

**UCD VET VIEWS
CALIFORNIA CATTLEMEN'S MAGAZINE
NOVEMBER 2005**

BVD Free Herds in the Future?

New vaccines and diagnostic tests have opened up a range of possibilities for the control of Bovine Virus Diarrhea (BVD) in cattle that simply did not exist before the turn of the century (5 years ago). Recently, Colorado has launched a BVD control program that allows cattle herds to be “certified free” of BVD. The program has three levels and producers can advance at their own pace. The most important aspect is that cattle buyers can have some assurance they are at low risk or no risk of bringing “virus shedders” onto their operations. This month we will discuss the Colorado BVD Control Program in general. Additionally, this subject may come up at the CCA convention in Reno and some general information will aid the discussion.

I forget—what does the BVD virus cause?

The BVD virus can cause a wide spectrum of disease problems. BVD virus infection can be fairly mild to fatal. In well cared for cattle it can cause diarrhea, with damage starting in the mouth and extending throughout the gastrointestinal tract. Hence, the name: ***Bovine Virus Diarrhea***. BVD is also a major cause of respiratory disease in young cattle going into stocker operations, backgrounder operations, and feedlots. It can cause abortions or reproductive failure in cows. One of the most important problems caused by BVD is the Persistently Infected (PI) animal. These PI cattle are actually infected with the BVD virus before they are born—at about 80-100 days of gestation in most cases. Many of these calves are born alive but cannot develop any immune protection against the BVD virus. They are sub-optimal performers (some obvious, some not). They shed billions of virus particles every day in their saliva, urine, and feces. They act as the “typhoid Mary” for the entire herd—infecting and re-infesting other cattle in the herd and causing continued illness in the entire group of cattle.

What do we need to remember to prevent BVD?

The most important points to control and prevention of BVD are (1) adequate vaccination of young cattle and replacement cattle, (2) annual vaccination (boosters) for the herd, (3) prevent the introduction of PI cattle, and (4) elimination of any PI cattle from the herd.

What is the Colorado program all about?

First of all, it is a voluntary program that can aid in reducing or eliminating the threat of new BVD infections. The program is divided into 3 levels. In level 1, the producer completes a short educational program with the herd veterinarian and then answers 20 standardized questions. Based on the answers, a specific herd BVD biosecurity plan is formulated. This biosecurity plan includes a vaccination program which is formulated for the herd. Level 2 involves some level of testing for the presence of BVD-PI cattle or testing serum samples for evidence of active BVD infection in the herd. Level 3 requires testing of all calves or cattle for evidence of BVD-PI animals and

if all are negative (and any positive BVD-PI cattle are removed from the herd) the herd can be certified BVD free.

What are the potential benefits of a program such as this?

The way I see it, this is mainly a benefit for the producer's marketing program. This gives us a scientifically valid approach to prove the cattle we sell are free of the most troublesome aspects of BVD infection. For the producer selling to the feedlot or other operation, there should be a significant premium as BVD-PI cattle in the feedlot cause significant losses. These losses are not only due to sub-optimal performance of the individual BVD-PI animal; but also due to the fact that other cattle in the pen (and adjacent pens) have much higher levels of respiratory disease, need for treatment, and death losses. These BVD-PI cattle shed billions of BVD virus particles that infect nearby cattle and cause illness. For seed stock producers this type of program can be very important. Because some BVD-PI cattle can appear to be normal, a buyer can easily infect their herd if they purchase BVD-PI cattle. If buyers unknowingly purchase infected BVD-PI replacement heifers or cows, these animals can cause many new BVD-PI calves to be born in the herd. In BVD-PI cattle the virus is shed in all secretions—the saliva, urine, tears, milk, and semen. BVD-PI bulls are particularly troublesome as they are with the cow herd at a critical time of the year and can cause reproductive losses and/or many BVD-PI calves to be born. It would represent significant progress in BVD control if all purchased cattle (bulls, heifers, and cows) were BVD-PI negative.

What are the disadvantages of a voluntary BVD control program?

It will obviously require some recordkeeping, probably require individual animal identification, and some expense for testing. The testing is quite accurate with the new techniques and this would not create additional difficulty. Because BVD can always come into a herd, across the fence, etc., it is doubtful that yearly testing of calves to remain "certified BVD free" could be eliminated or postponed.

Won't a good vaccination program eliminate BVD?

The direct answer is NO! Because this virus is continually mutating and because BVD-PI cattle can spread the virus far and wide, vaccination alone will not eliminate the threat of BVD. An aggressive vaccination program is necessary, but the identification and culling of BVD-PI cattle is also necessary.

