

THE EFFECTS OF LAMPI VIRUSES ON MAHARASHTRA STATE

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Abstract

The Lampi virus, officially known as Lumpy Skin Disease (LSD), has emerged as a serious threat to livestock health and rural livelihoods in Maharashtra. First reported in the state in August 2022, the virus rapidly spread across over 25 districts, causing significant cattle mortality and loss of milk productivity. Although non-zoonotic and not harmful to humans, the disease severely affects cattle, leading to fever, skin nodules, reduced milk yield, and reproductive complications. The outbreak has caused major economic disruptions, particularly among dairy farmers who rely on livestock for their income. Government interventions such as mass vaccinations, movement restrictions, and vector control have helped contain the spread to an extent. However, challenges remain in vaccine delivery, disease monitoring, and awareness among farmers. This study explores the multidimensional impact of the Lampi virus in Maharashtra and highlights the urgent need for strengthened veterinary infrastructure, research, and policy support to prevent future outbreaks.

Keywords:- Lumpy Skin Disease, Maharashtra livestock, cattle mortality, milk productivity loss, veterinary infrastructure, disease outbreak management.

Introduction

Lumpy Skin Disease (LSD), commonly referred to as the Lampi virus in India, has emerged as a significant threat to the livestock sector, particularly in the state of Maharashtra. Caused by the Capripoxvirus, this viral infection primarily affects cattle and buffalo, leading to severe economic and agricultural repercussions. First detected in Odisha in 2019, the disease made a devastating entry into Maharashtra in August 2022, with the Jalgaon district reporting the initial outbreak. Since then, it has rapidly spread across more than 25 districts including Dhule,

Sangli, Latur, and Ahmednagar, resulting in over a thousand recorded cattle deaths and widespread morbidity. The clinical symptoms—such as fever, nodular skin lesions, ulcerations, and in some cases, infertility or reduced milk production—have not only affected the health of the livestock but also significantly disrupted rural livelihoods, especially those dependent on dairy farming. Farmers have reported a drastic fall in milk yields, sometimes up to 50%, further exacerbating economic distress in an already vulnerable agrarian economy. The disease, though non-zoonotic and not a threat to humans, has led to the imposition of strict biosecurity measures including animal movement restrictions, vaccination drives, and temporary bans on cattle markets. Government intervention, through mass immunization using goat pox vaccines and vector control strategies, has been robust, yet challenges such as vaccine coverage gaps, lack of awareness, and inadequate diagnostic infrastructure persist. The Lampi virus has also brought to light significant research and policy gaps, particularly in the areas of disease surveillance, vector ecology, and region-specific vaccine efficacy. In Maharashtra, where animal husbandry forms an integral component of rural economic stability, the Lampi virus outbreak underscores the urgent need for integrated disease management strategies, farmer education programs, and sustained veterinary support. As the state continues to grapple with the long-term implications of the outbreak, it is imperative that future preparedness plans include real-time disease tracking, targeted research, and policy-driven resilience frameworks to mitigate such epidemics effectively.

Maharashtra is the second-most populous and third-largest state in India, located in the western peninsular region, bordered by the Arabian Sea to the west and states like Gujarat, Madhya Pradesh, Chhattisgarh, Telangana, Karnataka, and Goa. With a population exceeding 125 million (2021 estimate), it is one of India's most urbanized and industrialized states, home to major cities like Mumbai (its capital and India's financial hub) and Pune (an educational and IT center). The state comprises 36 districts across 6 administrative divisions, and is linguistically dominated by Marathi, the official language. Maharashtra's economy is the largest among Indian states, driven by diverse sectors including finance, manufacturing, IT, agriculture, and tourism, contributing over 14% to India's GDP. The literacy rate is approximately 82.3%, with a sex ratio of 929 females per 1,000 males. Rich in cultural heritage, Maharashtra is known for Ajanta and Ellora caves, classical arts, Maratha history, Ganesh festival, and a vibrant film industry. Its varied geography includes coastal plains, Sahyadri

ranges (Western Ghats), and the Deccan plateau, supporting diverse ecosystems and a wide range of climatic zones, from humid coastlines to dry interiors.

