



# Cattle Producer's Handbook

Reproduction Section

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## Pregnancy Losses in Beef Cattle

Jim Keyes, Extension Area Beef Specialist  
Utah State University

Pregnancy failures in beef cattle represent huge financial losses to cow-calf producers. The occurrence of pregnancy termination can happen for an assortment of reasons—some straightforward and others complex and difficult to pinpoint.

Pregnancy losses are defined by two groupings. If the loss occurs within the first 42 days of pregnancy, it is referred to as an embryonic loss. If it occurs after day 42, it is considered a fetal loss.

Embryonic loss may represent the single greatest economic loss for cow-calf producers (Geary 2005). Research has shown that fertilization rates for a single service, artificial insemination (A.I.) or natural, are 90 to 100 percent (Sreenan and Diskin 1983). However, rarely more than 70 percent of matings result in a positive pregnancy diagnosed after 30 days, and even fewer result in a positive birth (Geary 2005).

The causes of pregnancy losses can be divided into two categories—*infectious* and *non-infectious*. Infectious causes are those that happen due to some type of infectious agent. Non-infectious are those that happen for reasons other than disease or infection.

### Infectious

#### Trich (Trichomoniasis)

Trich has been a widespread problem for cattle producers in the West. This disease can be financially devastating because of the number of open and late cows at the time of pregnancy testing. Trich is a venereal disease spread from one cow to another by contact with an infected bull.

The organism enters the reproductive tract and causes loss of pregnancy in early gestation. The cow will develop an immune response after being infected. She will exhibit normal estrus cycles, and bulls that breed her will pick up the organism and spread it throughout the herd. After at least three or more cycles she will become free of the disease and will become pregnant again. The problem is that she will be

extremely late. A small percentage of cows can become persistent carriers and will never be trich-free.

The bull does not develop an immune response, and the organism lives in his reproductive tract. Currently, there is no treatment. Older bulls that have more wrinkles and folds in their sheath can harbor the organism much easier than young bulls.

Many states have a trich testing law that requires bulls to be tested at least annually. An infected bull should be sold for slaughter immediately.

#### BVD (Bovine Virus Diarrhea)

BVD is a viral disease that can cause abortion. The key factor is at what point during gestation is the cow infected with the virus? During the first trimester of pregnancy the cow can either abort or reabsorb the fetus. If a normal birth occurs after a fetus has been infected around 120 days of gestation, the calf will become persistently infected (PI). This calf will pass on the virus through body fluids for its entire life, thus becoming a huge risk to the cowherd.

Cows infected in the second trimester may also abort, or give birth to a calf with congenital defects of the brain and eyes. Exposure in the third trimester does not usually result in abortion but can result in a stillborn or weak calf.

Diagnosis of BVD can be done through blood samples, ear notches, and aborted fetuses. The BVD can be controlled with a proper vaccination program using modified live vaccines. It is also important to do testing for PI cattle if there is any suspicion in the herd.

#### Vibriosis (Campylobacteriosis)

Vibrio disease in cattle results in abortions caused by the bacteria *Campylobacter fetus* subsp. *Venerealis*. Vibrio is a venereal disease spread through breeding. Infection causes infertility, early embryonic death, and sporadic late term abortion.

Cows becoming pregnant extremely late in the breeding season is a typical symptom of vibrio infection in the herd. Infected cows may become pregnant, but early on the fetus will die and be reabsorbed. It takes a minimum of 3 months for most cows to return to normal cycling. In serious cases a cow may be so severely infected that she will never become pregnant again.

While vibrio is considered a venereal disease, it can be spread by cattle eating feed contaminated with fecal material. The organism gains entrance to the reproductive tract via the bloodstream. Prevention and control can be achieved through an adequate vaccination program.

### **Infectious Bovine Rhinotracheitis (IBR)**

IBR is caused by a virus that is highly contagious. A single infected animal can cause a widespread infestation in a herd. IBR is characterized by an acute inflammation of the upper respiratory tract. Abortions from IBR can occur into the second trimester of gestation. Most abortions actually occur after the fifth month of pregnancy. The fetus is often dead and may require human assistance for removal. The rate of abortion can be extremely high in an infected herd.

Some animals can become carriers of the virus and continue to shed the organism. Transmission comes by direct contact with nasal secretions containing the virus but can be spread through semen or breeding. Prevention and control requires a comprehensive vaccination program as well as preventing exposure to the virus.

### **Lepto (Leptospirosis)**

Lepto is a disease of cattle that generally results in abortion and infertility. It can be spread in many different ways including body fluids, across the placenta from mother to calf, and through small cuts in the skin. This disease can be transmitted to humans through contact with infected livestock.

Low conception rates are common in lepto-infected herds. Numerous late-term abortions can also occur in herds exposed to the organism. Prevention and control of the disease involves an adequate vaccination program as well as preventing contact with infected animals. Cattle can obtain the organism by drinking water that has been contaminated by urine from wildlife carriers.

### **Brucellosis (Bangs)**

Brucellosis in the past was a destructive disease that was common in the United States. The USDA conducted a successful program to eradicate the disease in cattle. Brucellosis spreads rapidly and can be transmitted to humans. In humans it is known as undulant fever or Malta fever.

Brucellosis is caused by strains of bacteria from the genus *Brucella*. The bacteria can be present in body fluids. The disease is spread by direct contact with in-

fectured animals and/or infected environments, as well as by mingling with wildlife such as bison that have been infected. In a situation where cattle are calving in confined quarters, it is extremely important to rapidly clean up all afterbirth and other substances to prevent contact with cows and calves.

