



# Repro Tracks

► by **Cliff Lamb**, Texas A&M University

## Herd health and reproduction

*April is the month of significant optimism for most cattle producers in the United States. Almost all spring-calving operations have started calving (with many of them almost done), temperatures have started warming up and grass may be turning green for many of us. There is always a sense of excitement at this time of year because we start to see the outcome of our efforts in nutritional management, genetic selection and herd health in our new calf crop.*

*Nonetheless, producers are faced with the most critical period associated with the success or failure of the subsequent breeding season. To ensure the success of cows becoming pregnant during the coming breeding season, producers should not neglect the importance of herd health and biosecurity in their operations. Although overall nutritional management and environmental stress may have detrimental effects on fertility, nothing can pose a more detrimental effect on pregnancy rates than a negative herd-health-related event, such as an infectious disease.*

### What does biosecurity mean as it relates to a beef operation?

Biosecurity can be defined as procedures implemented to keep infectious agents out of the herd. Many infectious reproductive diseases result in significant challenges, and identifying specific reproductive pathogens is usually difficult or impossible. The cause of reproductive losses from infertility, embryo loss, fetal loss or abortions can be difficult to diagnose.

In many cases, a problem is not identified until pregnancy diagnosis or at calving, well after the agent causing the problem is no longer detectable. In addition, if a bull is responsible for transferring a pathogen, the bull often has recovered in such a way that the pathogen cannot be identified during a subsequent breeding soundness examination.

### What should I consider in my biosecurity plan?

Before cattle are purchased at a sale or enter the operation, be sure to know some specific herd-health-related information of the origin from where the cattle are coming. This information should be related to the original herd's testing procedures, herd health programs and biosecurity protocols. In some instances this information may not be easily available, but that is an indicator of higher risk of receiving cattle for transmitting a potential pathogen.

If the origin or source of the cattle coming onto your operation cannot

provide you with herd health information, then consider other indicators, such as a history of consistent excellent reproductive performance (pregnancy rates, calving rates).

Other considerations may be demonstrated evidence of vaccination and biosecurity procedures that would indicate the health potential of the source herd's animals. Herd-level testing for an infectious disease is not necessarily a guarantee that the specific animals purchased will be disease-free; however, it creates a higher level of assuredness compared to a similar herd without disease surveillance in place.

In addition, reputable producers are usually open about the health status of their herd and animals, and some may provide the name of their veterinarian so that the receiving herd's veterinarian can communicate with them regarding herd health and proper methods of introducing the new animals.

To prevent a new infectious agent from entering the herd, the most common approach is isolating the new cattle from the rest of the herd. Preventing immediate contact between affected and non-affected animals allows new cattle an opportunity to recover from any transient illnesses that they may be incubating on or shortly after arrival. This helps to ensure that new animals do not

shed these infectious agents to animals in the existing herd.

This is especially important in the case of animals stressed by shipping, which have a greater likelihood of succumbing to conditions such as bovine respiratory disease. In addition, isolation allows the incoming animals to be protected from sudden exposure to agents from the existing herd at a time when stress makes them more susceptible. It is also important to remember that for certain conditions, no isolation period length would be sufficient for animals to stop shedding the infectious agents.

Biosecurity also involves increasing the level of resistance through vaccination. Although individual animal responses to vaccine may vary from animal to animal, the goal of a vaccination program is not to render each individual immune to disease. The goal of a vaccination program is to stimulate adequate immunity in a sufficient number of animals such that an epidemic does not occur. Thus, vaccination programs should be considered a form of risk management rather than a means to completely prevent disease.

Differences between vaccine strains and wild virus strains or overwhelming exposures to pathogens are both reasons why even a well-vaccinated herd could express significant clinical disease. All vaccine programs should be designed with appropriate guidance from a veterinarian.

Environmental factors are also important in controlling transmission of certain diseases. These factors may influence the relative ease with which disease agents are transmitted and may influence the resistance of the animals to clinical disease. However, some pathogens — such as infectious bovine rhinotracheitis (IBR), campylobacter or tritrichomonas — do not survive outside the host animal for long periods of time, and environmental control is not an issue in prevention of these diseases.

Several environmental considerations should be taken into account when attempting to reduce the risk of a pathogen entering the herd. Commingling newly

acquired animals (e.g., replacement heifers or cows) that have originated from many different sources is a risk factor for introduction of many



diseases. Social stresses and varying degrees of immune-system competence among animals result in conditions conducive to transmission of infectious agents and the emergence of clinical signs of illness.

Non-venereal reproductive disease pathogens such as bovine viral diarrhoea (BVD), IBR and leptospirosis may be harbored and shed in greater numbers by younger animals, such as weaned calves or backgrounded calves. Therefore, the mature cow herd should be segregated from these younger animals.

### **What infectious diseases should I be concerned about that can have an impact on reproduction?**

*Bovine viral diarrhoea (BVD):* The impact of BVD in reproduction depends on the stage of gestation in which the female is infected. Infection in early gestation results in low conception rates due to early embryonic death. Infection in mid-gestation may result in the formation of persistently infected (PI) calves, which occurs as a result of infection during a period of fetal development (roughly between 40 and 120 days of gestation). In PI animals, the virus is present in large quantities and shed continuously throughout life. Later infections may result in congenital defects, late-term abortions, or the birth of congenitally infected calves, which

are weaker and more prone to illness than normal calves.

*Trichomoniasis (trich):* Trich is a venereal disease that causes inflammation of the inner lining of the uterus and of the developing fetus. Infertility results from early embryonic loss, which materializes when females return to estrus. Bulls, especially older bulls, are generally the carrier for this pathogen and transmit it to cows when they mate.

*Infectious bovine rhinotracheitis (IBR):* The IBR virus affects reproduction by acting on the ovaries, uterus, and developing embryo or fetus. The result can be infertility or early embryonic death, and is one of the most frequently diagnosed causes of late-term abortions.

*Leptospirosis (lepto):* Lepto infection has been attributed to early embryonic death resulting in repeat breeders or low pregnancy rates, late-term abortions, weak live calves and uterine infections.

*Campylobacter fetus (vibrio):* Vibrio is a bacterial disease that affects the reproductive tract of male and female cattle in much the same manner as trich. Cattle with vibrio may have poor pregnancy rates or delayed returns to estrus after calving. Late-term abortions are rarely attributed to vibrio.

*Neospora caninum (neospora):* Cattle are the intermediate hosts of this protozoa, which is primarily hosted by canines such as

dogs, coyotes, wolves and other wild canines. If canines are infected with neospora and defecate in the feed sources (feedbunks, pastures or stored feed), cattle may become infected. Neospora results in abortions at any stage of gestation, but are most common between five and six months of gestation. In addition, stillborn calves or infected live-born calves may also be a result of this infection.

Obviously, differences exist in how different diseases are transmitted to cattle and how they affect reproductive performance, and different management and environmental conditions among cattle operations also alter the incidence of these pathogens. Therefore, it is impossible to make a single recommendation for all producers on a method of managing disease risk. However, following good biosecurity principles in hand with a veterinarian will reduce the risk of an infection in beef herds.



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