Background of the Study

Lumpy Skin Disease (LSD), locally known as the Lampi virus, has emerged as a significant veterinary and economic challenge in Maharashtra, India. Originally detected in Africa, the disease was first reported in India in 2019 and has since rapidly spread across multiple states, with Maharashtra witnessing major outbreaks beginning around 2020. Characterized by fever, skin nodules, weight loss, and reduced milk yield, LSD poses a direct threat to cattle health and indirectly affects farmer livelihoods and rural economies. Despite being non-zoonotic and posing no risk to human health, the disease's impact on dairy production, animal reproduction, and agricultural labor has been severe. Maharashtra, being a state heavily reliant on livestock for dairy and draft power, has suffered substantial losses in recent outbreaks. This study aims to assess the clinical, economic, and epidemiological dimensions of LSD in Maharashtra and to identify gaps in control measures, veterinary response, and future preparedness strategies.

An Overview of the “Lampi Virus”

Lumpy Skin Disease (LSD), locally referred to as the “Lampi virus,” is a highly contagious viral disease that primarily affects cattle and buffalo, posing a significant threat to livestock health and the rural economy. Caused by a capripoxvirus from the Poxviridae family, LSD is specific to bovines and does not infect humans or small ruminants like goats or sheep, making it a non-zoonotic disease. The virus is transmitted mainly through biting insects such as mosquitoes, ticks, and flies, as well as via direct contact with infected animals or contaminated materials. Clinically, the disease manifests in the form of fever, enlarged lymph nodes, and characteristic skin nodules that may lead to ulceration, lameness, and a marked drop in milk production. In some cases, it also causes infertility, abortions, and death, particularly in younger or weaker animals. First reported in Zambia in 1929 and spreading to India in recent years, LSD has become a growing concern in Indian states like Maharashtra, where livestock farming is a major livelihood. The disease's impact extends beyond animal health, affecting the socio-economic well-being of farmers due to decreased productivity, treatment costs, and restrictions on animal movement.



Although not a direct threat to human health, the indirect effects of the disease on food security, dairy supply chains, and income stability are considerable. Vaccination using goat pox-based vaccines has proven somewhat effective in controlling outbreaks, but timely diagnosis, isolation of infected animals, and robust vector control measures are essential for effective management. The persistence of the virus in regions like Maharashtra highlights the need for enhanced surveillance, public awareness campaigns, and government-supported veterinary infrastructure. Despite several containment efforts, recurring outbreaks point to systemic gaps in disease control and preparedness. Given the scale and severity of its impact, LSD warrants coordinated national attention, with research focused on developing region-specific vaccines and understanding local transmission dynamics. Ultimately, managing LSD effectively requires a holistic approach that combines scientific innovation, policy support, and community participation to safeguard the health of bovine populations and the livelihoods that depend on them.

Epidemiology in Maharashtra

The epidemiological pattern of Lumpy Skin Disease (LSD), commonly referred to as the Lampi virus in India, reveals a concerning spread across Maharashtra, severely affecting cattle populations and rural economies. Following its initial outbreak in the state in August 2022, with Jalgaon district reporting the earliest confirmed cases, the disease rapidly extended to approximately 25 districts within a short span. Early hotspots that experienced widespread transmission included Ahmednagar, Akola, Pune, Satara, Buldhana, Amravati, and Nagpur, alongside Jalgaon. These regions, characterized by dense cattle populations and active dairy

cooperatives, provided conditions conducive to viral transmission. The virus is primarily vector-borne, transmitted through biting insects such as mosquitoes, ticks, and flies, as well as through direct contact with infected animals or contaminated feed and water. The morbidity rate in affected districts was reported at an alarming 10–20%, indicating the proportion of cattle displaying clinical signs such as fever, nodular skin eruptions, respiratory distress, and temporary or permanent reduction in milk yield. Although the mortality rate remained relatively low at 1–5%, it was still significant due to the sheer size of the livestock population in the state. The impact was especially severe in younger calves, malnourished animals, and those with poor immune responses. While the disease does not affect humans, its indirect effects—ranging from disrupted milk supply chains to economic instability in farming households—have made it a public concern. The spread was exacerbated by gaps in early surveillance, limited farmer awareness, and delays in mass vaccination efforts. Movement of animals for trade, lack of vector control, and communal grazing practices further contributed to the wide geographic transmission. In response, the Maharashtra state government, in collaboration with central veterinary bodies, launched vaccination campaigns using goat pox-based vaccines, and imposed restrictions on animal transport from infected zones. Quarantine protocols and biosecurity guidelines were issued, though adherence varied widely across districts. Vector control measures, including insecticide spraying and sanitation efforts, were deployed in high-risk areas. Despite these interventions, periodic flare-ups continued due to insufficient vaccine coverage, challenging terrain, and resistance among rural communities to report or isolate infected animals. The episodic nature of LSD outbreaks in Maharashtra suggests a need for more comprehensive epidemiological studies, improved disease modeling, and consistent veterinary outreach. In essence, the spread of LSD in Maharashtra underscores the pressing requirement for an integrated animal health surveillance system, proactive disease forecasting, and stronger grassroots-level veterinary infrastructure to curtail future outbreaks and protect rural livelihoods.

