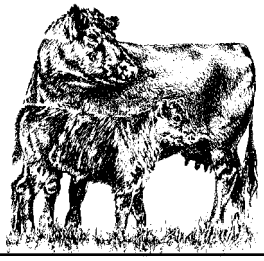

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Quality Assurance Section 250

Biosecurity and Agrosecurity: Protecting Your Cow-Calf Operation from Disease and Agro-terrorism

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Biosecurity and agrosecurity, to varying degrees, are currently practiced by most operators, which results in a healthier herd and a safer product. A well-defined and documented biosecurity and agrosecurity plan will be a significant factor in assuring your food product—beef—is safe, has high quality, and is wholesome.

Biosecurity is the management practice that protects animals from exposure to infectious agents that can adversely affect the productivity and profit of your enterprise. Biosecurity is defined by the physical and operational characteristics of the system that is being secured! Biosecurity consists of those activities that reduce the opportunities for infectious agents to gain access to, and for movement or spread within, the herd. These activities include properly maintained and cleaned equipment and facilities, pasture rotation, herd health programs, purchase of known source animals, isolation of new additions, proper waste disposal, personnel training (people management), perimeter control (fencing, access), record keeping, and individual animal identification (see addendums 1 and 2).

BIOSECURITY & AGROSECURITY
at a Glance
for Cow-Calf Operations

- **Protect against infection:**
  Vaccination
  Know animal and herd status
- **Reduce exposure to infected animals:**
  Add animals of known status
  Isolate new additions
  Quarantine sick animals
  Perimeter control
- **Reduce contamination:**
  Pasture management
  Waste management
  Restrict visitors
- **Sanitation:**
  Keep clean
  Use disinfectants
  Control birds and rodents
- **Train personnel:**
  Biosecurity plan
- **Permanent records:**
  Individual animal identification
  Veterinary records
- **Emergency response plan**

Agrosecurity is the practice that protects operations from outside activities that adversely affect production of feed and foodstuffs, such as intentional introduction of disease or chemicals, or occurrences of natural disaster. Biosecurity is a primary component of agrosecurity at the livestock production level of agricultural practices. Agrosecurity includes biosecurity and an emergency response plan.

Biosecurity for a swine or poultry operation has all the characteristics of a disciplinary facility from chain link fence to staffed guard houses that monitor and control the movement of all personnel, materials, and animals. Generally, beef operations must be open to vehicle traffic and visitors and, therefore, cannot implement biosecurity in the same ways as modern swine and/or poultry operations. However, general biosecurity principles can be incorporated into the modern ranch operation.

Protecting Against Infection

Vaccination

The rancher's first line of defense in protecting the herd from infection is by vaccination. In excess of 400 vaccines are available for use in cattle! Consequently, there are as many vaccination protocols as there are operations and vaccines.

It is important to develop an individualized vaccination program for each operation. Producers, work with your veterinarian to develop a vaccination program for individual herds based on an analysis of the animals, conditions/uses (e.g., calves, heifers, bulls, cows), disease history, and current problems. The vaccination program should be annually re-evaluated and updated based on herd health records, routine laboratory testing, and necropsy results (for more information, see 605).

Controlling Disease Exposure

Reservoirs of infection for livestock are not only other animals but also objects on which they depend for survival. Possible sources include, but are not limited to, people, bedding, birds, insects, rodents, manure, soil, surface water, water tanks, feed, and feeding equipment.

Addition of Known Status Animals

Any animals added to a herd should be derived from sources of known health status. Locally produced replacement animals should be considered as a first source to reduce the risk of potential disease introduction into your herd. Acquire virgin replacement bulls. Be aware of the potential risk of purchasing neonatal dairy calves for use as grafts.

Always request a copy of all tests and evaluations made on any animal to be purchased, and it is advisable to isolate and retest the animal before addition to the recipient herd. There have been numerous reports of Johne's disease and Bovine Viral Diarrhea (BVD) being introduced by animals of presumed known status without isolation and re-testing before being mixed with the resident herd.

Isolation of New Additions

Ideally, all additions to an existing herd should be held separate from the recipient herd for 30 days. During this time, the animals should be closely observed and tested for disease. Laboratory tests for Johne's disease, BVDV, Bovine Leukemia Virus (BLV), and Neospora should be standard when adding animals from any source. All incoming animals should be vaccinated using a protocol compatible with the recipient herd before movement into the new herd.

