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An evaluation of effects and mitigation measures of African swine fever in the North East India's pig industry

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Abstract

African Swine Fever (ASF) has emerged as a major threat to the pig industry in Northeast India, resulting in significant economic losses and disruption to livelihoods. This study assesses the economic impact of ASF on the pig farming sector, specifically in the states of Assam, Meghalaya, and Nagaland, from 2020 to 2024. Through data collection from farmers, government agencies, and veterinary reports, the study estimates the economic losses due to ASF outbreaks, which include direct losses from pig deaths, costs of disease control, and long-term impacts on the industry. The paper also discusses the measures taken by the government and local agencies to mitigate the havoc caused by ASF, including biosecurity measures, and awareness campaigns. The study revealed that African Swine Fever has caused significant economic losses in the pig industry of North East India, severely impacting the livelihoods of smallholder farmers and concluded that while mitigation efforts have been beneficial, enhanced support for farmers, improved veterinary infrastructure, and better disease surveillance are essential for long-term control and recovery.

Keywords: African swine fever, economic losses, pig industry, mitigation measures, North East India

Introduction

The pig farming industry in Northeast India plays a crucial role in rural livelihoods, food security, and the local economy. The region is known for its large-scale consumption of pork, with pig farming being an integral part of many households. However, in recent years, African Swine Fever (ASF) has severely impacted this sector, leading to high mortality rates among pigs and major disruptions in production. ASF is a viral disease that affects domestic and wild pigs, with no known vaccine or cure, leading to significant economic losses. The first outbreak in India was reported in 2020, and since then, it has spread rapidly across the region, affecting states like Assam, Meghalaya, Nagaland, and Arunachal Pradesh.

This present study aims to assess the economic losses caused by ASF in the pig industry of Northeast India and the measures taken by various stakeholders to mitigate these losses. It also discusses the role of government initiatives and interventions in reducing the impact of the disease on the region's economy.

Materials and Methods

Study Area and Data Collection

The study was conducted in three major pig farming states of Northeast India: Assam, Meghalaya, and Nagaland, during the period 2020-2024. A total of 200 pig farmers were surveyed (100 from Assam, 50 from Meghalaya, and 50 from Nagaland). Data were collected through structured interviews, field observations, and government reports. The primary data focused on farm-level economic losses due to ASF, mortality rates, costs incurred for disease control measures, and the overall impact on livelihoods.

Economic Loss Assessment

The economic loss due to ASF was quantified based on the following categories:

1. **Direct Losses:** Losses from pig mortality due to ASF, including the culling of infected pigs.
2. **Control and Prevention Costs:** Costs incurred by the government and farmers for disease control measures such as culling, disinfecting, and quarantine.
3. **Long-Term Economic Impact:** Long-term effects on production, sales, and the market price of pork.

Mitigation Measures

The study also evaluated the various mitigation measures undertaken by the government as well as local agencies including biosecurity protocols, awareness campaigns, and financial compensation for affected farmers. Interviews with veterinarians, district animal husbandry officers, and

government officials were conducted to understand the effectiveness of these measures.

Results and Discussion

Economic Losses

The total economic losses in the pig farming industry due to ASF outbreaks from 2020 to 2024 were estimated at Rs. 80 crore across the region. These losses include direct costs (e.g., the culling of infected pigs, decreased breeding, and lower productivity) and indirect costs (e.g., market disruptions, price fluctuations, and decreased demand for pork) (Singh & Singh, 2020) [3].

