

Biosecurity - More Than Just a Quarantine Pen

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Dairy biosecurity is another management program that will assist in minimizing the entry and spread of infectious diseases within a herd. The National Animal Health Monitoring System's (NAHMS) Dairy '96 study indicates that nearly 50% of dairies brought new additions into their operations in 1996. Of these new additions, less than 25% were quarantined and even fewer were adequately tested for infectious diseases. This overall lack of biosecurity measures, along with the potential limitations of vaccinations discussed in the last newsletter predisposes operations to the introduction of infectious diseases. For years we have equated biosecurity with simple quarantine, but it goes much further than that. As for vaccination programs, a biosecurity program must be tailored to the individual herd and their specific concerns and goals as they relate to infectious disease. This requires an understanding of the factors involved in infectious disease entry and spread as well as the management measures that can limit this.

The first task in developing a program is to identify the diseases of concern in a specific dairy operation. A list of several relevant diseases is given in Table 1. While it is possible to decrease the entry of many diseases by common methods such as quarantine, additional measures are often required for specific diseases. The specific measures in a biosecurity program depend on many factors such as the mode of transmission, duration of shedding, presence of asymptomatic carriers and whether or not an appropriate screening test exists for each disease. In addition, it is important to realize that a biosecurity program is not limited to the entry of foreign animals, but also must consider spread within the herd, spread from neighboring animal facilities or wildlife, and the entry of infectious agents through feed, water, air and insect vectors.

Historically, some method of quarantine for 3 to 4 weeks has been the primary recommendation for biosecurity. Quarantine is designed to limit entry of new acute infectious agents into the herd. While a simple concept, this can be extremely difficult to perform effectively. The quarantine area should be placed physically as far as possible from other animals, preferably at least 100 yards away and down wind. Transmission of infectious agents by insect vectors and airborne agents is decreased by this physical separation. The duration of quarantine is determined by the duration of shedding, which for most acute infections is less than 3 weeks. This time period starts with the entry of the last animal into the quarantine facility. Cleaning equipment and other supplies should be dedicated to the quarantine area and not used in the rest of the herd. Chores performed in the quarantine area should be done after the primary herd.

Unfortunately, many infectious diseases have chronic asymptomatic carrier states such as Johnes, BVD, IBR, brucellosis, tuberculosis, anaplasmosis, salmonellosis, Staph. aureus mastitis, and BLV. Entry and spread of these diseases can not be effectively controlled by quarantine alone. For some of these diseases, the best method of protection is through testing prior to purchase and entry of the animals. Basic screening tests might include an official brucellosis and tuberculosis test, milk culture, BVD virus ELISA, and BLV

AGID test. While some may advocate a negative Johnes ELISA test, it must be realized that nearly 50% of Johnes infected animals will test negative. It is probably more important to know the Johnes status of the herd from which the animal is coming from and only purchase animals from known Johnes negative herds.

Special consideration should be given to salmonellosis. Most Salmonella infections are caused by feed (primarily animal based feeds) or environmental contamination by rodents and birds. These sources often go together as contaminated feed may be a source for further spread by rodents. An important aspect of control is to minimize rodent populations. In contrast, Salmonella dublin is host adapted and can be carried by asymptomatic cattle. Currently there is a serologic test that will aid in identifying asymptomatic carriers.

Lastly, it should be remembered that while many infectious agents can be introduced by the entry of new livestock, in most cases they are already present in the herd. While minimizing additional entry of these agents is important, it is also important to minimize these diseases within the resident herd. It is rarely practical or economically feasible to eradicate these diseases by one time test and cull programs, but some effort should be made to identify carrier animals and use this information in later culling decisions. In addition, further spread can be minimized by proper hygiene, vaccination, nutrition and husbandry practices. We tend to focus on the losses incurred by the clinical cases, however, with many of these diseases, it is the production losses from the sub clinical infections that are having the biggest impact on profit. For this reason, a well designed biosecurity program is an essential aspect of modern dairy management.

Table 1: Common infectious diseases of concern to dairies that can be partially controlled by a biosecurity program.

Brucellosis
Tuberculosis
Johnes (M. paratuberculosis)
Salmonellosis
Bovine Leukosis (BLV)
Mastitis
Strep. agalactia
Staph. aureus
Mycoplasma spp.
Anaplasmosis
Hairy heel warts
Ringworm
Pasteurella pneumonia
Haemophilus
BVD
IBR
PI-3
BRSV