Quarantine of Diseased Animals

All diseased animals should be isolated from the remainder of the herd and processed and treated in separate facilities and equipment. Diseased animals should be handled only after clinically normal animals have been handled: use boot and hand sanitizers and provide separate coveralls for handling sick animals! By isolating any calves with diarrhea, producers can significantly reduce the risk of disease spread. Equipment used in the treatment and handling of diseased animals must be thoroughly cleaned and disinfected after each use.

Perimeter Control

Never has the statement **"good fences make good neighbors"** been more appropriate. Avoid the mixing of cattle in order to maintain good disease control and good neighbor relations. While the cow-calf operation may not be as stringently controlled as a swine farrow-to-finish operation, assuring good perimeter control and identifying designated access routes will markedly reduce the opportunity for exposure to disease by the mixture of cattle. ***Know who and what is on your premises at all times!***

Pasture/Paddock Management

Contaminated bedding and bed grounds, feed, and water are all sources of infection. A common presumed source of calf diarrhea is continued calving on the same areas year after year. While the likelihood of this being real in the cow-calf operation is slight, some strains of salmonella have been shown to remain infectious in pens or corrals for as long as 9 months under appropriate conditions.

Cattle producers should reduce manure and used bedding buildup. Bed grounds and nursing and calving areas should be cleaned regularly and used on a rotational basis. Separating the nursing and calving areas and moving cows and calves to nursing pens immediately after calving further reduces the potential exposure to diarrheic agents.

Controlling Exposure to Contamination

Waste Management

Waste buildup on cow-calf ranch operations is not as problematic as confinement operations. The key to manure management is frequent removal and dilution—spreading thinly on unoccupied fields. Manure in calving areas should be removed at least every week. Feed residues should be removed and composted or spread thinly on fields. Feed residues should not be mixed with other foodstuffs and refed. Feeds should not be transported in equipment used to process waste (e.g., front-end loaders), unless the equipment has been thoroughly cleaned and disinfected. Carcasses should be rendered or buried!

Cleaning and Disinfection

Overlooked sources of contamination in ranching operations can be the animal handling areas, such as

chutes, alleyways, and corrals. Since they are outdoors, these facilities are not consistently cleaned after use. Sunlight, time, and drying are good inactivators of infectious agents, but, for these forces to be effective, organic matter (manure, blood) must be minimized. These areas should be thoroughly washed and disinfected after each use and between different lots of cattle. This is especially important for the chute area(s) when processing animals with diarrhea or respiratory disease. Other processing equipment must be regularly disinfected during use.

While ranchers regularly demand that commercial cattle trucks be thoroughly cleaned between uses, the same cleanliness is often not applied to personal or neighbor's/helper's trucks and trailers. All transportation equipment should be thoroughly cleaned and disinfected between different lots of animals.

If a water source is not available, manure and blood should be removed by scraping. A disinfectant such as diluted bleach can be applied with a hand sprayer. Dirt floor areas should be scraped to hard surface. Spraying dirt surfaces with a bisulfate solution is an effective method of facilitating inactivation of infectious agents, especially salmonella. Any processing residuals such as horns and castration offal should be disposed of by burning (e.g., in the branding iron fire) or transported to the local (or to the ranch property) landfill. Dogs should not be allowed to eat and drag this material around the premises.

Contaminated feed and dirty water tanks have been shown to be sources for salmonella and *E. coli*. Water tanks should be cleaned at least every 2 weeks. Producers should obtain feeds from reputable sources, implement a quality control method for received feeds, maintain clean and rodent-free storage facilities, and avoid allowing used feed to accumulate in feed bunks.

When using live products, sterile, disposable syringes and needles must be used since disinfectants will destroy the vaccine. Chemical disinfection of syringes before/between refilling is not recommended. Disinfectants can leave residues in syringes that will interfere with vaccines.

Disinfectants are highly irritating, and residue may lead to the development of injection site lesions and abscesses. Multi-dose syringes should be thoroughly cleaned with soap, water, and brushes on external surfaces and then the internal components disassembled and cleaned with near boiling water immediately after each use. Surgical instruments should be held in a suitable disinfectant (see 615) only during use since long-term immersion will result in corrosion.

