

Biosecurity and Hygiene on the Dairy Farm

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Introduction

Biosecurity – the protection of livestock from exposure to disease causing organisms

One of the greatest disease threats to a cow or calf is from other cattle, whether through direct contact or through surfaces, equipment or people contaminated by diseased animals. This threat is greatest when cattle are brought together into housing, particularly at calving, when stress reduces the effectiveness of the animal's immune system.

Proper vaccination plays an important role in disease prevention. Medication can also be used once animals are seen to be sick. However neither of these can offer complete, effective and economical protection against the wide range of disease organisms that threaten cattle. Biosecurity completes the armoury of protection, excluding disease organisms from the animal's environment. This is the only way that the cycle of disease can be broken.

It is particularly important against the threat of so-called “management diseases”, such as calf pneumonia and calf scours which cost the beef and dairy industries large sums of money every year through death, poor growth, poor feed conversion and the cost of medication. Biosecurity can only be achieved through regular and comprehensive routines, using products that are proven to be effective against viral, bacterial and fungal disease organisms.

In consideration of the Biosecurity and Hygiene requirements of a Dairy farm operation there are many factors involved. Key sides of the issue are the aspects related to the maintenance of the health of the stock, protecting the production potential of the herd, and the protection of the quality of the product dispatched from the farm, be that milk or livestock such as calves.

Consideration must be given to the maintenance of the required standards in all area of the farm including cubicles, calving facilities, calf rearing, collection areas, milking parlor and dairy. Apart from the obvious need to protect the stock from disease either onto or within the farm, as with all food production chains, the safety of the consumer has to be a paramount consideration.

Details of Terminal Disinfection for Housed Animals

Unlike some livestock systems, the dairy farm does not give us the luxury of an “all in, all out” stocking policy. However, frequently the terminal disinfection of individual buildings or boxes is possible. First let us consider the stages of this procedure which should be applied in detail wherever possible.

Stage 1. Removal of Equipment and Dry Cleaning

The removal of all gross organic soiling is essential because dung and refuse contains high levels of contamination and are a major source of infection. High levels of soiling will also reduce the efficacy of the cleaning and disinfection process.

- Remove animals, feeders, drinkers, pen separators, crates etc. from the area to be disinfected and put to one side for cleaning and sanitizing.
- Remove all dung, soiled bedding and unused feed from the area to be cleaned using brushes, forks, or a mechanical scraper. Dust can be vacuumed from ledges.
- Dispose of all dung and soiled bedding by burial, incineration or transport from the area of the animal housing.

Stage 2. Pre-Cleaning and Sanitizing

Following any dry cleaning process high levels of infective material will still remain. Cleaning and sanitising using products with detergent capacity and a biocidal activity to remove soiling from the walls and floors ensures greasy deposits do not remain on rough surfaces e.g. concrete and wood. Detergent-sanitisers also reduce the time taken to clean by up to 60%, and reduce the spread of disease in washing water.

Apply with a knapsack sprayer or pressure washer. The pressure washer should be set on a low pressure setting 500 psi (35 bars) using a 45-degree angle jet. Use the appropriate application rate (normally 500 ml/m² or 250ml/m² for foam application).

Start at the apex of the roof and work down the walls to the floor paying particular attention to corners and other areas where dirt accumulates. Caked soiling should be brushed if necessary to aid removal.

Allow surfaces to dry where possible before disinfection.

Stage 3. Water System and Equipment Sanitizing

All water systems contain some bacterial contamination, especially the header tanks where dust and dirt can accumulate. This may enable disease to pass from one batch of animals to the next unless the bacterial growth is eliminated. Sanitizing will clean the system and eliminate bacterial growth.

Drainable Systems

1. Isolate the header tank at the mains and drain off from points farthest from the tank.
2. Remove accumulations of dirt from the tank.
3. Refill with water and add a suitable disinfectant - leave for 10 minutes.
4. Flush through to drain off point(s) and leave for 30 minutes.
5. Refill with fresh water.

Non Drainable systems and those with poor quality or contaminated water

1. Add a suitable safe disinfectant to the header tanks at a low dilution. Isolate the supply to the header tank and allow all water to be consumed until the system is empty.
2. Remove any sludge from the header tanks.
3. Recharge with water adding disinfectant at the same low dilution.

Moveable Equipment

Equipment removed from the house before dry cleaning feeders, drinkers, pen separators etc. can carry heavy pathogenic contamination and if not thoroughly cleaned it can lead to carry over of infection to newly introduced livestock.

1. Either soak and scrub equipment in a tank or pressure wash with a detergent sanitiser.
2. Store equipment where it will not be re-contaminated.

Stage 4. Disinfection

The level of disease organisms, particularly viruses, present after cleaning and sanitizing is still high enough to offer a serious disease challenge to young or recently introduced stock. The use of a broad-spectrum disinfectant active against viruses, bacteria, yeasts, moulds and other pathogenic organisms is essential to complete an effective disease control program. It is of prime importance to ensure all surfaces are thoroughly wet with disinfectant to break the chain of infection. An application rate of approximately 300ml per square meter is usually adequate.

