
Distribution And Implementation of Foot Mouth Disease Policy In The East Java Region

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Abstract

Livestock in Indonesia play an important role in supporting the national economy and improving farmers welfare. The resurgence of *Foot and Mouth Disease (FMD)* in Indonesia is a major problem that has a major impact on the economic sector. The high rate of spread and mortality prompted the government to take quick steps to tackle the FMD outbreak. One of the most affected regions, which is also densely populated with livestock is in East Java. This study uses a quantitative descriptive design with a Geographic Information System (GIS) to analyze the distribution of FMD in the East Java region in the first quarter of January-May 2025. The data taken is data on the number of cases that occurred in several regions in East Java. This study utilizes secondary data on reported livestock cases FMD which is then presented in the form of maps and narratives. Based on the results, the areas that have a high incidence rate of disease are Pacitan, Ponorogo, Nganjuk, Kediri, Jombang and Lamongan. One of the government's efforts is to limit livestock traffic, improve biosecurity and biosafety and establish an FMD handling task force team.

Keywords: Biosecurity, FMD, Mortalitas, SIG

Introduction

The livestock sector plays a crucial role in ensuring food security in Indonesia. Livestock in Indonesia plays an economic role in improving the welfare of farmers. The need for livestock products in Indonesia is increasing along with the increasing population (Hartati et al., 2024). The distribution of livestock populations in Indonesia shows significant regional distribution. East Java is recorded as the main center for beef cattle, dairy cows, laying chicken chickens, rabbits, and quail. Meanwhile, the highest population of goats and free-range chickens is in Central Java, while West Java dominates in sheep, broiler chickens, and ducks. Outside of Java, East Nusa Tenggara holds the largest population of buffaloes and pigs, while South Sulawesi is the region with the highest horse population. Cumulatively, the population of several commodities was recorded at 17.3 thousand beef cattle, 18.5 thousand goats, 304.6 thousand free-range chickens, and 14.9 thousand quail (Ditjenpkh, 2023).

Foot and Mouth Disease (FMD) is an acute infectious animal disease caused by a virus of the genus *Aphthovirus*, family *Picornaviridae*, which attacks cloven-hoofed animals such as cows, goats, sheep, pigs, and

other hoofed animals. The virus has a very high transmissibility, with morbidity with morbidity rates approaching 100% is susceptible populations, although mortality rates are relatively low in adults but high in offspring. FMD affects many aspects of livestock production including the growth, reproduction, and productivity of milk and meat, thus having a significant impact on the livestock economy and livestock product trade in endemic areas (Sukoco et al., 2023). Based on a report from the Ministry of Agriculture as of May 17, 2022, the *Foot and Mouth Disease (FMD) outbreak* has spread to 15 provinces and 52 districts/cities in Indonesia, with the number of infected livestock reaching 13,965 heads. The transmission characteristics of this disease are very progressive, with a morbidity rate close to 100% (Sudarsono, 2022).

After maintaining the status of *Foot and Mouth Disease (FMD)* free since 1986, Indonesia again reported the re-emergence of this outbreak in May 2022 with an accumulation of 615,570 positive cases. The beef cattle population was the most significantly affected commodity with a total of 505,837 heads, followed by dairy cows, buffaloes, goats, sheep, and pigs. Spatially, Java Island recorded 343,675 positive cases, of

which the highest concentration of cases was found in Malang Regency and the lowest in Yogyakarta City. Of these, 274,907 cases occurred in beef cattle, indicating that 54.35% of the total national beef cattle cases are centered on the island of Java (Jayanegara, 2025). The spread of the virus shows inter-regional variability triggered by multifactors. This includes managerial aspects (control policies), economic-logistical aspects (animal trade patterns), and physical aspects of the region (geographical conditions and accessibility) that collectively determine the

Materials and Methods

This study uses a quantitative descriptive design using a Geographic Information System (GIS) approach that describes the distribution of FMD in the East Java region in the first quarter of January-May 2025. The data consist of reported FMD cases across several region in East Java. The sample of this study uses the reporting of the number

Results and Discussion

Based on a letter from the PUSVETMA Surabaya No. 05001/PK.310/F4. H/05/2022, 06001/PK.310/F4. H/05/2022 and 06002/PK.310/F4. H/05/2022 stated that there were FMD incidents in several areas in East Java, namely Gresik, Lamongan, Mojokerto and Sidoarjo Regencies. The spread of FMD was relatively fast from the beginning detected in 5 districts to 62 districts within 2 weeks.

Based on data presented in Figure 1, FMD incidence up to May 2025 in East Java is in several areas that are red with indications of a high number of cases. Based on Figure 1, the high FMD shows a significant clustering pattern in the western region including Pacitan, Ponorogo, Nganjuk, Kediri, Jombang, and Lamongan. This distribution pattern indicates that virus transmission is not only local but can be triggered by regional mobilization. As stated by Adjid (2022), the high transmission of FMD in Indonesia is influenced by livestock traffic, means of transportation, and human interaction that act as mechanical carriers (fomites).

These areas are cattle barns that have a high density of livestock and are the Livestock trade routes. The presence of regional animal markets at these points is often the center of the amplification of the virus before it spreads to the surrounding areas. This is in line with the

level of vulnerability of an area (Pamungkas et al., 2023).

However, studies that specifically describe the spatial distribution of FMD cases in East Java are still limited, especially those using a Geographic Information System (GIS) approach. Understanding the distribution of FMD cases is important to support disease control and prevention efforts, particularly in high-risk areas. Therefore, this study aims to describe the spatial distribution of FMD cases in East Java using a GIS approach during January–May 2025.

of livestock suffering from FMD which is then presented in the form of maps and narratives.

Geographic Information Systems (GIS) a system used to collect, examine, integrate and analyze information related to the earth's surface. This system integrates spatial data which makes it easier to describe a disease event (Sindi et al., 2024).

research of Jamaluddin et al., (2023) which emphasized that areas with high transportation connectivity have a faster risk of infection due to the difficulty of *real-time* biosecurity surveillance at district borders. This condition demands the implementation of stricter zoning management to isolate infected areas from spreading to surrounding green areas.

In addition, northern coastal areas such as Lamongan and Gresik have access to transportation and active livestock trade activities, which are suspected of accelerating the spread of the disease. The occurrence of FMD in Jember Regency shows the possibility of transmission through cross-regional livestock distribution channels, a pattern that is in line with evidence that inter-regional livestock trade can be a route for the spread of disease (Bale, 2007). Meanwhile, most other districts/cities in East Java, including other Horseshoe areas (Pasuruan, Probolinggo and Lumajang) and Madura Island, did not show any indication of FMD incidence in that period or had a relatively low incidence rate. In figure 1 high incidence rate of the disease is shown in red. These findings confirm that the spread of FMD in East Java is influenced by geographical factors, livestock density, and the intensity of livestock mobility and trade, so disease control

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