Disinfectants

Many disinfectants are available for use (see 615) in livestock operations. The most commonly used disinfectant is chlorine bleach. While this disinfectant is quite corrosive on metal surfaces, few disinfectants are as efficacious. Chlorine disinfection is recommended for use on surfaces only. A non-corrosive and non-irritating broad-spectrum disinfectant such as chlorhexidine is recommended for short-term use (less than 24 hours) on instruments.

The time necessary to inactivate infectious agents ranges from as little as 3 to 5 minutes to more than 30 minutes depending on the disinfectant and the organism. Disinfection requires time and direct contact between the compound and the organism(s). The ability of a disinfectant to inactivate the organism(s) is greatly reduced in the presence of organic matter—blood, manure, and dirt—thus the necessity for thorough cleaning before applying the disinfectant.

People Management

Employees

All personnel must be knowledgeable about and acutely aware of the biosecurity/agrosecurity program/protocols, including what the animals are being protected or secured against. Provide written plans for each aspect of the program(s) and routine training for each employee. A clear delineation of actions to be taken at each step of the process will help assure continuity in the process and that no steps are overlooked.

Compliance with established protocol is especially important in the processing stages such as calving, health programs, cleaning and disinfection, waste management, AND record keeping. Assuring that the personnel fully understand the importance of regular and frequent calf monitoring, expedient movement to nursing areas, and the appropriate post-birth processing of newborns is the single most important step to assure disease-free animals as they move through the process.

Appropriate training in the administration of vaccines and antibiotics will be one of the most important steps to assure continued healthy animals and a safe and wholesome product acceptable by the consumer. Continual training in disease recognition/diagnosis is necessary to assure that a bio- or agrosecurity breach has not occurred.

Personnel training in food security, natural disaster events, and potential terrorist activities as well as identifying the local authorities and county or state emergency services are important components of an emergency preparedness plan. On-site preparations should include safe and secure feed and water supplies and sources and emergency power.

Visitors and Vendors

Visitors and vendors can be potential risks for introduction of disease to a premise. Knowledge and a record (visitor log) of all individuals present on premises should be maintained. Limiting the number of vehicles and off-farm helpers/visitors (i.e., weekend cowboys) should be a standard of all biosecurity programs. Know the origin of all visiting vehicles.

Record Keeping

In a biosecurity program, records of all procedures, including appropriate personnel training programs, are necessary. As Beef Quality Assurance and individual animal identification programs become the norm, record keeping is increasingly important to demonstrating and verifying the quality of a ranch's end product. Records of all treatments and vaccinations given to each animal are highly likely to become as important as average daily gain and pounds of calf produced per exposed cow. A key component of successful, useful, and accurate record keeping is accurate animal identification.

Animal Identification

Animal identification remains a common practice for food animal producers. Because of the heightened consumer demand for safe and wholesome foods, as well as producer desires to assure a value-added product, however, the era of permanent and individual animal identification is upon us. Electronic identification measures are being installed in many portions of the production animal system. Within a few short years, it is highly likely that all production animals from birth to consumption will be individually identified. For biosecurity, this facilitates verification (record of all animal related activities/actions) and tracking (epidemiology, control, and eradication) of disease outbreaks.

References

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Addendum 1

Biosecurity—Best Management Practices

This checklist is a compilation of biosecurity best management practice suggestions by the **Idaho State Department of Agriculture** to help livestock producers minimize the exposure of their animals and facilities to diseases and enhance the general health and safety of their animals. Also, included is a checklist for those farms or facilities that may have visitors from foreign countries.

