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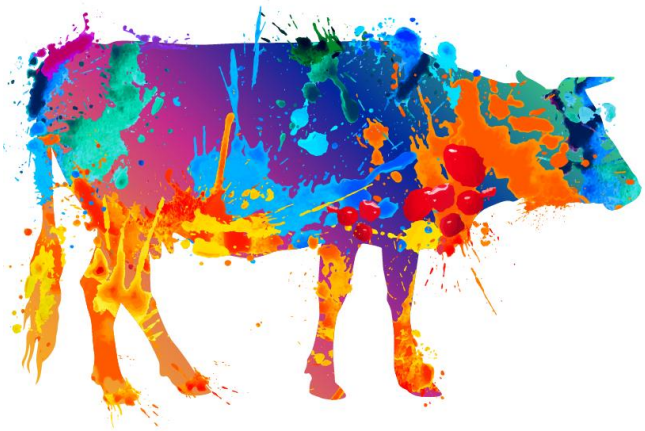
# Bovine Viral Diarrhoea is costing NZ dairy farmers $127 million, so what are we doing about it?

Bovine viral diarrhoea (BVD) is one of the most economically significant viral diseases of cattle in New Zealand. In 2019 DairyNZ estimated the annual BVD-related losses for dairy farmers at $127 million, equating to approximately $70,000 for an average-sized infected herd of 431. That's an average of $162 per cow

## What do we know about BVD?

BVD is a *Pestivirus* hat primarily affects cattle. Reports have shown that due to the BVD virus's ability to spread rapidly, it's estimated that about 80% of New Zealand's dairy and beef herds have been exposed (DairyNZ, 2019).



Three types of infection can result from the disease: acute (transient), fetal and persistent. A first-time exposure to the virus in naïve, susceptible animals results in transiently infected animals that shed low levels of the virus. Infected dams will be at risk of causing fetal infections due to the virus's transmission across the placenta. When fetal infection occurs before the development of a fully functioning immune system, persistently infected (PI) cattle are born. A PI calf will always carry the BVD virus and will never generate antibodies (proteins produced by the immune system to fight foreign invaders) specific to the virus due to its immune system not recognising the virus as 'foreign' at the time of infection. PI cattle are the leading cause of new acute and foetal infections due to their shedding of enormous amounts of the virus via all body fluids (Reichel et al., 2018). Current estimates place the prevalence of PI animals in BVD-infected herds in New Zealand at less than two per cent (Cuttance and Cuttance, 2014). Therefore, identifying and appropriately managing PI animals is the primary focus of BVD control programmes.

## Economic impacts of BVD

BVD in cattle can cause infertility, abortion, reduced milk production, increase susceptibility to Bovine respiratory disease and other illnesses, increased calf deaths and increased congenital defects. All of this negatively impacts production and increases economic loss. Many studies around the world have quantified the detrimental impacts that BVD can have on-farm productivity, and the national economy. Studies in 2006 and 2007 demonstrated the high cost of BVD to the NZ dairy industry. The 2006 study estimated that there was annual loss of $71.5 to the dairy industry (Compton et al., 2006). While the 2007 study estimated an annual loss of $52.8 million. Now that costs have risen to $127 million, it is now time to act.

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## Why it is essential to test newborn calves and how to do it

As the effects of BVD can look similar to those of other diseases, knowing your BVD status is crucial in the fight to achieve control. Comprehensive diagnostic testing plans are fundamental to making informed decisions on controlling and preventing the spread of the BVD virus. This has been proven in the successful regional and national BVD eradication programmes of Germany, Scandinavia and Switzerland (Han et al., 2018).

BVD control consists of two critical mechanisms that, together, break the within-herd transmission cycle: the **early identification and removal of PI animals**; and **strict herd biosecurity** to prevent the reintroduction of the BVD virus from outside sources (Han et al., 2018). Detecting PI animals is and should remain, the primary focus for farmers working to remove BVD from their properties. Previous studies have demonstrated that an ELISA test using a small bit of ear tissue (ear notch) is an accurate, economical and feasible way of detecting PI calves in New Zealand (Hill et al., 2007). A breakthrough 2019 research trial done by Cognosco Animal Health in New Zealand was designed to assess the sensitivity and specificity of ear notch samples of calves analysed using a specific antigen-ELISA (targeting the Erns structural unit of the virus) and real-time PCR testing at 4-time points after birth. Results demonstrated an economical breakthrough with Andrew MacPherson, IDEXX Medical Affairs Veterinarian quoted saying "we now have the perfect test to focus our efforts on identifying only PI animals (i.e. using the IDEXX antigen ELISA) thereby saving unnecessary culling of TI animals and enabling farmers to maximise their return on the calves born each year."

## So what now?

Today, BVD voluntary control in New Zealand is entirely achievable. A decision to adopt a simple and easily understood mechanism for testing every calf born represents a significant opportunity for the New Zealand dairy industry to control BVD voluntarily. Farmers' willingness to test all calves to identify PI animals, then remove them from their farms, combined with improved biosecurity, will deliver economic benefits for all farmers and lead to significant improvements in New Zealand's BVD status.

To motivate change, it's crucial to have a determined community effort that encourages all farmers to get on board for the benefit of their farms, the community, the region and the country.


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