Table 1: Economic Losses in the Pig Industry (In Crore)

State	Direct Losses (In Crore)	Indirect Losses (In Crore)	Total Losses (In Crore)
Assam	45	20	65
Nagaland	15	8	23
Meghalaya	10	5	15
Arunachal Pradesh	5	2	7

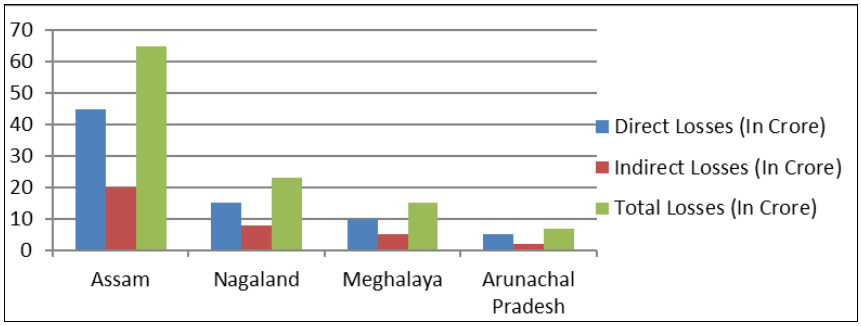

Fig 1: Total Economic Losses due to ASF in the Region

Mitigation Measures Implemented

To combat ASF, several mitigation measures were implemented, including:

1. **Culling and Disposal of Infected Pigs:** Infected and exposed pigs were culled to prevent the spread of the disease. The culling operation was carried out under the supervision of veterinary experts (Bora *et al*., 2020) [1].
2. **Awareness Campaigns:** Extensive awareness campaigns were conducted by Krishi Vigyan Kendras (KVKs), the Department of Animal Husbandry, and NGOs. These campaigns educated farmers about ASF symptoms, biosecurity measures, and the importance of reporting outbreaks (Singh and Singh, 2020) [3].
3. **Biosecurity Measures:** Farmers were trained in biosecurity practices to reduce the risk of ASF transmission. These included the disinfection of pig enclosures, the use of protective clothing, and restrictions on the movement of pigs (Thomas *et al.*, 2021) [5].
4. **Government Compensation Schemes:** The Government of India provided compensation for farmers who suffered losses due to ASF, although the compensation was often deemed insufficient by farmers. States like Assam set up specific relief funds to assist affected farmers (Bora *et al.*, 2020) [1].
5. **Improved Surveillance and Testing:** Regular surveillance and testing of pig herds were introduced to quickly identify outbreaks and prevent further spread (Buragohain *et al.*, 2023) [2].

Table 2: Mitigation Measures Taken in Response to ASF Outbreaks

Measure	Implementation Details
Culling and Disposal	Infected pigs were culled and disposed of safely.
Awareness Campaigns	Farmers were educated on disease symptoms and prevention.
Biosecurity Measures	Disinfection, restricted movement, and protective clothing.
Government Relief	Compensation for affected farmers through state schemes.
Surveillance and Testing	Regular testing and surveillance to detect outbreaks early.

The economic losses due to ASF in North East India have been devastating for smallholder pig farmers. The reduction in pig populations, along with decreased production capacity and market disruptions, has affected the livelihoods of thousands of farmers. While the government and local authorities have implemented several mitigation measures, including culling, awareness campaigns, and compensation, the effectiveness of these measures has been mixed.

The rapid spread of ASF highlights the need for better surveillance, stricter biosecurity protocols, and more comprehensive government support. Furthermore, the compensation schemes, though helpful, are often insufficient to cover the total losses faced by farmers. Therefore, it is crucial to provide better financial support, along with long-term strategies for disease management and prevention.

Training programs on biosecurity have proven effective in improving farmers' understanding and implementation of disease prevention practices. Increased awareness about ASF, combined with effective surveillance systems and rapid response mechanisms, is essential for controlling future outbreaks (Bora *et al.*, 2020) [1].

Conclusion

African Swine Fever has caused significant economic losses in the pig industry of North East India, severely impacting the livelihoods of smallholder farmers. Although various mitigation measures have been implemented, including culling, awareness campaigns, biosecurity training, and government compensation, more needs to be done to prevent further outbreaks. The study suggests that improving surveillance, strengthening biosecurity practices, and providing better financial support for affected farmers will be crucial for minimizing the impact of ASF and rebuilding the region's pig farming industry.

Future research should focus on developing vaccine solutions for ASF and exploring ways to enhance regional cooperation in disease control efforts. Additionally, integrating digital tools for disease monitoring and market access could improve farmers' resilience to future outbreaks.

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