Industry Insight

Bovine Viral Diarrhea

A highly qualified panel discusses cattle persistently infected with bovine viral diarrhea.

Coordinated by Paulette Cochenour

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How aware are the cow-herd owners in your region of the risk/reward aspects of BVD-PI? What is being done to create awareness?

Under the direction of Dr. Jim Kennedy, Colorado has been active in a voluntary BVD control program for beef cattle for a several years. This has created awareness in our state and has provided baseline information on the incidence of BVD-PI animals to producers who participate in the voluntary program. In brief, the program involves three levels of evaluation and begins with a questionnaire to assist in determining the level of risk that BVD-PI animals are present in the herd. If producers progress through the testing phase and meet the needed criteria, they can become a certified BVD-free herd. See more information on the Colorado program at: http://www.dlab.colostate.edu/BVDControlProgram/bvdcontrolprog_main.cfm

From a seed stock producer's standpoint, how important are BVD-PI evaluations? From a bull buyer's standpoint, how important is the assurance that your seed stock supplier is BVD-PI free?

Our general understanding of BVD disease transmission has improved substantially over the past couple of years. While there are still a few areas of uncertainty, it is clear that identification and removal of persistently infected (PI) animals is central to eliminating the impact of the disease in a herd. Therefore, a key aspect of remaining BVD-PI free involves a strict biosecurity program that scrutinizes incoming animals. It simply makes good sense that seedstock animals be tested free of BVD-PI for sale by seedstock suppliers so that those who purchase these animals can have assurance they are not exposing their animals to BVD risks when bringing new animals into their herds.

What do you recommend that producers do to deal with BVD-PI?

First, they should evaluate their level of risk using some type of risk assessment tool. The Survey used in Level 1 of the Colorado Voluntary BVD Control Program is a great place to start. The questionnaire contains some brief background information on the herd and answers to 20 questions. The questionnaire is available at: http://tekki.cvmbs.colostate.edu/bvdcontrol/webform1.aspx After completing the questionnaire, an assessment of risk is provided by Dr. Kennedy's lab and the need for further testing is evaluated. If warranted, ear notches of all calves are collected and tested in a pooled analysis. If the pooled analysis indicates positive samples, further testing is done to identify the positive animals so that they can be removed from the herd. Identifying BVD-PI animals and removing them from the herd – when followed by a strict, whole-herd biosecurity program — has been shown to significantly reduce the impact of this disease in a beef herd.

What economic advantages are most apparent for those herds that become BVD-PI free?

This really is the question of the moment. Unfortunately, there does not appear to be clear, unbiased data to answer this question unequivocally. There certainly is much evidence that exposure to BVD-PI cattle in feedlots will cause greater incidence of both BVD and other diseases. There is also evidence that reproductive performance in a cow herd will be reduced if BVD-PI animals are present to cause further exposure to susceptible animals. However, it appears to me that the marketplace is still trying to determine the increased value of BVD-PI-free animals - both seedstock animals and feeder cattle. In the meantime, I think it is a wise strategy for seedstock suppliers to anticipate – and market the fact – that cattle that have been BVD-PI tested will have greater value than untested seedstock animals.

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Over the last few years nearly every trade magazine has published articles on BVD-PI, so exposure has been high, but awareness is more difficult to measure. Producers who participate in state-wide programs such as the New York Bull Test, NY Feedlot and Carcass Value Discovery Program and the Empire Heifer Development Program are familiar with BVD-PI due to program testing requirements. Those who purchase animals from these programs also have an awareness of the issue. A program sponsored by the NYS Department of Agriculture and Markets (NYSDAM), called NY State Cattle Health Assurance Program is built around several health modules. BVD is one module and there has been increased enrollment in this module over the last two years, indicating the producers interest in eradicating this disease.

