

IOWA BEEF CENTER

HEALTH CONSIDERATIONS FOR CONFINED COW-CALF OPERATIONS



Confined cow-calf operations are becoming more common as Midwestern cattle producers adjust to increased land costs and a decreasing forage base. These operations can mitigate some environmental issues such as harsh winters, mud, and heat stress that pasture-based operations are required to deal with. However, to operate a confined cow-calf system, management and health practices will have to be intensified in order to minimize any negative effects of increased animal density. Confined cattle operations will need to adjust management and biosecurity practices to adapt to an intensively managed confinement situation. In some cases, we are still learning what good management practices for confined cow-calf operations are.

Biosecurity and Biocontainment

Many confined cow-calf operations are under roof but the cows are not entirely enclosed in a building with environmental controls. This type of housing should not require intensive biosecurity programs, such as shower in/shower out facilities, but biosecurity and biocontainment efforts need to be increased over what is practiced in a typical pasture based systems. Biosecurity is a set of protocols used to prevent the introduction of disease organisms from outside the cow-calf operation. Biocontainment refers to minimizing the spread of disease organisms once they have been introduced and a disease outbreak is active. Producers need to plan these protocols with their veterinarian since an infectious disease can readily spread through a high density cattle barn if it is introduced.

Isolation of new animals should be enforced for at least 30 days. Any infectious diseases carried by new animals should have been detected by diagnostic screening tests or observation of clinical signs. Breeding animals such as replacement heifers and bulls should be screened for Bovine

IBCR 205 July 2020

Viral Diarrhea Virus (BVDV), Anaplasmosis and Johne's disease. Depending upon the source and previous testing of newly arrived breeding stock, screening for *Tritrichomonas foetus* ("Trich") should be considered as well. Planning for this type of program should begin with a discussion with your veterinarian to determine which diseases you need to test for, how often to test, and which test to use.

Cattle that are positive for any of these diseases or have other abnormal clinical signs should not be introduced into the confinement facility. Since some diseases can be transmitted over a distance, isolation pens should be located in an area away from the pens or barns holding the resident breeding herd. This will prevent any contact between the resident herd and the new arrivals. The isolation period also allows the veterinarian time to get all test results back from the lab, deliver the needed vaccines (and boosters) and implement the parasite control measures prior to these animals joining the resident herd. If there is any doubt about the disease status of these new arrivals then the isolation period must be extended.

If the operation is not a year-round confined cow operation, then some protections need to be implemented before moving cows back into the barn. If the barn was used to finish calves while cows were turned out on pasture or stalk fields then it should be thoroughly cleaned and allowed to dry before cows are introduced. This is especially true if the feeder cattle are purchased from outside sources. At minimum, pens should be scraped of all manure and, if possible, solid concrete surfaces should be washed with a disinfectant solution and allowed to dry completely. Water tanks should be cleaned (scrub brush) and disinfected with a bleach solution prior to cattle entry and then several times each month. If water sources become contaminated with feed or bedding, fecal material, or algae they will need to be cleaned immediately.

Vaccinations

Vaccination is an important component of the control and prevention of disease, but a vaccination program is not a substitute for good nutrition, adequate ventilation, effective sanitation, and other health management procedures. No vaccine provides 100% immunity for all animals in a herd. Vaccines raise the general level of herd immunity so that the spread of an infectious disease or severity of clinical illness is minimal. Vaccination programs should be developed in cooperation with the herd veterinarian to balance effectiveness with cost of the program.

Vaccination for viral reproductive diseases (IBR and BVD) using a MLV vaccine 45 days prior to breeding is the best

time to provide protection for the cow herd. Replacement heifers should receive three vaccinations (pre-weaning, weaning, and pre-breeding) with a MLV IBR and BVD virus before their first breeding season. Cows that are going to be confined during the breeding season and gestation may require multiple vaccinations with a five-way (strain) leptospira vaccine starting at pre-breeding and boosted at pregnancy diagnosis.

Although a single MLV viral vaccine pre-breeding is adequate for pastured cattle, confined cows may benefit from a well adjuvanted killed viral vaccine during the third trimester to help protect against respiratory disease and enhance colostrum immunity of calves. Scours outbreaks can be severe in confined cow-calf operations due to the relatively high density of the calves. These organisms are spread through fecal contamination of the pen environment and can quickly infect newborns. The use of vaccines to help protect against these scours organisms, as well as a scours intervention strategy, should be discussed with the herd veterinarian. Timing of pre-calving vaccination is important so the maximum amount of immunoglobulins are secreted into the colostrum. The optimal time is about one month prior to calving, but the vaccine label should be consulted as to the recommended timing of vaccination. Depending upon label directions, cows that have not calved within 60 days of the first vaccination may need to be revaccinated.

Vaccinations for calves are most effective if delayed until 2-3 months of age. Vaccines given in the first few weeks of life may not provide adequate protection until weaning. Intranasal vaccines have shown to be effective in young calves and can play an integral part in establishing immunity. Additionally, calves should receive a Clostridial perfringens C&D toxoid at a minimum and a complete seven-way clostridial vaccine if pasture turnout is anticipated before weaning. Pre-weaning vaccinations including MLV viral respiratory vaccine, *Mannheimia haemolytica*, *Histophilus somni* and seven-way clostridial vaccine should be given at least one month prior to weaning and boosted prior to or at weaning.

