

Common Diseases in the Beef Herd

By Dr. Jeff Lehmkuhler, Extension Beef Specialist

There are a variety of products available for vaccinating the beef herd. Dr. Larry Baumann has written a publication (A3673 Cattle Vaccines: recommendations and available products) that lists the product types, names and manufacturers and is a good source of information for the beef producer. Products can vary based upon how the vaccine stimulates immunity and fall into two general categories, modified live or killed products. Vaccines are designed to be effective against either viral or bacterial diseases. Many times several organisms, viral and bacterial, work in concert to cause illness. For example, the bovine respiratory disease complex is commonly associated with four viruses (IBR, PI3, BVD, & BRSV) and two bacterial organisms (Pasteurella and Haemophilus).

Definitions

Vaccination – act of administering a vaccine that stimulates an immune response within the animal for prevention of disease.

Vaccine – a product developed to prevent diseases and may be either killed or modified live agents.

Antibiotic – a product developed to kill bacteria for treatment of bacterial disease. Does not stimulate immunity in the animal and is not a vaccine.

Passive/Maternal Immunity – antibodies passed to the calf through the colostrum. Can protect the calf for periods up to 4-6 months in some instances. Calf must receive colostrum within 24 hours after birth. Cow must be vaccinated or have survived disease challenge prior to calving to ensure antibody production and passed on via the colostrum.

Immunization – process of animal to become resistant to disease. Can be developed through natural exposure or vaccination.

Bacterin – a product developed to prevent bacterial disease made of inactivated/killed bacteria. Products commonly contain adjuvants that assist in stimulating an immune response.

Toxoid – a product containing inactivated toxins (toxins produced by bacteria and lead to disease) and stimulates anti-toxin production within the animal to combat the infection.

Modified-live vaccines (MLV) – a virus or bacteria that has been altered such that it does not cause disease. It may replicate within the animal as the disease causing counterpart would and stimulate antibody production or maybe a non-replicating altered form. Generally, replicating forms of vaccines only require one dose while non-replicating forms require two doses for immunization. Due to the fact that these are live organisms, care must be taken to ensure efficacy of the vaccine. Store at proper temperature, do not

reconstitute more product than can be used in approximately 45-60 minutes, keep product out of sunlight, and sterilize syringes with boiling water only or as directed by label or veterinarian. Do not use the same syringe for administering antibiotics and modified live bacterial vaccines.

Inactivated/Killed viral vaccines – a product consisting of inactivated or killed viruses. Less sensitive disinfectants may be used on syringes, however, products should still be stored at the correct temperatures and out of direct sunlight.

CC / ML – one CC (cubic centimeter) is equal to one ML (milliliter)

Diseases

Now, that we have defined some of the basics, we should consider some of the diseases that are commonly vaccinated against in the beef herd (The Merck Veterinary Manual).

Respiratory

IBR (Infectious Bovine Rhinotracheitis) – Caused by Bovine Herpesvirus BHV-1. The respiratory sub-type can lead to upper respiratory infection and subsequent secondary bacterial pneumonia. Abortions occurring in the second half of gestation may be observed while early embryonic loss may also occur. Rarely fatal and animals will recover within a few days if bacterial pneumonia is not associated with the infection.

PI3 (Parainfluenza – 3) – Relatively mild viral disease itself but can lead to severe respiratory disease through secondary bacterial pneumonia.

BRSV (Bovine Respiratory Syncytial Virus) – Respiratory virus that is not prevented but rather the severity is reduced through passive immunity. Therefore, PI3 primarily affects younger calves. Another virus that can initiate secondary bacterial infection in the respiratory tract.

BVD (Bovine Viral Diarrhea) – Widespread disease found in most herds. Passive immunity may protect calves for 3-6 months. Exposure to the organism during gestation may lead to abortions or persistently infected (PI) individuals. PIs may appear stunted and “poor doing”. They will carry and shed the organism infecting others. Treatment is limited and mortality can be high. Exposure early during gestation may result in abortion, while exposure between 80-120 days may result in PIs which can not fight the disease and develop severe clinical symptoms around 6-12 months of age, or result in fetal abnormalities and late term abortions. Exposure late in pregnancy may result in a normal calf with antibodies to BVD. It is recommended that all replacements be vaccinated against BVD.

Pasteurella – Common bacteria carried by normal, healthy cattle. May find *P. haemolytica* and *P. multocida* in the lungs of infected cattle. Most frequent species isolated from cattle having BRD/shipping fever.

Haemophilus somnus – Another bacteria common to the upper respiratory tract of cattle, vagina, sheath and prepuce. Can result in fever reaching 108° F and “Brain Fever” in feedlot cattle (also known as thromboembolic meningioencephalitis).

Reproductive

IBR – Most common cause of abortions in cattle. Vaccine available.

BVD – see above. Vaccine available.

Brucellosis (Bangs) – Vaccination will depend upon current disease status. Heifers were to be vaccinated by an accredited veterinarian, tattooed and ear tagged.

Vibriosis (Campylobacter) – Bacterial venereal disease that results in early abortions and transmitted by breeding. It can also result in late term abortions and may be considered suspect when repeated breeding and extended calving seasons are observed. Vaccine available.

Trichomoniasis – Protozoal venereal disease spread during the breeding season. Protozoa lives on the prepuce of the penis and in the sheath. Enters the uterus and can lead to abortions late in the first or early in the second trimester. Vaccine available.

Leptospirosis – A bacterial disease with five strains identified and can affect other species including humans. May be carried by rodents, deer, and other animals. Can lead to abortions shortly following infection and generally are noted in the third trimester. Vaccine available (5-way).

Neosporosis – Intracellular protozoa leading to abortions in cattle. Canines are believed to be a host that may spread the organism to livestock through contamination of feedstuffs/pastures as the organism is shed in the feces of canines. Repeated abortions in the same cow may occur.

Sudden Death

Clostridial diseases – Long living spore-forming bacteria that can live in the soil for extended periods of time. Vaccine available (7-way).

Black Leg – Caused by *Clostridium chauvoei*. Leads to death within 12-48 hours.

Red Water – Caused by *Clostridium haemolyticum*.

Malignant Edema – Caused by *Clostridium septicum*.

Black disease – Caused by *Clostridium novy*.

Sord – Caused by *Clostridium sordellii*.

Enterotoxemia – Caused by *Clostridium perfringens* Type B, C, and D.