



## Biosecurity - A Practical Approach

### What is biosecurity?

The series of management practices that are employed to prevent the importation of infectious agents from entering a farm is termed biosecurity.

As herd and flock sizes increase and animals are placed in more intensive housing management systems it is easier for infectious diseases to enter and spread throughout a herd/flock. Relatively small and stable herds and flocks with minimal herd additions and good animal comfort frequently have a lower prevalence of infectious disease and may have several advantages in implementing a biosecurity plans.

### Isolation

**The most common and significant biosecurity risk factor is the purchase of animals.**

Ideally units should remain closed but if replacement stock need to be brought in the health status of the farm of origin should be determined.

New additions should be inspected carefully, screened, and quarantined for infectious diseases. A program to routinely and systematically monitor and survey the herd for the presence of important infectious agents should be implemented. Many people do not appreciate that apparently healthy looking animals can still carry and spread infection. When stressed or housed adjacent to susceptible animals these silent carriers can spread the infection to other animals. Developing a strategy to keep infectious agents and

discharges away from susceptible animals, especially critical with herd additions, can help to reduce animal disease and minimize economic loss.

Careful screening and appropriate testing will help to limit the addition of animals with unwanted infectious conditions. However understanding the limitations of testing is important. The characteristics of common tests coupled with an adequate herd history allows us to make sound scientific judgment on the risks of potential herd additions. Far too often this crucial step is skipped because it is sometimes difficult to see the economic benefit of pre-purchase testing and inspection. Inevitably the small price paid for screening is a bargain compared to dealing with the long term consequences of disease introduction.

Ideally even after screening, new herd additions should be **quarantined for a minimum of two weeks or a more ideal four weeks**. All animal discharges, manure, urine, and fetal fluids should be isolated from the quarantined animals and the established herd. The quarantine period should also involve separate air handling and separate feed and water troughs. In general, many acute diseases run their course in two to three weeks, and the use of an effective quarantine program can greatly reduce many of the acute biosecurity hazards. This quarantine period can also be used to further screen animals to detect any disease conditions that might have been missed in the initial screening. Any animals that become ill shortly after purchase or during the quarantine period should undergo a thorough diagnostic work up and adequate treatment program or be culled. Rapid early detection and treatment when appropriate can prevent the initial case of an outbreak from spreading through the herd.

Other risk areas where animals can become exposed and isolation needs to be practiced include: common equipment to feed and haul or scrape manure, clothing/boots, wildlife vectors, or stock trucks/ trailers that have not been adequately cleaned between herds. Common fence lines, shows and fairs are also possible contact areas.

### **Promoting Resistance**

A second important aspect of a biosecurity program is **Resistance**. Resistance includes nutritional, environmental, pharmacological and immunological practices that improve the

animal's ability to resist disease. These external factors coupled with the natural genetic disposition of certain animals provide an animal with either increased or decreased susceptibility to certain infectious diseases. Antibiotics and immunizations have been the primary tool for controlling infectious disease in the past. While the importance of these two factors cannot be ignored, more and more emphasis is being placed on supporting the innate ability of animals to resist disease. Therapy and immunization can then be viewed as adjunct treatments. A sound nutritional program that promotes good overall health and growth and an environment that minimizes stress, promotes the animal's resistance to all sorts of infectious agents. A bonus included in the overall immune status or resistance is that such overall improvement, typically increases the productivity of the animal as well as promotes good health. A further benefit is that the healthy animal on a good nutritional plane, generally responds better to antibiotic therapies and immunizations when they are indicated.

A truly effective immunization program needs to be customized to the farm. While some generalities can be made concerning vaccines and immunization, the most cost effective plan must be designed to complement the animal groups and risk of exposure on a particular farm. One size does not fit all, and more is not always better. A well-designed immunization plan will compliment animal health but cannot be substituted for good management or prevent infection in the face of overwhelming challenge. We can design and recommend the most cost effective immunization program for a specific farm.

