

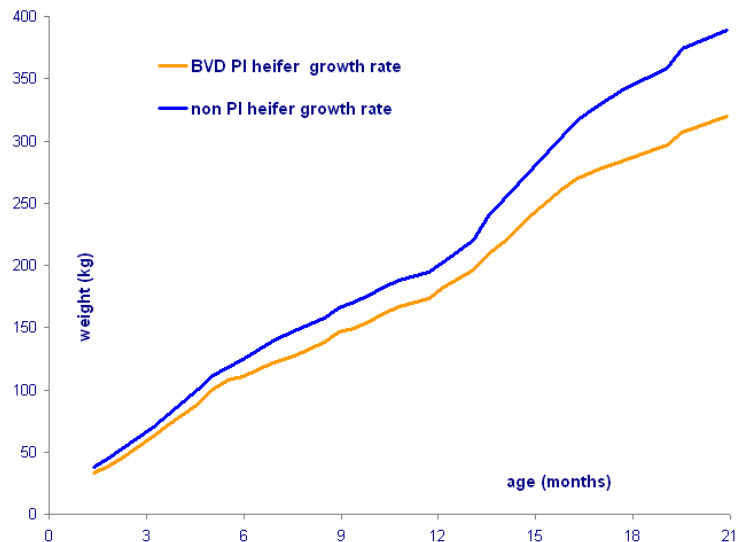
PERSISTENTLY INFECTED BVD CALVES ARE UNHEALTHY, INEFFICIENT AND EXPENSIVE

Poor growth

BVD (bovine viral diarrhoea) virus can cause significant damage to cattle health, fertility and productivity. Generally BVD infection of a healthy cattle beast has only short-term impacts except during pregnancy. If a pregnant cow becomes infected, BVD may result in repeat breeding, abortions, stillbirths or deformed calves. BVD infection during the first half of pregnancy may also result in the birth of live calves that remain persistently infected (PI) with BVD virus throughout their lives. These PI calves have poor immunity and are often ill-thrifty. They are prone to mucosal disease – a highly virulent and fatal form of BVD. However, a proportion of BVD-carrier PI calves look like normal, healthy animals. Besides the impact of spreading vast amounts of virus to susceptible cattle, it is difficult to quantify the impact of the persistent BVD infection on the health of these normal-looking PI individuals.

We had the opportunity to study the effects of 'being a PI BVD virus carrier' in a trial dairy herd made up of calves purchased from over 300 commercial herds. Retrospective testing revealed that 12 of 904 reared heifers were persistently infected (PI status) with BVD virus although they appeared to be normal and 'healthy'. Five of the PIs were obtained from a single herd with a BVD outbreak. Genetically, the heifers were closely related with similar ancestry breeding values¹ for liveweight and production.

At 3 weeks, the PI carriers weighed on average 3½ kg less than the remaining herd mates. By 21 months the difference between the surviving heifers had increased to 68 kg with average PI weights 17% lower than normal heifers.



The BVD PI (virus carrier) calves were 68 kg lighter than the 'normal' heifers in the mob at 21 months

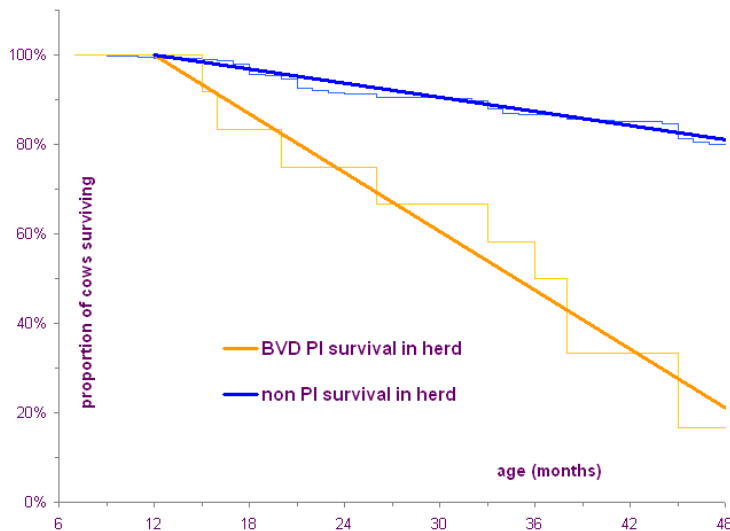
Impaired health

Several of the PI animals suffered bouts of pneumonia; recurrent mastitis and other infections were common. In several cases the illness led to the death of the animal or resulted in culling after failed attempts to treat the infections.

