



Veterinary Science Information

Biosecurity Fundamentals

The current outbreak of Foot and Mouth Disease in the United Kingdom has attracted much media attention. Much animal suffering has occurred and millions of animals have been destroyed. Economic difficulties have been severe in the British agricultural communities, and the cost to that economy is now estimated at more than \$10 billion. Avoiding a similar catastrophe in the U.S. has been and continues to be a priority for all those in animal agriculture. The heightened awareness of the importance of preventing infectious diseases from entering our herds and flocks has many people talking about and enacting biosecurity programs.

What is biosecurity?

In the context of animal agriculture, biosecurity is the series of management steps taken to prevent the introduction of infectious agents into a herd or flock. Biosecurity usually involves screening and testing incoming animals, some sort of quarantine or isolation for newly purchased or returning animals, and then finally some type of monitoring or evaluation system. Once an infectious agent is in a herd or flock a similar but slightly different set of management practices are employed to prevent the infectious agent from leaving the farm in animals or products. In some publications this is also included as part of biosecurity, while in some cases you may see this referred to as biocontainment.

Why is biosecurity important?

Biosecurity is important for a great number of reasons. First it is an essential aspect of on farm food safety programs. Keeping food products wholesome and of highest quality is important for the health and welfare of consumers. This helps to ensure consumer demand for product, and therefore ultimately the profitability of animal agriculture enterprises. Secondly, animals are healthier and more productive. This benefits the farming community through greater efficiency and profitability. Finally, a vibrant agricultural community is a positive influence on the economy of our state and nation, and an important resource in maintaining a healthy environment.

How do you start to develop a biosecurity plan?

The initial step in a biosecurity plan is to assess goals and key concerns of the farm. The producer along with his/her advisors needs to determine just what infectious agents are important in their plan. Diseases such as FMD are so devastating for the entire farming community that federal and state regulations and plans are in place to prevent such catastrophes. Foreign animal diseases require a special set of biosecurity plans because



they could potentially cover such a broad range of animal species and territory. However, on the individual farm level a variety of common domestic bacteria and viruses can be identified as important disease problems and should be included in the biosecurity plan. On most dairy farms this would include diseases such as contagious mastitis, Johne's, *Salmonella spp.*, Bovine Virus Diarrhea (BVD), Neospora, digital dermatitis, and a few others. Once the types of disease agents are identified, a risk assessment should be completed.

What is risk assessment?

Risk assessment is a way of determining the presence, distribution, and severity of a given disease. Once risk areas have been identified, appropriate control measures can be enacted. Acceptable levels of risk for a farm will be determined by what products are sold or what may be sold from the farm in the future. Typically this involves meat, milk, perhaps breeding animals, embryos, etc. Understanding what diseases are important for the sale of each of these products and understanding how disease may enter and spread within animal groups is the next step. This is followed by close evaluation of methods to prevent the disease from entering the herd from sources outside the farm. If key areas can be identified they are often call critical control points. Actions taken at these critical control points are the most effective way of implementing a biosecurity plan.

Who is involved?

In most cases the herd veterinarian works closely with the producer to develop and start the implementation of a biosecurity plan. However, each and every person who lives, works, or visits the farm has a stake and role in the biosecurity plan. To make a biosecurity plan effective and easier to follow it is important to adopt practices that are customized to the individual farm setting and really make a difference. Not all animal groups are equally susceptible to infection and not all human activities are equally likely to contribute to disease control or potential spread. Strategies are being developed to help identify activities and animal groups that contribute to the risk of acquiring or preventing a specific disease. As part of that risk assessment, the level of risk can be categorized as low, medium, or high. Emphasizing high-risk animal groups and high-risk human activities can help to make the biosecurity plan more effective and simpler to implement. Cooperation and promotion of a sound biosecurity plan is important for the financial health of the farm, as well as the consumer through wholesome and high quality agricultural products.

What is bioterrorism or agroterrorism?

Bio or agroterrorism is the intentional contamination of plants, animals, or humans with infectious agents (viruses, bacteria, protozoa, insects, or fungi) or toxins (nuclear, chemical, bacterial or fungal) with the express intent to cause disease or economic hardship in animals, agricultural systems, or humans.

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