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Applied Biosecurity for Dairy Farms

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The term “Biosecurity” has been generated out of the concern for the protection and safety of dairy cows. The pathogens of concern may range from those used to promote agroterrorism to those pathogens that might be on the farm that cause public health concern.

As the concept of managing the dairy for animal health and well-being, public health and environmental health on a daily basis continues to gain strength in the dairy industry, some producers and veterinarians are developing the type of formal, “biosecurity” programs that are now routine on pork and poultry operations. Biosecurity is defined as the ability to minimize the introduction of new animal or human pathogens on the dairy. The three pillars of any biosecurity program are: 1) Isolation, 2) Sanitation, 3) Restricted Movement. Therefore, stricter quarantine procedures, more thorough sanitation, increased testing for pathogens and less contact between animals are all components of the programs now being developed.

Dairy producers remain behind their counterparts in the pork and poultry industries on this front called biosecurity. A major contributing factor is the continued concentration into larger operations by modern dairies, and unrestricted introduction of new animals into the herd, puts more animals at risk with any single disease outbreak. It is clear more rigid guidelines for the purchase of feedstuffs or the outsourcing of replacement heifer raising and replacement cows will be necessary to reduce the introduction of new pathogens on a dairy that can cause public health concern.

Breakthrough Management is a program for identifying problems before they occur, then implement and sustain the changes necessary to achieve food safety and biosecurity goals. Before individual procedures are instituted, it's necessary to develop a Breakthrough Management (BTM) plan. The steps to developing a BTM plan are as follows:

- Identify the “BTM Specialist”- the person responsible for organizing the meetings, putting together the BTM documents and managing the entire process of team building, proactive listening, and problem solving.
- Assemble the BTM team. Because no single person will spot all of the potential weak links on an operation, the veterinarian must sit down with the producer and decide who will be on

the team. Everyone who is considered critical to the long-term success of the dairy operation should be involved, including the herdsman, nutritionist and other private dairy consultants. Extension personnel can also offer valuable input.

- Identify the various biosecurity problems that compromise the health and well-being of the herd.
- Develop a flow chart of animal movement on the dairy. You'll want to diagram the movements of each component group, including calves, older heifers, the milking herd and dry cows. On the flow chart, you should note all potential contact points between the animals from birth until they leave the premises. Pay particular attention to potential contact points between animals in different age groups.
- Identify critical control points in preventing the introduction or spread of disease. To do this, the BTM team should take a walking tour of the operation, looking critically at housing, bedding, feeding mechanisms and the milking parlor.
- Establish goals in disease prevention.
- Implement the professional training necessary to reach the goals. For instance, herdsmen and producers might attend milking schools put on by universities or private management consultants. To emphasize the value of such additional training, you may want to describe the impact a disease can have on a dairy.
- Develop routine monitoring procedures to ensure progress toward the operation's biosecurity goals.
- Establish a functional record-keeping system for the program. This can be a system developed independently by the team or one that is adapted from state and national dairy associations.
- Implement corrective actions if the goals are not being met. This may be your toughest role as part of the biosecurity team, but your constructive criticism may get a plan back on track if it gets derailed.
- Put in place a review system to verify that the BTM plan is being followed. This may be as simple as having monthly meetings with the team to go over CCPM points.

The Daily Implementation of a Biosecurity Program

Although the specifics of a biosecurity program will differ from farm to farm, the overriding concerns are to keep everything as free of germs as possible and to limit contact between animals as much as possible. One of the greatest threats of disease to a dairy cow or calf is from other cattle, whether through direct contact or through surfaces, equipment, insects and people contaminated by diseased animals.

To avoid introducing new pathogens to a dairy, it is advisable to test every new animal and every new lot of hay or load of feed. Feedstuffs should be tested for microbial content, including molds, aflatoxin and salmonella. New cattle should remain quarantined until all vaccination and testing regimens are completed and follow-up tests on any suspect animals are performed and evaluated.

Although salmonella most often enters a dairy through contaminated feed, new/replacement animals should also be tested for salmonella. All new cattle should also be tested for the presence of mycoplasma. One of the best ways to control mycoplasma, is to avoid buying cattle from known positive tested herds.

In addition, sample the bulk tank at least monthly and preferably bi-weekly for problem organisms. If the target organism(s) is detected, the options for maintaining biosecurity will depend on the number of animals that are infected. If only a few cows are infected, these can be removed from the herd. If many are infected with the target organism, however, it may be recommended to isolate them from the rest of the herd and milking them last.

Most of the measures that will be incorporated in biosecurity plans are fairly basic. They'll remain effective only when the biosecurity measures practiced as a regular part of management. The key is to make them routine. For a dairy producer, biosecurity should be a habit, just like washing your hands before meals.

Calving should occur in a designated building away from the rest of the herd. The building should be thoroughly cleaned of all organic debris and pressured-washed using approved disinfectants. Then spray all surfaces with a commercial-grade disinfectant. After each calving, all bedding, cleansings and discharges should be removed, and cleaning and disinfection procedures should be repeated. That includes all buckets, tools, vehicles and utensils.

Make sure calves receive at least four quarts of pathogen-free colostrum within the first 12 hours after birth. Calf rearing should include an all-in, all-out policy. The goal is to prevent mixing of age groups. The buildings--including all equipment, water buckets and utensils--should be thoroughly cleaned and disinfected between each group of calves. Never use moldy or dusty bedding. Check buildings for good, draft-free ventilation. One way to do this is to use the smoke-bucket technique--you burn some straw in a metal bucket and observe how the smoke escapes the building. Also, don't overstock areas.

For the milking herd, remove manure and bedding from the freestalls at least twice daily, and scrape and remove all manure from walkways at least daily. Then spray the stall base with disinfectant solution and replace with clean, fresh bedding material. Clean and disinfect all equipment and tools afterward.

Measures like these are at the center of biosecurity because they aim at protecting the animals from exposure to disease-causing organisms. A much broader definition of biosecurity is the set of procedures implemented to protect the health of people--including producers and consumers--and the surrounding environment as well as animals.

The BTM Biosecurity plan should address perceived as well as real potential health threats. For example, implement procedures that keep cattle out of mud, streams and farm ponds. Water and mud are havens for coliform bacteria and organisms like *Pseudomonas aeruginosa* that can cause mastitis. Keeping cattle out of streams not only protects animals on the farm, it also reduces the possibility of contaminating animals downstream--or spreading organisms to other animals such as fish. Controlling manure runoff and following proper waste management guidelines makes for healthier soils and animals.

Food safety is also a vital part of biosecurity, Salmonella-contaminated milk or other products that may leave the farm are a still a very real threat to food safety. It's also vital that producers follow label directions for the vaccinations and medications they use.

Industry-wide biosecurity programs like the California Dairy Quality Assurance program gain the trust of consumers. They benefit producers and consumers alike. Ultimately, economics will force Breakthrough management biosecurity programs to the forefront of the dairy industry. Those who choose to adopt it will be the producers able to compete in what is a very margin-thin industry.

* Adapted from Roche technical service article (1998) and National Mastitis Council document (2001).

Abstract

Le concept de « Biosécurité » découle des préoccupations sur la sécurité et la protection des vaches laitières. Les microorganismes visés sont ceux pouvant être impliqués dans l'agroterrorisme ou simplement des agents pathogènes qui par leur présence sur la ferme, sont une menace pour la santé publique. Cette présentation va aborder les principes et les pratiques associés à la gestion quotidienne de la ferme dans le but de préserver le bien-être et la santé animale, la santé publiques et la qualité de l'environnement.