

Biosecurity at livestock farm

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Livestock biosecurity encompasses a broad range of practices and systems aimed at preventing the transmission of infectious agents from infected to susceptible animals or stopping the introduction of infected animals into herds, regions, or countries where the infection has not yet occurred.

Globally, the livestock and poultry industries are grappling with the emergence, re-emergence, and resurgence of highly contagious infectious diseases. Effective on-farm biosecurity measures are essential for curbing the spread of numerous contagious animal diseases. In the dairy sector, there is a recognized necessity for enhanced biosecurity measures to manage disease transmission both on and off farms. Veterinarians play a pivotal role in conveying and implementing biosecurity protocols on livestock operations.

The rise of highly contagious viral diseases among livestock and poultry, including foot-and-mouth disease, peste des petits ruminants (PPR), African swine fever (ASF), Newcastle disease, avian influenza, and zoonotic viruses like Ebola, West Nile, Nipah, Hendra, and swine influenza (H1N1), has underscored the need for the establishment of comprehensive policies and regulatory frameworks. These measures are geared towards preventing the incursion of exotic diseases and controlling the dissemination of endemic diseases within a country's boundaries.

Biosecurity, within this specific context, serves as a strategic management framework aimed at minimizing the potential for infectious diseases to infiltrate a livestock herd. This concept, particularly relevant in animal production systems, encompasses a series of measures that can be enacted by animal producers at the farm level to effectively assess and mitigate the risks associated with infectious diseases within their operational

boundaries. It forms the foundational basis for implementing control strategies against both prevalent and foreign diseases.

The biosecurity regimen adopted on a farm includes a multifaceted approach involving key areas such as sanitation, animal management, feed handling, facility upkeep, manure management, and proper disposal of deceased animals. To outline these measures:

- 1. Understanding Disease Transmission Modes:** Before crafting biosecurity protocols, it's crucial to comprehend the nature of disease causation and the mechanisms through which it spreads. For instance, diseases like Brucellosis transmit via natural services, artificial insemination, and placental transmission.
- 2. Risk Assessment:** Evaluating the likelihood and potential consequences of disease introduction or spread on the farm is essential. This involves assessing factors like morbidity/mortality rates, as seen with diseases like Peste des Petits Ruminants (PPR).
- 3. Farm Location and Layout:** The farm's geographical placement plays a pivotal role, as proximity to other farms, abattoirs, markets, and waste disposal sites can significantly elevate disease risks. Proper design of barns, ventilation systems, isolation areas, and loading zones is vital in preventing disease incursion and subsequent transmission, benefiting both animal health and human public health.
- 4. Introducing New Animals:** The acquisition of new animals into the herd poses a considerable disease risk. Robust quarantine practices and

thorough testing protocols should be enacted when introducing or reintroducing animals to the farm. Farm practices like temporary animal hires, such as bulls during breeding, require heightened scrutiny due to the potential transmission of vulnerable infections.

5. **Farm Management Practices:** Implementing sound animal husbandry practices and maintaining proper hygiene and cleanliness are paramount to the effectiveness of the biosecurity plan. Well-maintained facilities and a commitment to sanitation play pivotal roles in fostering a successful livestock operation.

By diligently adhering to these biosecurity measures, livestock producers can significantly curb the potential for infectious diseases to infiltrate their herds. This proactive approach not only safeguards animal well-being but also contributes to broader public health by minimizing the spread of zoonotic diseases.

Sanitation encompasses a comprehensive range of practices aimed at maintaining a clean and hygienic environment within a livestock operation. This extends to various aspects of the operation, including employee hygiene, equipment cleanliness, vehicle decontamination, proper cleaning of footwear, thorough sanitation of sheds, and meticulous cleaning of animals. Adhering to these sanitation protocols is integral to upholding biosecurity and preventing the spread of infectious diseases.



Picture 01- Cleaning and Painting of Waterer at animal shed.

6. **Movement within the farm premises -** The regular movement of individuals such as farm owners, employees, visitors, veterinarians, and service providers pose a continuous risk of introducing and spreading diseases. To address this, the farm should be divided into distinct zones with varying levels of protection. Controlled access can be implemented to manage people's movement between zones. Transition areas should be equipped with footbaths and hand wash facilities. Additionally, shower sanitation procedures should be carried out at entry points. Vehicles transporting goods or personnel should be prohibited from entering sensitive zones to prevent disease transmission.
7. **Animal Feed, Water, and Bedding -** Regular assessment of feed and bedding quality is essential before their use. Ongoing testing of water, soil, feed, and fodder is crucial for an effective biosecurity plan. Monitoring for moldy or spoiled materials in storage areas like silos, bins, and bunks should be routine. Regular cleaning of storage spaces and timely disposal of feed refusals that have not been consumed within 24 hours is imperative.
8. **Cleaning and Disinfection -** Cleaning and disinfection form the cornerstone of a robust biosecurity plan. This practice minimizes the presence of pathogens on equipment, vehicles, and personnel, thereby reducing the risk of pathogen movement within and between production areas.
9. **Manure Handling -** An effective manure handling system prevents environmental contamination. Proper composting or storage conditions must be maintained to eliminate disease-causing bacteria.
10. **Identification and Treatment of Sick Animals -** Swift diagnosis of potential diseases plays a vital role in minimizing their impact and preventing their spread. Isolation of sick or suspected animals from healthy ones is critical. Comprehensive investigation should be carried out on sick animals. Proper medication usage enhances treatment effectiveness. Strict adherence to vaccination and deworming schedules is essential, with meticulous records maintained.

11. Disposal of Dead Animals - Prompt carcass disposal is crucial to reduce disease risks. Methods of disposal include engaging licensed deadstock collectors, approved animal disposal pits, or composting. Livestock farm owners should maintain communication with local and state authorities to ensure compliance with disposal regulations in their region.

Conclusion- In the wake of the ongoing COVID-19 pandemic, which is believed to have originated from zoonotic transmission, the attention towards implementing robust biosecurity measures in the animal husbandry sector has grown significantly. The significance of biosecurity has gained prominence over the years, and its principles are now more critical than ever. Veterinarians play a pivotal role in offering guidance, as they are recognized as the primary authorities on biosecurity and trusted sources of information.

Livestock owners, managers, and handlers share a collective responsibility alongside governments, scientists, veterinarians, and the broader community to safeguard livestock from the introduction and spread of diseases. Additionally, this collaboration aims to curtail the prevalence of existing diseases.

Embracing effective biosecurity practices equips stakeholders with the tools to effectively manage the potential outbreak of diseases. This proactive approach not only assists in mitigating the impact of a disease outbreak but also reduces the financial burden associated with disease control and eradication efforts at both the farm and industry levels. By adhering to comprehensive biosecurity measures, the agricultural sector becomes more resilient and prepared to address disease challenges, ensuring the well-being of both animals and human populations.