Economic & Socioeconomic Impact

The outbreak of Lumpy Skin Disease (LSD), or Lampi virus, in Maharashtra has had far-reaching economic and socioeconomic consequences, significantly disrupting rural livelihoods and the agricultural economy. By October 2022, the disease had led to the death of approximately 1,500 cattle and infected over 40,000 animals across the state. This large-scale

morbidity and mortality among livestock directly impacted dairy farming, which forms the backbone of income for thousands of rural households. One of the most pronounced economic consequences was the drastic reduction in milk yield among infected animals—often dropping by 40–50%—leading to a substantial loss in daily revenue for smallholder farmers and cooperatives. Beyond the dairy sector, the outbreak severely disrupted agricultural operations, particularly in regions dependent on animal labor for harvesting. For example, in sugarcane-growing belts, the movement of draft bullocks—commonly used for hauling harvested cane—was delayed due to state-imposed vaccination mandates and strict movement restrictions designed to contain the disease. This led to a shortage of transport animals, delayed harvests, and increased reliance on expensive mechanized alternatives or manual labor, both of which placed added financial strain on already burdened farmers. The disease outbreak also disrupted cattle trade and fairs, affecting ancillary rural markets that rely heavily on livestock commerce. In response to the crisis, the Maharashtra state government took several measures to mitigate the economic fallout. The state cabinet approved compensation schemes for livestock owners who lost their animals to the disease, providing financial relief to those most affected. The government committed to covering the full cost of treatment for infected animals, including veterinary care, medicines, and vaccines, thereby reducing the financial burden on farmers. Despite these efforts, challenges such as slow disbursement of compensation, limited access to veterinary services in remote areas, and vaccine hesitancy among some rural populations limited the overall effectiveness of these initiatives. The socioeconomic toll extended beyond immediate economic loss, affecting nutritional security due to lower milk availability, disrupting household income streams, and heightening emotional distress among farmers who view their cattle not only as economic assets but also as part of their family and cultural heritage. In communities where cattle play a central role in rituals, festivals, and daily agricultural life, the Lampi virus outbreak also disrupted traditional practices and social rhythms. The economic and social ripple effects of LSD in Maharashtra underscore the urgent need for sustainable livestock health policies, faster response mechanisms, and stronger social safety nets to cushion vulnerable farming communities against future disease outbreaks.

Public Health & Food Safety

While Lumpy Skin Disease (LSD), also known as the Lampi virus, poses a significant threat to livestock health and rural economies, its implications for public health and food safety are

minimal, providing some reassurance amid widespread concern. Scientifically classified as a non-zoonotic disease, LSD is caused by a capripoxvirus that specifically targets cattle and buffalo, with no evidence of transmission to humans. This means that direct contact with infected animals or consumption of their products poses no risk of infection to people. Despite the alarming appearance of the disease—characterized by visible nodules, skin lesions, and fever in affected animals—there is no scientific basis to suggest that it can be transmitted through the food chain. Milk from infected animals, although it may show a temporary reduction in quantity and quality, remains safe for human consumption, particularly when subjected to proper boiling or pasteurization. Boiling milk effectively neutralizes any pathogens that might be present, including secondary bacterial contaminants that could arise from poor handling or hygiene conditions during collection. This critical food safety assurance has been echoed by veterinary authorities and public health departments across Maharashtra, who have urged consumers not to panic or boycott dairy products during the outbreak. Nevertheless, misconceptions and misinformation have led to temporary declines in milk sales and unwarranted fear among consumers, particularly in rural and semi-urban areas where access to accurate scientific information may be limited. In response, state health and animal husbandry departments have undertaken awareness campaigns to dispel myths, emphasizing that LSD does not affect humans and that routine precautions such as boiling milk and maintaining hygiene during handling are sufficient to ensure safety. Furthermore, stringent regulatory controls in dairy supply chains—particularly through cooperative societies and organized vendors—have reinforced quality checks during the outbreak. Veterinary guidance has also recommended withholding milk from severely infected animals undergoing treatment or those with secondary infections to prevent any indirect health risks related to compromised milk quality, though these are precautionary rather than necessity-driven measures. On the broader public health front, LSD has not necessitated any interventions beyond animal disease control protocols, and no quarantine or human health advisories have been issued. However, the outbreak underscores the importance of maintaining clear communication channels between veterinary and public health agencies to preempt misinformation and ensure consumer confidence. While LSD poses no direct threat to human health, continued vigilance, education, and adherence to basic food safety practices are essential to sustaining public trust in the safety of animal-derived food products during such veterinary disease outbreaks.

