

# Biosecurity in the dairy herd – basic principles

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## Summary

- Biosecurity is a set of management and physical measures designed to reduce the introduction (Bioexclusion), and spread (Biocontainment) of animal diseases.
- Reducing cattle movement into the herd is the best bioexclusion practice.
- Restricting infection spread from sick cattle is the most important biocontainment practice.
- Prompt, veterinary diagnosis is the best protection against rapid disease spread within the herd.
- Long-term, building up herd resilience through genetics, nutrition and vaccination will reduce the impact of infectious diseases.

## Introduction

Biosecurity is defined by the World Organisation of Animal health as “a set of management and physical measures designed to reduce the introduction (Bioexclusion), establishment and spread (Biocontainment) of animal diseases, infections or infestations to, from or within an animal population”. Infectious diseases are caused by pathogens which can be viral, bacterial or fungal.

Bioexclusion includes all management practices implemented to prevent infectious diseases entering a farm holding/herd. This has become more important in recent years as herds expand. However, when an infection does occur on farm, biocontainment practices will reduce and slow down the spread of disease throughout the herd. While both bioexclusion and biocontainment are important, they are best implemented with a rapid diagnosis of infection. In addition to bioexclusion, biocontainment and diagnosis, herd resilience can be improved through genetics, nutrition and vaccination. All four of these are components of a Herd Health Plan.

## Bioexclusion

The most common route of infection entering a herd is the purchasing of cattle. This has risen in recent years due to the expansion of dairy herds and new entrants to the dairy industry. A prime example of this is Bovine Viral Diarrhoea virus (BVDv). Purchasing a dam (a Trojan cow) carrying a persistently infected (PI) foetus will introduce BVDv infection to a herd. This is a risk for larger herds as they are more likely to have an “open” herd status. And now that BVD control is progressing successfully more naïve herds are being created, which if not vaccinated run the risk of serious BVD outbreaks. Maintaining a closed herd and aiming to produce replacement heifers through sexed semen can reduce a herd's risk of infection. There are many other routes of transmission such as visitors onto the farm who may visit multiple other farms on the same day. These include vets, AI technicians, scanners, hoof trimmers, dead stock collectors and farm labourers. Regular use of disinfection points at the entrance to the farm and buildings, especially the calf house, can reduce this transmission.

## Biocontainment

Biocontainment is the control of infection within a herd. These practices are key to reduce the speed of disease spread within a herd. For example, having an isolation pen away from other cattle with a separate airspace prevents infection transmission between sick and

healthy animals. Furthermore, ensuring healthy animals are always attended (fed/watered) to prior to sick animals ensures you are not bringing any infection from the isolation pen into healthy animals. Placing, maintaining and using, foot baths at the entrance and exit to housing/sheds and having separate equipment in these sheds also prevents the spread of infection.

## Diagnosis

How fast can you detect the cause of an infectious disease outbreak? It is important where any symptoms of illness and/or signs of reduced production are observed, that action is taken to identify the source of infection. Because reduced milk yield is a non-specific potential sign of disease, e.g. Infectious Bovine Rhinotracheitis (IBR), Johne's disease, pain – lameness etc., diagnosis of the actual cause is important for herd biosecurity. Additionally, trends in locomotion scores and body condition scores recorded regularly can indicate changes in herd health before other clinical signs are observed, thus acting as an early warning system. It is also advisable that a post mortem is carried out on any animal that dies, in order to determine the cause of death and prevent further infection. Where a clinical disease outbreak occurs, samples should be submitted to the lab for further investigation. The Regional Vet Labs are a critical resource available to all farmers.

## Herd Resilience

Resilience describes the herd's ability to withstand/overcome infection. Animals who have a balanced diet are less likely to get sick as their body has the required energy reserves to support its immune system. Vaccination programmes are also important as part of herd health and resilience. These can be drawn up with a veterinary practitioner to suit individual farm requirements as part of a Herd Health Plan. The genetics of the herd can also have an impact on herd resilience. For example, breeds such as the Norwegian Red have shown, both as a pure bred and cross bred animal, to have lower Somatic Cell Count (SCC) in comparison to that of Holstein Friesians. Additionally, the Economic Breeding Index (EBI) can be used to improve herd resilience in the long-term. There are six sub-indexes, one of which is health. This health score includes udder health (somatic cell count and mastitis) and lameness.

## Conclusions

The top four tips to prevent introduction and spread of infectious disease in a herd are to 1) keep a closed herd where possible, 2) implement a good vaccination programme and good isolation pen management, 3) monitor animals for potential infectious diseases and always get veterinary opinion where unsure and 4) ensure a good Herd Health Plan is in place.