1. Apply at recommended dilution rate.
2. Use a knapsack sprayer or pressure washer at 35 bars (300psi) with a 45-degree spray head.
3. Pay particular attention to corners, cracks, seams and porous surfaces e.g. wood and concrete which can retain infective material.
4. Spray in the apex of the roof and work down the walls to the floors.
5. Allow surfaces to dry before restocking.

Stage 5. Fogging and Aerial Disinfection

Fogging

When animal housing has been thoroughly cleaned and disinfected all moveable equipment should be returned and new bedding can be laid. To control any disease that could be brought in with the bedding and to disinfect inaccessible areas that might have been overlooked, the house should be fogged with a suitable disinfectant, used at a rate of 1 litre of solution per 100 cubic meters.

Cattle Biosecurity Programs

Calving

Calves need the best possible start in life, and cows need the best possible care at calving to ensure a good profitable lactation. A crucial factor in achieving these aims is to make sure that the calving environment is as clean and pathogen free as possible. Calving should be in a designated building away from the rest of the herd.

1. The building should be thoroughly cleaned of all organic debris.
2. Now the surfaces should be pressure washed using a detergent sanitiser..

3. All the cleaned surfaces should be sprayed with a solution of broad spectrum disinfectant at a rate of 300ml per square metre.
4. After each calving, remove all bedding, cleansing and discharges. Clean and disinfect.
5. Clean and disinfect buckets and utensils regularly.

Cow Cubicles

There are many factors involved in the development of mastitis, including genetic predisposition and milking techniques. Of vital importance is the environmental control of mastitis pathogens. The reduction of bacteria in the immediate surroundings must reduce the opportunity for such bacteria to gain access to the udder.

Clean cow housing when the building is empty.

1. It should be thoroughly cleaned of all organic debris.
2. Surfaces should be pressure washed using a detergent sanitiser.
3. All cleaned surfaces should be sprayed with a suitable disinfectant solution at a rate of 300ml per square metre.
4. Remove dung and bedding from cubicles daily. Scrape / remove dung from channel at least once daily. Spray the concrete base with a suitable disinfectant at a rate of 300 ml per square metre and renew bedding.
5. Clean and disinfect all equipment, utensils, feed racks and drinkers daily.

Collection Area

Again with the prevention of a build up of mastitis pathogens in mind, it is important to disinfect the collection area after each cleaning.

All cleaned surfaces should be sprayed with a suitable disinfectant solution at a rate of 300ml per square metre.

Milking Parlour and Dairy

This is the area where the Dairy Farmer would naturally practice high standards of hygiene with milk hygiene and mastitis prevention high on the agenda. However, farmers frequently fail to use effective broad spectrum disinfectants after cleaning. This should be considered as part of the routine.

Care of Housed Calves

Calf pneumonia and calf scours cost the farming industry world wide vast sums. It is estimated that in the UK alone that cost is over £100 million per year. The losses result not only from deaths, but from reduced feed conversion, poor growth and the cost of treatment. However, if efficient hygiene management practices are put in place, these two serious diseases can be prevented.

The housing of calves introduces similar threats to those seen with the intensification of other species such as poultry and pigs. Some of these threats can be termed 'management related diseases'. This is where infectious agents on their own do not necessarily cause an outbreak

of the disease, but other factors such as poor ventilation, overcrowding and the movement of stock can all play a part. A further and all important factor that comes into play is that of poor hygiene. The problem can be controlled with the combination good management practices aimed at eliminating stress factors and the use of an effective and reliable disinfection regime to eliminate bacteria, viruses and other disease-causing organisms.

Wherever possible, an all in/all out system should be used with the calf housing and a full terminal disinfection programme, as previously illustrated, applied.

Cattle Vehicle Biosecurity Programs

Introduction

The importance of biosecurity for all vehicles cannot be stressed enough. This applies especially to livestock and feed vehicles, but also to any others visiting a farm. Livestock haulage and other vehicles, such as feed lorries, provide an excellent vector through which disease can spread.

Cleaning and disinfection must be carried out to minimise the possibility of transmission of disease.

Vehicle Biosecurity Summary

In addition to livestock haulage vehicles all vehicles e.g. feed lorries and contractors must follow this summary to reduce the potential for transmission of disease.

- Only essential vehicles may enter the farm.
- All vehicles visiting the farm should be kept outside the biosecurity perimeter if at all possible.
- Vehicles should be thoroughly cleaned and disinfected using prior to arrival at the unit.
- Wheels, tyres and wheel arches should be cleaned and disinfected upon arrival at the unit using wheel dips or sprays where provided.
- Personnel should use foot dips, protective clothing and observe Hand Hygiene requirements prior to entry to premises

Conclusion

Careful attention to the points discussed can dramatically reduce the cost of disease on a farm and improve quality of production and profitability.