

Beef Quality and Biosecurity Go Hand in Hand

By Lisa Duffey, Montana Beef Network Coordinator with Clint Peck, Senior editor, BEEF Magazine.



Biosecurity management on a Montana cattle operation can be the cheapest and most effective means of disease control. Certainly, no disease prevention program today should be implemented without plans to prevent or limit the movement of biologic organisms (viruses, bacteria, rodents, etc.) onto and within an operation.

Ranch biosecurity can be very difficult to maintain because the interrelationships between management and biologic organisms are very complex.

It stands to reason that attention to some basic common-sense biosecurity measures can reduce treatments costs, treatment “events”—and help improve the overall health, performance and welfare of animals in a herd. Additionally, it should be assumed that as we reduce treatment events, the less chance there is for carcass defects due to injections, handling and stress.

The impact of health on performance, profits and quality grade—and the overall ability of calves to express their genetic potential—were evident in the 1996-97 Texas A&M Ranch to Rail program. Fed steers that got sick not only incurred an average of \$23.36 more expense in medicine costs, but there was \$94.06 in “lost value” due to reduced efficiency, lowered gain and reduced sale value.

Dr. Gary Smith, the renowned meat scientist from Colorado State University, summed up the relationship between animal health and beef quality when he was in Montana last fall: “Calves that get sick while on feed *will* grade lower and *will* produce tougher meat.”

Biosecurity SOPs and GMPs

Improving an animal’s disease resistance is at the heart of disease prevention and herd health programs and must be considered in the stan-

dard operating procedures (SOPs) and good management practices (GMPs) of all livestock production management.

But, Dr. Dee Griffin, DVM, MS, University of Nebraska, says improving disease resistance is not possible or can be over powered for many of the diseases that can affect livestock health and production. Therefore, Griffin says, an understanding of biosecurity basics, in addition to a properly designed disease resistance health program, is essential.

He lists five major components of a ranch biosecurity plan:

- 1) Assessment,
- 2) Resistance
- 3) Isolation,
- 4) Traffic Control, and
- 5) Sanitation.

Assessment of the potential for disease organisms to enter a livestock herd should include a general evaluation for the potential for contamination of livestock from other/outside livestock, wild animals, contaminated feedstuffs, equipment, etc. Specific diseases of concern should be evaluated as related to the potential for herd exposure, potential impact on the herd, and potential for biosecurity control.

Resistance refers to management that will enable an animal to reject or contend with an infectious agent. Typically, both general and specific components of disease resistance must be properly maintained for an animal’s resistance to function properly. General resistance mechanisms are supported by proper nutrition, minimizing stress (handling, environmental, etc). Specific resistance mechanisms are trained using properly selected and appropriately used vaccines.

Isolation can be the most important first step in disease control. This includes minimizing commingling of all new purchases as well as movement between established groups of cattle. An important biosecurity action on ranches is to separate cattle by age and/or production groups. Visit with your veterinarian about specific isolation management procedures and how they can be applied to control targeted diseases.

Traffic control includes traffic onto your operation and traffic patterns within your operation. It is important to understand that traffic includes more than vehicles. All animals and people must be considered. The degree of control will be dictated by the biology and ecology of the infectious organism being addressed

and the control must be equally applied. Traffic control can be built into the facilities design. An example would be placing cattle loading facilities on the perimeter of the operation.

Sanitation addresses the disinfection of materials, people and equipment entering the operation and the cleanliness of the people and equipment on the operation. The ability to sanitize or disinfect organic matter is an important concept to get across to ranch personnel. Equally important is for management to understand, things that are hard to clean, won't get cleaned. The first objective of sanitation is to prevent fecal-oral cross contamination. Cross contamination with blood, saliva, and urine from sick or dead cattle should also be targeted.

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GMP Checklist for Preventing Infectious Disease from Entering All Operations

Ranking	Y/N	Rank importance of each disease entry item in biosecurity and note if being addressed:
		Always know the health history for the herds from which cattle are purchased.
		Always know the health status of animals brought into my operation / demand a valid health certificate.
		My veterinarian talks to the seller's veterinarian prior to buying animals.
		Sometimes bring in animals without knowing their vaccination history.
		Buy animals from a herd that has mixed origin cattle.
		Transport animals in clean vehicles.
		Have a control program for outside animals that could spread disease (rodents, etc.).
		Loading area is located at the perimeter of the operation
		Dead animal pickup area located so that removal vehicles do not contaminate my operation.
		Limit people's access to my cattle pens, feeding mixing and storage area, and treatment area.
		Keep a record of visitors to my operation.

GMP Checklist for Preventing Infectious Disease from Entering Cow/Calf Operations

Ranking	Y/N	Rank importance of each disease entry item in biosecurity and note if being addressed:
		Cattle use community pastures, or are placed in cattle development operations.
		Cattle sharing fence lines with neighbor's cattle.
		Purchase, borrow, or use loaner bulls from other operations.
		Limit purchases to open heifers.
		Know the biosecurity, vaccination, and testing program for herd(s) supplying replacement cattle.
		Quarantine new arrivals for 21-30 days before allowing them contact with my cattle.
		Quarantined area is designed to prevent cross contamination between cattle.

Biosecurity GMP Checklists

Griffin suggests reviewing the checklists above and discussing each item with your veterinarian. He says to rank the biosecurity importance of each item (0 = not important, 5 = very important) and indicate yes (Y) or no (N) if the biosecurity item is being addressed. Add additional items to the checklists as appropriate.

Montana Agroterrorism Briefing

A successful terrorist attack using the foot-and-mouth disease (FMD) organism does not need to infect thousands of animals. FMD can spread aggressively from site to site, so a small-scale attack on a few facilities could balloon into an epidemic spread by the wind or by the movement of animals and equipment.

To infect the largest number of animals at once, terrorists may try to contaminate products, such as feed, that are distributed widely among herds.

One publicly disseminated tactic suggested by domestic eco-terrorists is to coat feathers with the FMD agent, filling small bomblets and exploding them over the target where they drift on the wind and contaminate a vast area.

In an exercise conducted by the U.S. Army several years ago, agents acting as potential customers infiltrated auction and sale barns and pretended to infect livestock by spraying animals with spray bottles that contained water (to simulate a solution of virus) or dropping handkerchiefs (to simulate a pathogen-soaked rag) into a livestock pen. Both of these methods would be highly effective in spreading diseases such as FMD.

Detection and control is complicated by the variability in the incubation period for FMD –considered to be 2-14 days, depending on the dose of virus, the strain of the virus and the route of infection.