How can I prevent the introduction of PI cattle into my herd?

The old saying, "Good fences make good neighbors" is an appropriate guideline to answer this question. Avoid having your pregnant cows (particularly cows less than 4 months pregnant) come into contact with cattle from outside your herd. The stocker calves that use winter range adjacent to a spring calving herd can be a very high-risk situation. Have all new bulls and replacement females tested for PI status.

What samples are needed for these tests?

The two most common tests require either a skin sample or a serum sample. The skin sample is usually taken from the ear. The serum sample is derived from a blood

sample that is allowed to clot, spun in a centrifuge and the clear serum is collected with a disposable pipette.

How are the samples taken from the animal and processed?

The skin samples are best taken from the edge of the ear (where there is an abundance of small blood vessels) with an ear-notching tool. These are the common ear notch instruments used for pigs. These ear-notching tools take a triangular notch. The triangular notch should be ¼ to ½ inches per side. Depending on the laboratory you plan on using, the ear notch sample is either put into a vial containing formalin or into an individual plastic bag. Both types of sample containers must be clearly labeled with the animal's identification number with indelible ink. The serum samples are derived from a blood sample that is allowed to clot and then spun down at high speed in a centrifuge. The clear, straw-colored fluid (serum) at the top of the clot is carefully collected and placed into a separate vial. Again, this vial must be labeled with the animal's ID number. In most cases, your veterinarian will take the blood for serum samples and process those in the laboratory. For the ear notch samples your veterinarian can easily show you how to take the samples and handle them. If you put the ear notches in formalin it is very important that you handle this material safely as it can be very dangerous if inhaled or if it comes into contact with your eyes or skin. Also, the ear-notching instrument should be cleaned and disinfected between animals.

Are there other important things to remember when handling these samples?

All sample containers must be clearly labeled with an individual animal ID number. The sample ID's must match the paper work and the samples and paperwork must be written with ink that does not run. For refrigerated samples, ship on gel-type, frozen bags not on ice cubes.

Where do these samples go and what is the cost?

The samples can go to any one of the three laboratories listed below. Some general costs and considerations are listed for each laboratory. Each lab wants a certain type of sample submitted for their specific test method. If you submit the wrong type of sample to the lab, all your work in collecting the sample may be wasted. Make sure you or your veterinarian calls ahead to be sure of the details for submitting the samples.

1. Tulare branch of the California Animal Health & Food Safety Laboratory (CAHFS)

**CAHFS-Tulare
18830 Road 112
Tulare, CA 93274**

**Phone (559) 688-7543
Fax (559) 686-4231**

***Sample description:* Ear notch (triangle notch ¼ to ½ inch per side) in zip lock bag (or whirl pack bag). Refrigerated—not frozen. Ship overnight (not for Saturday arrival).**

***Technique:* Immunohistochemistry.**

Cost: \$12.00 for first 3 samples, i.e. \$4.00 for each additional sample. Additional one time accession fee is also charged.

2. University of Nebraska, Lincoln, NE

**Veterinary Diagnostic Center
University of Nebraska
Fair Street and East Campus Loop
P. O. Box 82646
Lincoln, NE 68501-2646**

**Phone (402) 472-1434
Fax (402) 472-3094**

Sample description: **Ear notch (triangle notch ¼ to ½ inch per side) in neutral-buffered formalin. Leak proof tubes are mandatory for containers. Do not hold skin samples in formalin for more than 7 days prior to submission.**

Technique: **Immunohistochemistry.**

Cost: **Accession fee: \$7.00 per each shipment (submission). First sample: \$12.00. Two (2) to 6 samples: \$20.00, multiples of 6: \$20.00/six samples.**

3. Davis branch of CAHFS.

**CAHFS-Davis
University of California, Davis
West Health Sciences Drive
Davis, CA**

**Phone (530) 752-7578
Fax (530) 752-6253**

Sample description: **serum, freshly centrifuged and refrigerated (not frozen). Ship in leak proof containers on ice bags (gel bags).**

Technique: **PCR.**

Cost: **\$15.05 for the first 3 samples, \$6.25 per each sample after the first. Additional one time accession fee is also charged.**

As the subject of a BVD control program is discussed, I hope this background information will be helpful. Share this with your veterinarian and think about the usefulness of BVD in your marketing and herd health programs.

John Maas, DVM, MS
Diplomate, ACVN & ACVIM
Extension Veterinarian
School of Veterinary Medicine, UC Davis