Literature Review

Bayyappa, M.R.G., et al. (2025). This study provides a comprehensive analysis of the spatiotemporal dynamics of Lumpy Skin Disease (LSD) outbreaks in Maharashtra, focusing on its emergence and spread between 2019 and 2023. Using a combination of field data and geostatistical modeling, the authors identified key districts that acted as hotspots for disease transmission, with a notable concentration in western and central Maharashtra. The study incorporated GIS tools to create disease spread maps over time and seasons, highlighting monsoon and post-monsoon periods as peak outbreak windows. The authors also evaluated the effectiveness of the goatpox vaccine administered during emergency campaigns, showing an 82% efficacy rate in field conditions. Their findings revealed significant associations between cattle density, rainfall, and outbreak intensity. This paper is critical for understanding the temporal clustering of LSD outbreaks and supports the use of targeted vaccination strategies. It emphasizes the importance of integrating veterinary surveillance with climate and livestock movement data to improve early warning systems in Maharashtra. Furthermore, it provides a framework for state-level policymakers to design more region-specific disease control programs based on evolving epidemiological trends.

Bajpai, M., et al. (2025). Bajpai and colleagues conducted a molecular surveillance study focusing on the characterization of LSDV variants in Maharashtra and Odisha during the 2022–2023 outbreaks. The researchers collected samples from clinically affected cattle and sequenced critical regions of the LSDV genome, including the GPCR and RPO30 genes. Their results demonstrated distinct genetic variations within Maharashtra isolates compared to older Indian and African strains, suggesting the possible emergence of a regional variant due to local evolution or recombination. They also reported minor differences between isolates from Maharashtra and Odisha, indicating region-specific microevolution. Phylogenetic analysis clustered the Maharashtra strains close to East African variants, but with some unique nucleotide substitutions not previously reported. These mutations may influence virulence or vaccine responsiveness. The study stressed the need for regular molecular monitoring to detect such shifts and update diagnostics and vaccine formulations accordingly. It also raised concerns about the potential for immune escape and underscored the relevance of integrating genomic surveillance with field epidemiology to anticipate future outbreaks. Their findings provide a

strong argument for incorporating whole-genome sequencing in state-level disease monitoring programs, especially in high-risk regions like Maharashtra.

Sudhakar, S.B., et al. (2025). This discovery is significant because buffaloes were previously considered less susceptible to LSDV, which is primarily known to affect cattle. The team collected blood and skin lesion samples from symptomatic buffaloes and used real-time PCR and gene sequencing to confirm the presence of LSDV. The infected animals showed symptoms consistent with LSD—nodular skin lesions, fever, and reduced milk yield. The study also distinguished the LSDV genome from other capripoxviruses such as sheep pox and goatpox through differential diagnosis. Their findings suggest that buffaloes could potentially serve as silent reservoirs or secondary hosts for the virus, which has implications for disease control strategies. This expands the epidemiological scope of LSDV in India and necessitates including buffalo populations in routine surveillance and vaccination programs. Additionally, it raises the urgency of reevaluating interspecies transmission dynamics in endemic zones like Maharashtra. The study's impact lies in broadening our understanding of LSD host range and suggesting a paradigm shift in how buffalo herds are managed during LSD outbreaks.

Mani, G., et al. (2025). This study by Mani et al. introduces an advanced fractional-order differential equation model to simulate the spread of LSDV in Maharashtra. Unlike traditional models, which assume uniform rates of infection and recovery, fractional-order models better capture memory effects and delayed responses in real-world disease dynamics. The authors parameterized the model using actual outbreak data from Maharashtra collected between 2020 and 2023. The model incorporated variables such as vaccination rates, cattle movement, climate conditions, and intervention delays. Their simulations demonstrated that early intervention and consistent vaccination reduced peak outbreak sizes by up to 70%. They also showed that a delay of even 10 days in response measures could significantly amplify outbreak severity. The model accurately predicted real outbreak patterns across different districts of Maharashtra, validating its utility for forecasting and planning. This paper stands out for its methodological innovation and practical application, offering state authorities a predictive tool to optimize resource allocation and mitigate future outbreaks. It also highlighted the need for timely deployment of control measures and robust veterinary infrastructure, especially in high-density livestock zones.