Reduced survival

Two BVD-carrier PI heifers died at 15-16 months – one of bloat complications, the other with mucosal disease. A third PI was culled after aborting (and ill-thrift) at 20 months. The remaining nine heifers calved and entered the milking herd. However, only a single PI cow (8%) remains alive at this stage (after 4-5 years), having survived two bouts of pneumonia. In contrast, 71% of the normal herd mates are still milking.

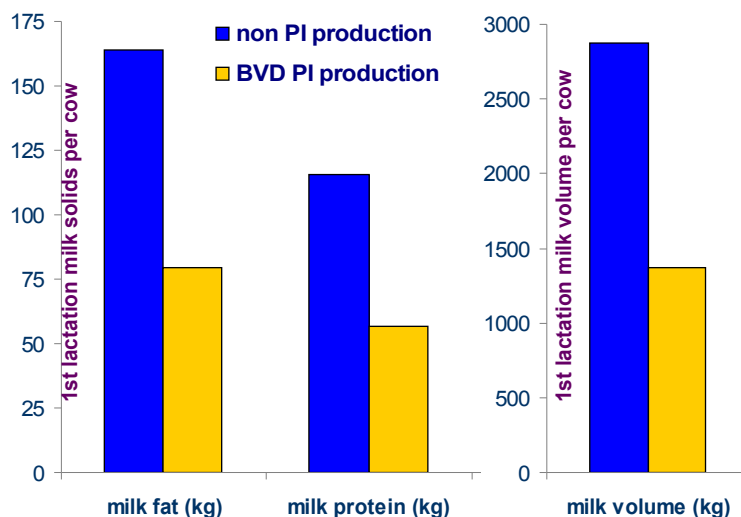
Because the herd was involved in an unrelated trial, no culling was carried out for low production. PI virus carriers were 13 times as likely to die unexpectedly of severe illness than normal cows. They were also 17 times more likely to be culled for unresolved mastitis complications than the remaining cows.



The proportion of PI heifers (BVD virus carriers) surviving to any given age was much lower than the survival of 'normal' non-BVD stock

Depressed milk production

Based on ancestry breeding values¹ the average milk production from the BVD-carrier PI individuals should be equivalent to the normal non-PI herd mates. However, first lactation milk-fat, protein and volume output were massively reduced in BVD-carrier PIs. Milk solids production was essentially halved.



Average first lactation production of the BVD-carrier PIs was 50% of the 'normal' non-BVD cows

Discussion

Five BVD PI heifer calves were purchased from a single herd, suggesting that the herd of origin had experienced a BVD outbreak during or after mating. Using an untested bull in a susceptible herd is a recipe for disaster. If the bull is a BVD virus shedding PI, the result may be abortion storms and BVD PI calf crops. It is therefore imperative that bulls (and other cattle) be tested for BVD virus before they enter a herd.

Growth rates and general health of these 'normal' PI heifers were clearly compromised. First lactation milk production was halved as a result of persistent BVD infection. Poorly functioning immunity meant that these animals were highly susceptible to other infections including pneumonia. Survival of the BVD-carrier PIs was also several years less than non-PI; although these 12 PI cows produced 10 calves in total. Since all offspring of PI cows will also be persistently infected with BVD virus, they continue to spread the virus resulting in subfertility, abortions, ill-health etc amongst in-contact cattle.

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¹ Ancestry breeding value (liveweight or production): Based on parentage information, expected difference in live weight (kg) or milk production (kg per lactation) compared to an average mature 'base' cow born in 1985