Abortions may occur in infected herds. The occurrence of abortion is dependent on when a cow is exposed to the bacteria. If a cow is infected at breeding, she will abort at an average of 225 days into gestation. If already pregnant when infected, she will abort approximately 50 days later. Abortion rates can range between 30 to 70 percent (Wenzel and Hanosh 2011).

To control this disease, it is important that females younger than 12 months of age are vaccinated. Vaccination for brucellosis can only be performed by a licensed veterinarian.

## **Non-Infectious**

### **Nutrition**

Gross nutritional deficiencies can obviously have detrimental effects on pregnant cattle. Energy and protein levels can affect pregnancy success. It has been shown that cows bred when they are gaining weight have higher pregnancy rates than cows bred when they are losing weight (Wiltbank et al. 1962).

Cows with high milk production can experience a negative nutrient balance and increased embryonic mortality when forage conditions are limiting (Geary 2005). Producers need to take this into consideration when selecting cows for high milk production. On the other hand, excess nutrient intake, particularly protein, has been shown to increase embryonic mortality in cows (Elrod and Butler 1993). Cattle can consume excess protein when grazing alfalfa or wheat pastures.

### **Toxins**

Common plant toxins in the western U.S. include mycotoxins, nitrates, locoweed, and ponderosa pine needles. Mycotoxins occur in moldy feed. Producers often try to cheapen up the rations they feed by adding hay or concentrates that have been exposed to excess moisture. This can present a problem but can be avoided by using quality feeds.

Nitrates are not necessarily toxic to cattle. Nitrate poisoning occurs when nitrate consumption in feed and water is sufficient such that nitrates convert to nitrites. Nitrites decrease oxygen availability in the cow's body and result in embryonic death. Plants such as oats, millet, sorghum, sudangrass, corn, and even some weeds are susceptible to high nitrates. Diets of pregnant cows should not exceed 5,000 ppm nitrates on a dry matter basis (Brownson and Zollinger 1996).

Locoweed causes problems with all aspects of livestock production. This plant is highly palatable and readily eaten by cattle. Locoweed can actually restrict

blood flow to the uterus, which affects all aspects of reproduction, but during certain stages of gestation it can result in embryonic death.

Pine needle consumption can readily occur when feed sources are covered by snow and cattle migrate to the bare ground under pine trees. Dropped needles are ingested by cattle, which can induce parturition similar to a natural birth. Abortion can occur during the second and third trimesters of gestation.

### **Stress**

Other factors that can result in pregnancy losses include transportation, handling, or even unusual weather conditions that cause stress to cattle.

Anytime cattle are transported from one point to another a certain amount of stress is generated. Stress causes the release of hormones in the animal's system. Certain hormones, such as cortisol, can cause the environment of the uterus to change that can result in pregnancy loss. The most critical time period is between days 5 and 42 after insemination (Fields and Perry 2007). Cattle producers should take this into consideration when transporting animals early in the breeding season.

Heat stress is also a major cause of infertility, especially early in pregnancy. High humidity exacerbates heat stress and would be expected to impact conception rates even more (Navarre 2010). In many herds being run in the western United States, breeding occurs during the spring and summer months. Research has shown that conception rates can fall 10 to 20 percent during hot seasons (Cavestany, El-Whishy, and Foot 1985).

### **What If?**

Well known ranch management specialist Burke Teichert said that there is nothing more economically important about the cow as reproduction. Pregnancy

losses can be devastating to the rancher's bottom line. If pregnancy losses are suspected, contact your veterinarian for assistance and advice. Proper diagnosis and control of the agent causing the problem can aid in avoiding substantial production losses.

### **Literature Cited**

- Brownson, R., and B. Zollinger. 1996. Nitrates in cattle feed and water. Cattle Producer's Library, 3rd Edition. 355. Western Beef Resource Committee.
- Cavestany, D., A. B. El-Whishy, and R. H. Foot. 1985. Physiological responses of ruminants to heat stress. *J. Dairy Sci.* 68: 1471-1478.
- Elrod, C. C., and W. R. Butler. 1993. Reduction of fertility and alteration of uterine pH in heifers fed excess ruminally degradable protein. *J. Anim. Sci.* 71:694-701.
- Fields, S., and G. Perry. 2007. Effects of shipping and heat stress on embryonic mortality in cattle. South Dakota State Univ. <http://agbiopubs.sdstate.edu/articles/ExEx2063.pdf>
- Geary, T. 2005. Management strategies to reduce embryonic loss. Range Beef Cow Symposium. Univ. of Nebraska-Lincoln. <http://digitalcommons.unl.edu/rangebeefcow symp/36>
- Navarre, C. B. 2010. Infertility in cattle. Animal Health Notes. Louisiana State Univ. <http://www.lsuagcenter.com/NR/rdonlyres/9F5679C3-B754-40A4-AB50-F04E55CA89A8/75672/Infertilityin-Cattle1.pdf>
- Sreenan, J. M., and M. G. Diskin. 1983. Early embryonic mortality in the cow: Its relationship with progesterone concentration. *Veterinary Record.* 112:517-521. doi: 10.1136/vr.112.22.517.
- Wenzel, J. C., and T. J. Hanosh. 2011. Pregnancy loss in beef cattle. New Mexico State Univ. CES Guide B-228.
- Wiltbank, J. N., W. W. Rowden, J. E. Ingalls, K. E. Gregory, and R. M. Koch. 1962. Effects of energy level on reproductive phenomena of mature Hereford cows. *J. Anim. Sci.* 21:219-225.



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