Yadav, P., et al. (2024). By sequencing the full genomes of LSDV isolates from several Indian states and comparing them with global reference strains, the study identified Maharashtra isolates as part of a cluster genetically close to strains from Kenya and Ethiopia. However, specific nucleotide mutations unique to Indian isolates were also observed, suggesting the emergence of a potentially distinct Indian sub-lineage. These findings are critical in understanding the transmission routes and mutation dynamics of LSDV in India. The researchers also investigated markers related to virulence and immune evasion, finding changes that may influence disease severity or vaccine response. Maharashtra isolates in particular exhibited SNPs in regions coding for host-range and immunomodulatory proteins. This study emphasized the need for continuous genomic surveillance to adapt vaccine strategies and prevent cross-border spread. It also recommended creating a national repository of LSDV genomes to facilitate rapid tracking of variant emergence. The research marks a major step toward precision epidemiology in managing capripoxvirus outbreaks in India.

Clinical & Veterinary Impact

Lumpy Skin Disease (LSD), caused by a Capripoxvirus, has a profound clinical and veterinary impact on cattle, marked by a wide range of debilitating symptoms that severely affect the health and productivity of infected animals. The disease typically begins with a sudden rise in body temperature, with fever reaching up to 105–106 °F (40.5–41.1 °C), followed by pronounced lethargy and a sharp decline in appetite. Affected animals rapidly lose weight, and their physical condition deteriorates due to systemic viral infection and associated stress. One of the most visible and defining symptoms is the development of firm, round skin nodules ranging from 2 to 5 cm in diameter, which may ulcerate and become infected. These lesions often cover large areas of the body, including the neck, back, legs, and udder, causing pain and discomfort. Additional symptoms include respiratory distress, nasal discharge, conjunctivitis, and swelling around the limbs and eyes, which can result in lameness and restricted mobility. Pregnant cows are particularly vulnerable, as the disease can lead to spontaneous abortions and long-term reproductive complications. While the mortality rate associated with LSD is relatively low, typically ranging between 1% and 5%, the morbidity rate is significantly higher—reported between 10% and 20%—and has devastating consequences for livestock productivity. Infected animals often exhibit a sharp drop in milk yield, sometimes up to 50%, due to fever, inflammation, and physiological stress. In beef-producing cattle, meat quality is

compromised by the presence of skin lesions and systemic weakness, leading to reduced market value. The virus also affects reproductive efficiency, with delayed estrus cycles, infertility, and increased calving intervals observed in recovered animals. Secondary bacterial infections frequently develop in open skin ulcers, further complicating the health status and requiring prolonged antibiotic treatment. These clinical outcomes demand extensive veterinary care, isolation protocols, and supportive therapies, all of which increase the financial burden on farmers. In areas like Maharashtra, where the outbreak has affected large populations of livestock, the clinical manifestations of LSD have overwhelmed veterinary infrastructure, highlighting the need for rapid diagnostic capabilities, better-equipped field units, and training for local veterinarians. The veterinary challenge is compounded by the disease's similarity to other skin-affecting conditions, requiring laboratory confirmation for accurate diagnosis. Given the severity of symptoms and the scale of productivity losses, LSD represents a critical animal health issue that necessitates integrated clinical management strategies, continuous surveillance, and widespread farmer education to mitigate its impact on cattle health and agricultural livelihoods.

Methodology

The methodology adopted for this study on the impact of the Lampi virus (Lumpy Skin Disease) in Maharashtra involved a multi-dimensional approach, combining both qualitative and quantitative data collection. Primary data was gathered through structured interviews and field surveys conducted among affected cattle owners, veterinarians, and local livestock officers across key districts such as Jalgaon, Ahmednagar, Pune, Amravati, and Satara. These areas were selected based on reported case density, mortality rates, and availability of veterinary response data. Secondary data was collected from government reports, veterinary department bulletins, academic journals, and reliable news sources to validate and supplement field findings. Epidemiological trends were analyzed to assess the geographic spread, morbidity, and mortality over time. Clinical symptoms were documented and categorized based on veterinary case reports and diagnostic records. In addition, economic losses were estimated using average reductions in milk yield, treatment costs, and livestock deaths. The study also evaluated the effectiveness of government interventions such as vaccination drives, compensation schemes, and public awareness efforts. All data were analyzed descriptively, with results presented in tabular and narrative formats to ensure clarity. This comprehensive

approach allowed for a holistic understanding of the Lampi virus's effects on Maharashtra's livestock sector.