Internal parasites are not a concern if cows are totally confined, but will need to be considered if grazing is part of the management program. Fecal samples can be collected and checked for parasite eggs annually when cattle return to the barn from grazing. This information can be used to determine the parasite load and whether treatment is needed. External parasites, particularly lice, will need to be aggressively managed. Pour-on insecticides applied before persistent cold temperatures will not effectively control lice and may need

to be reapplied in late winter. Horn flies and face flies will typically be lower than pastured cattle because intact fecal pats are required for flies to lay eggs. Biting stable flies may be an issue and are best controlled with prevention of decaying vegetation and manure, predator wasps, and occasionally spraying animals. Larvicidal feed additives have been successfully used to decrease stable fly populations if other breeding areas that are not manure based are also cleaned up.

Breeding

To facilitate a condensed calving season, females should be on an increasing plane of nutrition and estrus synchronized prior to the breeding season. Estrous synchronization followed with a 45-day breeding season would be an ideal program as long as bulls are healthy and have passed a breeding soundness examination. Bulls will be able to handle about 25% more cows than pasture-based breeding since they do not have to travel to find cows. Good pen condition will be important to prevent slips or falls on concrete. One bull per group of cows will prevent fighting and risk of injury. Additionally, single sire pens can help evaluate progeny. Heifers should be bred to calve at least two weeks prior to the cow herd.

Calving

Management during calving is critical to achieving a healthy calf at weaning. The bedding pack should be kept firm and dry and concrete aprons scrapped clean daily (Figure 1). Ultrasounding females for pregnancy early enough to age fetuses accurately will aid in sorting cows into pens by expected calving date. Heifers should be sorted and housed separately from mature cows. Feeding cows in the afternoon will increase the percentage of calves born during the day when observation is easier. If not part of standard diet, monensin should be included at 200 mg per head per day for at least a month prior to calving to decrease the level of coccidia in fecal matter. Monensin also increases feed efficiency allows the cows to utilize their rations more effectively.

The biggest factors related to calf diarrhea problems are adequate immunity from absorption of colostrum and the level of pathogens in the environment. Initially, cows shed low levels of diarrhea pathogens but once calves are born, they have the potential to multiply pathogen levels dramatically due to a high level of shedding. As the bedding and calving pens become contaminated the newborn calves are infected with diarrhea pathogens at birth. These pathogens flourish in warm and wet environments so the quality of the bedding material is crucial. Pens should be scraped and clean bedding added daily in order to provide



Figure 1. Bedding during calving should be kept firm and dry, as well as changed daily.

as dry an environment as possible. Depending upon the pathogen they are exposed to, these calves often break with diarrhea 3-10 days after infection and the cycle of massive contamination of the environment and newborn infection increases. This helps explain why many diarrhea outbreaks begin 2-3 weeks after calving begins.

To minimize diarrhea outbreaks movement of cow-calf pairs between pens should be limited. The goal is to get the population of the pen established in a narrow time frame and shut the gate. At the beginning of calving, a clean empty pen should be available for new pairs. After a cow calves, she is moved to a small pen for 24-48 hours to allow for maternal bonding. After bonding and assurance of colostrum intake the pair can be moved to this empty pair pen. The new pair pen will be considered full when it reaches capacity (approximately 100 square feet per head and three feet of bunk space per pair) within a 10-day period. After the pair pen reaches capacity or 10 days elapses, the pen should be closed and no new pairs added.

Calving continues as a new empty pen is created by regrouping and moving pregnant cows forward toward the calving area (away from the pair pen). This new empty pen will be beside the pen that has just been filled with new pairs. Scrape the bedding from this empty pen and re-bed so the new pen is as clean as possible. If scrapping is not possible, extra heavy bedding should be used to protect new calves. Fill this pen with new pairs as done previously until it is at capacity based on the rules stated above. Once this pen is full, the gate is closed and no new pairs are added. Then the process continues with pregnant cows being regrouped and moved to create the next empty pen for the next set of pairs.



Figure 2. Provide an area for calves only.



Figure 3. Provide plenty of water for all cows.

This system has been referred to as creating a “snake,” as pregnant cows move one direction and pairs move the other. This process continues until the end of the calving season. This “snake” effect is made easier if cows are sorted into calving groups prior to the start of calving based on palpation or ultrasound pregnancy diagnosis.

It is critical to avoid moving an animal out of one pair pen into another pen during a disease outbreak. This not only upsets the social order in the new pen but risks the introduction of a calf that could be carrying a significant pathogen load. This will only serve to spread the outbreak around the barn more rapidly. It is imperative that young calves are not housed in the same pen as late gestation cows. These young calves will nurse and rob colostrum from pregnant cows as they are standing at the bunk eating. Outside calves from salebarns or other cattle operations (beef or dairy) should never be brought in to graft on to a lactating cow that has lost a calf.

If diarrhea starts in one particular pen, stopping movement in or out of the pen should help contain the outbreak. Additionally, good biocontainment measures (handle scouring pens last, wear protective boots and coveralls, and clean between pens) should be implemented so that manure is not tracked around the barn.

Calves should have access to an area that is for calves only (Figure 2). These areas are often referred to as calf play pens. Creep gates can be used to prevent cows from getting into the area. The play pens should be big enough for all the calves to lay down with extra room for natural play without stepping on other calves. Additionally, if calves cannot reach the waterer in the main pen, access to water should be provided in these creep areas (Figure 3). Creep feed can be provided in these areas as early as 7-10 days of age and should contain an ionophore to help control coccidiosis as the calves get older. High quality hay can be provided if bunk access is limited or cow ration does not contain sufficient high quality hay.

Written by Grant Dewell, DVM, associate professor in beef production and extension beef veterinarian, and Terry Engelken, DVM, associate professor of veterinary diagnostic and production animal medicine at Iowa State University.



This publication was peer-reviewed by two independent reviewers using a double-blind process.

This institution is an equal opportunity provider. For the full non-discrimination statement or accommodation inquiries, go to www.extension.iastate.edu/diversity/ext.