease intelligence generation in Indonesia. *Journal of Global Health, 15*. https://doi.org/10.7189/jogh.15.04118

[2] Kuchipudi, S. V., Behring, D., Nissly, R., Chothe, S. K., Gontu, A., Ravichandran, A., & Butler, T. (2022). Mitigating the Impact of Emerging Animal Infectious Disease Threats: First Emerging Animal Infectious Diseases Conference (EAIDC) Report. *Viruses, 14*(5). https://doi.org/10.3390/v14050947

[3] McPake, B., Gilbert, K., Vong, S., Ros, B., Has, P., Khuong, A. T., Phuc, P. D., Hoang, Q. C., Nguyen, D. H., Siengsounthone, L., Luangphaxay, C., Annear, P., & McKinley, J. (2022). Role of regulatory capacity in the animal and human health systems in driving response to zoonotic disease outbreaks in the the Mekong region. *One Health, 14*(January), 100369. https://doi.org/10.1016/j.onehlt.2022.100369

[4] Purwadi, & Prasetyo, A. B. (2024). The Impact of the Foot and Mouth Disease (FMD) Outbreak on Milk Production and Income of Smallholder Dairy Farmers in Boyolali. *Tropical Animal Science, 6*(1), 55–59. https://doi.org/10.36596/tas.v6i1.1394

[5] Saniyyah, S., Christi, R. F., & Firman, A. (2024). Analysis of Milk Production, Quality, and Price Before and During the FMD Outbreak at KPBS Pangalengan (Vol. 44, Issue 2).

[6] Wibowo, R. A. K. W. (2025). Cross-Sectoral Performance Synergy in Handling Foot and Mouth Disease in Cattle in Ngawi Regency. *Manajemen Agribisnis: Jurnal Agribisnis, 25*(1), 61–69. https://doi.org/https://doi.org/10.32503/agribisnis.v24i2.5885