Result and Discussion

Table 1: Veterinary Response Capacity in Affected Districts

District	No. of Govt. Vets	Emergency Mobile Units	Average Response Time	Challenges Faced
Jalgaon	18	3	24–48 hours	Inadequate field teams
Ahmednagar	22	4	12–24 hours	High case volume
Amravati	14	2	2–3 days	Rural inaccessibility
Pune	26	5	24 hours	Urban-rural case coordination
Satara	16	3	2 days	Shortage of transport, manpower

The veterinary response to the Lampi virus outbreak in Maharashtra varied significantly across districts, reflecting disparities in infrastructure, manpower, and logistical readiness. Jalgaon, one of the first-hit districts, had 18 government veterinarians supported by three emergency mobile units, but response times ranged from 24 to 48 hours due to inadequate field teams. Ahmednagar, with 22 vets and four mobile units, demonstrated a faster response time of 12–24 hours but struggled to manage the high volume of cases during peak outbreak periods. In Amravati, the shortage of veterinarians 14 and just two mobile units extended response times to 2–3 days, mainly due to difficult rural terrain and poor accessibility. Pune, with the most robust setup of 26 vets and five mobile units, maintained a 24-hour average response time despite coordination challenges between urban and rural zones. Satara, with 16 vets and three mobile teams, faced delays due to transport shortages and limited manpower, causing a two-day average response.

Table 2: Clinical Impact on Infected Cattle

Clinical Sign	Frequency (%)	Notes
High Fever (105–106°F)	80%	Early symptom
Skin Nodules	95%	Characteristic, 2–5 cm lesions
Anorexia & Weight Loss	70%	Leads to sharp productivity decline
Ocular/Nasal Discharge	50%	May result in temporary blindness
Abortions	20–30%	Reported in pregnant cows
Secondary Infections	40%	Includes mastitis, pneumonia, etc.

The clinical impact of the Lampi virus on infected cattle has been both severe and widespread, significantly affecting animal health and productivity. Nearly 80% of affected animals exhibit high fever ranging from 105–106°F as an early sign, often accompanied by lethargy. The most distinctive symptom—observed in 95% of cases—is the formation of firm skin nodules measuring 2–5 cm, which may ulcerate and attract secondary infections. About 70% of animals suffer from anorexia and rapid weight loss, directly leading to reduced milk yield and overall productivity. Ocular and nasal discharges are reported in 50% of cases, sometimes resulting in temporary blindness and complicating recovery. Pregnant cows are particularly vulnerable, with 20–30% experiencing spontaneous abortions. Additionally, 40% of cases develop secondary infections such as mastitis and pneumonia, which require extended treatment. These compounded health effects lead to long recovery periods and significant economic losses for farmers.

Conclusion

The outbreak of the Lampi virus, or Lumpy Skin Disease (LSD), in Maharashtra has had far-reaching consequences on the state’s livestock sector, affecting animal health, rural livelihoods, and the broader agricultural economy. Since its first detection in 2020, the disease has spread rapidly across more than 25 districts, resulting in thousands of infections and significant mortality. The clinical manifestations—including high fever, skin nodules, weight loss, and

reproductive complications—have led to a sharp decline in milk production, impaired animal growth, and increased treatment costs, placing a considerable economic burden on farmers. Despite a relatively low mortality rate of 1–5%, the high morbidity rate and secondary infections have prolonged recovery times and lowered the productivity of surviving animals. The 2025 resurgence in Ahilyanagar, affecting over 600,000 previously vaccinated cattle, has highlighted gaps in vaccine efficacy, coverage, and long-term disease surveillance. Government measures, including mass vaccination, compensation for livestock deaths, and veterinary outreach, have played a critical role in limiting the spread. However, challenges such as uneven veterinary infrastructure, delayed response times, misinformation among farmers, and poor biosecurity practices continue to hinder complete disease control. Public health impacts remain minimal, as LSD is non-zoonotic and milk from infected animals is safe when boiled, but consumer perception and market confidence have been temporarily affected. The study underscores the urgent need for a coordinated and sustained approach involving scientific research, targeted policy interventions, and community-level engagement. Strengthening veterinary services, investing in region-specific vaccine development, and improving disease reporting and response mechanisms are essential to prevent future outbreaks. In conclusion, while Maharashtra has made notable progress in managing LSD, long-term resilience will depend on proactive preparedness, farmer education, and integrated disease management strategies.

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