



Repro Tracks

► by **Bill Beal**, beef cattle reproductive physiologist, Virginia Tech

BVD surveillance of purchased commercial heifers

Purchasing commercial heifers to use as embryo transfer (ET) recipients is a fairly common practice. Purchased heifers introduced to a herd should have received recommended preweaning vaccinations and be tested for persistent infection (PI) with BVD (bovine viral diarrhea). The risks posed by introducing a heifer with confirmed BVD-PI depend on the herd health program of the resident herd and the reproductive status of the cows in the herd.

Breeder question No. 1

Earlier this month (May) I purchased 60 Angus × Hereford commercial heifers weighing 700 pounds (lb.) from a large ranch in Oklahoma. After grazing them for the summer, I intend to use them as ET recipients this fall. The heifers were 13 months old when they arrived, and I had them tested for persistent infection (PI) with BVD. One heifer tested positive for BVD-PI. What are my options for dealing with this heifer?

Response: Calves persistently infected with BVD are infected with BVD virus between days 50 and 120 of pregnancy. Once their dam contracts the virus, it spreads to the fetus through the placenta. During the first trimester of pregnancy the immune system of the fetus identifies “self” and “non-self” proteins. Because the proteins on the surface of the BVD virus are present and perceived as “self” proteins, the calf infected in utero never develops antibodies to BVD. Hence, the calf becomes a lifetime carrier (and shedder) of the virus.

The BVD-PI heifer you own is shedding large amounts of BVD virus in her secretions (nasal discharge, saliva, tears) and excretions (feces and urine). The virus can be readily transmitted to susceptible herd mates by ingestion or inhalation, and by contact with non-living sources that harbor the virus, such as boots and vehicles.

The ethically correct way to deal with a confirmed BVD-PI animal is by euthanasia or by selling the animal for immediate slaughter (there is no human health risk). Some feedlots are prepared to isolate and feed BVD-PI cattle, but most don't want to touch them. Your best option is immediate slaughter or disposal. Most importantly, don't take the heifer to an auction barn and sell the problem to someone else.

A second important action I suggest is to contact the ranch where you purchased the heifers and alert them to the BVD-PI status of the infected heifer. They may be willing to reimburse you for losses and should be anxious to learn about the potential BVD problem in their herd.

The dam of the BVD-PI heifer should be tested for BVD-PI status. There is a small chance (approximately 10%) that the cow is also BVD-PI and should be culled. Cows with BVD-PI calves that are not BVD-PI need not be culled, but the existence of a BVD-PI calf should indicate to the herd owner that there may be a BVD-PI carrier somewhere in the herd. This won't be welcome news, but it should be enough to cause the ranch to initiate a BVD surveillance program.

Breeder question No. 2

I have kept the purchased heifers isolated from my pregnant cows. However, is there any chance that the virus transmitted from the confirmed BVD-PI heifer will cause my cows to abort or to have calves persistently infected with BVD?

Response: Isolation and slaughter of the heifer confirmed as a “PI calf” was the correct strategy. Even though the heifer is isolated from your cow herd, there is still a risk that the virus shed could be carried to the cows via contact with vehicles, equipment or boots and clothing of workers on the ranch.

There are two important factors working in your favor to reduce the risk of BVD-induced abortion or the development of a “PI calf” in your herd: 1) in the past, you have consistently vaccinated your cows and replacement heifers for BVD prior to breeding each year; and 2) if your pregnant cows (bred last winter with expected calving in fall) happen to be exposed to the BVD

virus shed from the BVD-PI heifer, they are well past the first 120 days of pregnancy when exposure would cause a “PI calf” to develop in utero.

Your program of annual vaccinations for BVD with a modified-live virus (MLV) vaccine prior to breeding should protect your cows from contracting BVD, even if there is exposure to the virus.

Furthermore, because your cows were bred between November and the end of January, they should all have been more than 120 days pregnant when the confirmed BVD-PI heifer arrived. This put the developing fetuses beyond the time when the immune system had recognized “self” and “non-self” proteins. Therefore, after birth the calves should not be persistently infected carriers of BVD.

Breeder question No. 3

My final question is when I use these heifers as ET recipients whether I should expect them to achieve a pregnancy rate similar to those of older cows that have had a calf before?

Response: I found two sources of data comparing the pregnancy rates recorded after using beef cows or heifers as recipients. Data were collected at Virginia Tech after purchasing weaned heifers to use as recipients the next year vs. purchasing pregnant cows that were used as recipients 60 to 90 days after they calved. Both groups received Grade 1 or 2 frozen embryos. The pregnancy rate for the cows used as recipients, 61.2% (30 of 49), was slightly higher than the pregnancy rate for heifers, 57.4% (58 of 101).

However, in 2001 John Hasler reported that the pregnancy rate after transferring frozen embryos to beef heifers, 60% (151 of 252), was slightly higher than that in cows, 58.6% (270 of 461). Bottom line, it looks like the pregnancy rates with either purchased cows or heifers will be satisfactory as long as the heifers are well-developed and the cows are in optimal body condition after calving.

Editor's Note: Bill Beal is a beef cattle reproductive physiologist at Virginia Tech. He conducts research involving estrus synchronization, artificial insemination, ET and the use of ultrasound technology. This column is designed to provide answers to questions about reproductive management commonly posed by commercial and purebred breeders. If you have questions or comments related to the reproductive management of cows or bulls, e-mail them to Beal at wbeal@vt.edu or mail them to him at the Dept. of Animal & Poultry Sciences, Virginia Tech, Blacksburg, VA 24061-0306.