(✔)	Procedure
	Maintain accurate identification and health records of all animals. Especially check accuracy of identification of purchased animals.
	Restrict access points to your facilities. Lock gates to prevent unauthorized entry. Investigate strange people or vehicles that enter or approach your property.
	Farm visitors should not enter any facilities on the farm unless they have a real need to do so.
	Visitors who have to enter animal facilities should wash their boots with a disinfectant or put on plastic boots before doing so.
	Insist that all employees, advisers, and visitors enter only with clean clothing and disinfected equipment. Maintain the highest standards of hygiene for all movements on and off your farm.
	Provide boot brushes, disinfectant, and boot wash areas or disposable boots when moving between areas on the farm. Keep the disinfectant solution clean and renew it daily.
	Establish parking areas for vehicles and equipment that are away from any animals and that provide adequate space to clean and disinfect vehicles, if necessary.
	Prevent movement of and contact with mud and feces introduced from other farms.
	Whenever possible, bring animals in from a source herd with a defined health history.
	Establish a segregation or isolation plan to prevent the introduction of disease agents. Quarantine incoming and returning animals for a minimum of 3 to 4 weeks, preferably in a holding facility downwind from resident animals. Use this time to monitor for disease.
	Minimize contact with non-resident animals including cattle, other livestock, pets, pests, and wildlife to prevent introduction of infections spread by saliva, respiratory secretions, blood, urine, and feces.
	Start work routines with young stock and move toward adults to prevent contamination of young stock. Handle sick animals last.
	Work with every person who routinely enters the barn to make sure they understand concerns for biosecurity. Train your staff and check to see they are following procedures.
	Identify a holding area for dead animals awaiting pickup by the rendering truck that is as far away as possible from the corrals and other resident animals.
	Clean and disinfect vehicles, trailers, and other equipment before returning to the farm.
	Equipment must be cleaned and disinfected between cows, groups, and farms.
	Equipment, such as hoof trimming tables, chutes, panels, etc., should be washed and disinfected thoroughly before it is brought into the facility.
	Use separate equipment for handling feed and manure, or clean and disinfect thoroughly before handling feed.
	Use clean equipment to mix and deliver feeds.
	Adopt rodent control programs. Keep pets and pests out of feedstuffs.
	Keep animals away from surface water sources that may be a point of entry or export of disease.

Kindly provided by the Idaho State Department of Agriculture.

Addendum 2

Biosecurity Checklist for Farms, Ranches, and Other Facilities Receiving Visitors, Guests, or Family Members from Foreign Countries

The following is a checklist of questions and concerns that producers should address with visitors or guests from foreign countries before allowing them admittance or access to their farms, ranches, or production facilities. This would also apply to family members or relatives who have been vacationing or traveling in foreign countries before their returning home to the farm, ranch, or production facility. (Note: These procedures are geared toward screening visitors from countries with possible Foot-and-Mouth Disease exposure.)

(✔)	**Procedure**
Note	Although foreign visitors must clear the customs station when coming into the U.S., there may be some things that get overlooked or missed. For your own protection, you should also screen your visitors (or returning family members, etc.) to ensure the chances are minimized of their bringing disease organisms onto your farm, ranch, or production facility.
	Be aware of, or specifically inquire about, what countries your visitors have traveled to before coming to the U.S. (If any are known Foot-and-Mouth Disease countries, it is imperative that the following items be addressed. It is a good idea to address all of the following items anyway).
	All travelers should have avoided farms, sale barns, stockyards, animal laboratories, packing houses, zoos, fairs, or other animal facilities for at least 5 days (preferably 1 week) before travel.
	All clothing and outerwear should be laundered immediately before travel to the U.S.; or purchase new clothing before travel.
	All dirt and soil should be removed from shoes by thorough cleaning. Then the shoes should be wiped with a cloth dampened with vinegar or a bleach solution (5 tablespoons of bleach in a gallon of water). The soles of the shoes should be soaked in the same solution. *(It would be optimal to purchase new shoes just before traveling to the U.S.)*
	Luggage and personal items (including watches, cameras, laptop computers, CD players, and cell phones) should be wiped with a cloth dampened with vinegar or a bleach solution (5 tablespoons of bleach in a gallon of water). If disinfectant could damage or destroy expensive equipment, follow manufacturer's recommendations for cleaning and assure the item is dry and free of soil, debris, or organic matter.
	Visitors from foreign countries should not have contact with livestock or wildlife for 5 days (preferably 1 week) after arrival in the United States. *(It would be optimal to schedule sightseeing trips and activities in other areas, thus keeping visitors off the farm completely during the first week.)*
	It would also be optimal to have visitors shower and shampoo immediately upon arrival and provide them with a clean set of clothing while their clothes are being laundered.

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Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, by the Cooperative Extension Systems at the University of Arizona, University of California, Colorado State University, University of Hawaii, University of Idaho, Montana State University, University of Nevada/Reno, New Mexico State University, Oregon State University, Utah State University, Washington State University and University of Wyoming, and the U.S. Department of Agriculture cooperating. The Cooperative Extension System provides equal opportunity in education and employment on the basis of race, color, religion, national origin, gender, age, disability, or status as a Vietnam-era veteran, as required by state and federal laws.

Fourth edition; December 2016 Reprint