### **Sanitation**

While frequently the least attractive aspect of a biosecurity plan, sanitation is often the key factor in minimizing spread and limiting the course of infectious diseases. This involves the removal or eradication of persistently infected or carrier animals, as well as the disinfection of any potentially contaminated equipment or facilities. Once animals that are shedding pathogens are cured or removed, as much contaminated material as possible should be removed. This will help to eliminate the source of the infectious agents. Disinfection of partitions, floors, and other objects that can serve as fomites or harbor pathogens must be part of the biosecurity plan. Failure to adequately clean and disinfect and ensure all sources

and reservoirs of the pathogen are removed can allow an infectious agent to re-enter the herd.

The life span of pathogens varies greatly. Many viruses and bacteria have a relatively short life span outside the host in an unprotected environment, often hours to days. Others can be viable for years. However, the lifespan of most pathogens can be expanded greatly when protected in organic material. Thus protected, even the fragile pathogens can often remain infective for days, months or in some cases, years. Organic material can also inactivate many disinfectants limiting their ability to destroy the pathogens. Therefore a key control feature to limit or eliminate most infectious agents is the careful and thorough removal of all organic material. In many cases just thorough cleaning will remove as much as 95% of the pathogens. Equipment that may be used for many animals needs special attention for sanitation. Such equipment would include feeding equipment for young animals, medical equipment for treating sick or injured animals, obstetrical or other equipment used for calving and lambing. Buckets and feeding troughs should be scrubbed to eliminate any secretions and then sanitized. Equipment used to mix or deliver feed must be kept clean and sanitized as necessary.

Vehicles or trailers that visit multiple farms should be cleaned and sanitized before hauling any animals back to a farm.

Other areas that need special attention are, boots and soiled clothing as these can serve as important mechanical vectors.

Manure, dead animals, or tissues must be disposed of in such a manner to allow time, temperature, desiccation, or ultra-violet light to inactivate the pathogen. These potentially highly infectious materials need special attention, to prevent the re-introduction of pathogens into susceptible herd mates.

Biosecurity can be accomplished on nearly every farm if some common sense and science are employed to create a program and protocol. A biosecurity plan can potentially save a producer from significant economic loss and lend assurance to consumers that products are safe and wholesome. A common stumbling block on many farms is the inability to break

down the concept of biosecurity into understandable and simple steps that can be consistency practiced. Using the acronym **I** for **isolation**, **R** for **resistance**, and **S** for **sanitation** helps to make the biosecurity principles easier to remember and may help to motivate a consistent and effective program.

## Developing a Biosecurity Plan

In order to effectively begin to develop a biosecurity program it is important to review the risk areas that may be present on a farm. Risk assessment helps to determine the areas or factors are most likely to lead to the spread of infectious agents. Risk management is the second step. Here a preventive plan is developed and implemented. The final step the risk communication. In this step, all members of the farm management team, suppliers, and service personnel are informed of the plan to ensure cooperation and buy-in.

To make the development of biosecurity plans more effective materials are being developed to reflect areas or activities on the farm that can be classified as to the level of risk. Certainly these will vary with the disease in question and the individual herds' goals and disease prevalence. However, on practically every farm there are groups of animals that tend to be the more susceptible to disease and activities that can potentially affect animal groups very differently. These can vary simply due to the potential to carry pathogens between animal groups or between farms. To make this concept easier to understand risk areas are being classified as low risk (green), moderate risk (yellow), and high risk (red). A low risk area is typically the farm office. An example of a moderate risk area on a dairy farm would the milking parlor. Examples of a high-risk area would include the calving or nursery areas, which for many diseases, has the highest risk animals. All employees, visitors, and service personnel must participate in the program. Everyone that works on or visits the farm for any reason should be aware of and follow the biosecurity protocols.

The following are some procedures can be included in your biosecurity plan to make it less likely to spread pathogens from farm to farm.

1. Visitors, agricultural professionals, or service personnel should wear clean disinfected overalls and clean and disinfected boots or disposable boots. If activities take place in

animal contact areas or feed mixing areas coveralls and boots should be worn. Only essential visitors should have access to animal contact areas.

2. Animal housing and feeding areas should be secure and prevent the entry of wildlife.

See <http://www.tbhub.co.uk/biosecurity/wildlife/>

3. Reduce contact with infected cattle in neighbouring herds via direct contact (e.g. nose to nose) or indirect contact (e.g. via contaminated equipment or aerosol spread during manure or slurry spreading).

See <http://www.tbhub.co.uk/biosecurity/cattle/neighbouring-herds/>