The awareness of producers is actually quite variable, and is associated with, how involved they are in the industry, as well as how frequently they use or don't use a veterinarian. Those who sell breeding stock are increasingly aware of the risks associated with BVD-PI, while many smaller commercial producers are less so. A part of the ongoing efforts of increasing awareness includes focusing on continuing education of practitioners as well as surveillance studies evaluating the level of BVD-PI within the state of Iowa. Recently, Iowa State University, College of Veterinary Medicine, Department of Veterinary Diagnostic and Production Animal Medicine, conducted a telephone survey of producers. The first goal was to evaluate both their understanding of risk/rewards associated with BVD persistent infection or testing for BVD-PI animals, and the second was to determine what changes those producers who had positive animals identified and the changes these producers made in biosecurity, vaccination protocols etc.

While testing for BVD-PI is not mandated by NYSDAM, most programs that evaluate and merchandise breeding stock run diagnostic tests on participating cattle. Therefore, private and public sponsors of bull tests and heifer development programs recognize the value of a BVD-PI negative animal.

BVD-PI is important to the seed stock producer for two reasons. First, there is a risk to the health of the fetus, and calves in herds with BVD-PI. Abortions, infertility, and sick calves are obvious direct costs. The risk of disease associated with BVD, depends on the size and management of the operation, biosecurity techniques, vaccination protocols, and other health issues which may or may not be present in the herd. The second major area of importance is the health and BVD-PI status of seed stock sales. One thing is certain, however a premium for BVD-PI negative seed stock, can and will be paid in many places.

Now that BVD-PI tests are economical, I recommend that all new animals to a cow/calf operation be purchased through programs that offer BVD-PI testing, or that they isolate purchased animals and test before turning in with the herd. Any BVD-PI positive animal should be sold for slaughter or euthanized. If a cow/calf herd has a documented incidence of BVD or any reproductive or health issues that might be related to BVD, the producer should work with their veterinarian to develop a strategy to detect and remove all PIs, and then test replacements and use vaccination and biosecurity to prevent re-introduction. Some herds may recognize an economic advantage to screening their herds in the absence of any problems, in order to take advantage of BVD test-negative marketing opportunities.

First, if you don't have it, then manage, so you don't have to deal with it. The best thing that producers can do to deal with BVD-PI, is to practice good biosecurity and management procedures so they don't have to deal with BVD-PI. Vaccination and monitoring protocols developed with the aid of a veterinarian can be effective preventatives. When faced with a turn of events where, BVD infection is active in their herd, producers should meet with their veterinarian, and review their production goals, current exposure risks, to devise appropriate measures to deal with the issue. Control and elimination strategies for BVD, need to be tailored to the individual production system, and are a part of the overall biosecurity for the operation. There is not a single best answer for BVD, since each producer and herd, has different objectives and constraints. This emphasizes the need to communicate with a team of knowledgeable individuals when faced with decisions for BVD control and elimination.

The economic advantages we see for cow/calf producers are more consistent reproduction once BVD is eliminated. A big beef industry study has shown that, overall, one could expect about 5% fewer live calves born in herds with a BVD PI present during the breeding season. In addition, one can protect against the less common major BVD wreck. The Cornell Veterinary Diagnostic lab recently reported a case of a 100 cow operation that ended up with death losses around weaning and euthanized about 14 more calves on the premises that tested as PIs. There may also be premiums paid for test-negative animals, or additional marketing opportunities, not available to untested cattle.

There can be a number of different economic advantages to improving herd health status and biosecurity. Being free of BVD-PI usually corresponds to increased dollars for calves, and almost always correlates with an overall reduction in disease incidence within the herd. Seed stock and cow-calf producers should look at BVD-PI control as an investment in their herd health status, not an expense. Larson et al, showed an economic study that cost of BVD persistent infection was between $15-20.16 per cow. Obviously following a solid herd health management program that includes solid common sense biosecurity measures has the potential to save producers money.

(Industry Insight continues on page 20)

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(Continued from page 17)

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How aware are the cow-herd owners in your region of the risk/reward aspects of BVD-PI? What is being done to create awareness?

BVD-PI screening should be part of a program involving good vaccination, biosecurity and overall herd health management. The Montana BVD-PI Herd Screening Project is being initiated to improve the overall health of Montana's cow herd and add value to the state's calf crop. The project provides technical assistance and limited financial support to Montana seed stock and commercial ranchers who want to screen their herds for persistent infection (PI) with bovine viral diarrhea (BVD) virus. The focus of this project is to assist ranchers in adopting biosecurity practices that will prevent transmission of BVD virus from PI animals to cattle breeding herds. In 2007 nearly 400 Montana ranchers will screen more than 100,000 head of commercial and purebred calves, replacement heifers and breeding bulls. Last year, 65 ranchers screened 38,500 head of cattle through the project. Through this effort, hundreds more Montana ranchers are becoming aware that an accepted biosecurity plan is an integral part of preventing transmission of the BVD virus and overall disease control. Biosecurity addresses all aspects of livestock movement, health management, record keeping and planning. BVD-PI screening should be part of a program involving good vaccination, biosecurity and overall herd health management.

From a seed stock producer's standpoint, how important are BVD-PI evaluations? From a bull buyer's standpoint, how important is the assurance that your seed stock supplier is BVD-PI free?

First, we hesitate to use the word "BVD-PI Free" in the context of a BVD-PI marketing guarantee. No tissue sampling procedure, no analytical test and no reporting/identification system should be considered perfect or free from error. Rather, we prefer to say an animal is "PI-screened negative" — providing the industry a reasonable assurance the animal identified as such is not BVD-PI. Second, a PI-negative animal can at any time become transiently infected with the BVD virus. This is the reason we do not recommend using "BVD-free" terminology in a marketing statement. Third, while vaccination programs are an essential part of a BVD virus management program, vaccination certainly does not guarantee a BVD-free herd. The sale of BVD-PI-negative breeding stock should be the standard of all seedstock producers.The worst case scenario for BVD virus exposure is to introduce a PI bull or PI heifer into a breeding herd. We are recommending to all cattle producers that every replacement animal — purebred or otherwise — is screened and identified as PI-negative before entering their home breeding herd.

What do you recommend that producers do to deal with BVD-PI?

The screening process used in our project is based on analysis through reverse transcriptase polymerase chain reaction (PCR) technology using pooled animal tissue samples. We are including 28 or fewer "ear-notch" tissue samples per pool. If the BVD virus is detected in the pool the individual tissue samples making up the pool are tested using the Antigen Capture ELISA method. Thus, we can determine the individual tissue sample(s) contributing BVD virus to the pool. Once an animal is identified as a carrier of the virus, the livestock owner/manager will be notified. We suggest the animal (and its dam, if still nursing) be segregated from the herd and held for re-sampling 3-4 weeks later and for a "re-test" in order to be sure and identify transiently infected animals from PI animals. If the second sample is positive for the virus, the producer can be reasonably assured that the animal is PI-positive. In the case of an extremely valuable animal, a third sampling may be warranted. In most cases, we recommend PI animals be humanly euthanasized in order to eliminate the possibility of the animal entering commerce. The disease has no human health implications and meat from BVD virus infected cattle is no threat to the beef consumer.

What economic advantages are most apparent for those herds that become BVD-PI free?

The cost of at least one BVD-PI animal in a commercial beef herd has been reported to range from $14-$24 per cow per year. The costs escalate once PI calves leave the ranch and end up in a feedlot. The BVD-PI calf that exposes its feedlot pen mates to massive amounts of BVD virus on a daily basis creates economic chaos for the feedlot operator. Kansas feedyard research indicates exposure from a PI costs $47/head for every animal in the feedyard. The managers of the Montana BVD-PI Herd Screening Project say the first reason to screen herds for BVD-PIs should be for herd health purposes. But price discovery for PI-negative cattle is beginning to emerge. We think today that "PI-negative" commercial feeder calves at weaning deserve at least a 4¢ per pound pricing advantage. This is not a bad return for a screening process that can be conducted for less than $2 per head plus sampling labor and supplies. For more information, contact Clint Peck at cpeck@montana.edu or 406-896-9068. ◆