



Can New Zealand eradicate the Bovine Viral Diarrhoea virus?

Sandra Forsyth of SVS Laboratories sees plenty of challenges ahead in eradicating a destructive and expensive disease.

BVD SUGGESTS DIARRHOEA, dehydration and weight loss, but in reality BVD stealthily debilitates the immune system, reducing fertility, causing abortion, lowering milk production, encouraging mastitis, weakening calves and diminishing live weight gain. The virus deceives the unwary into believing it is anything but BVD. However, there are

those who recognise how significantly it compromises animal health and welfare and reduces farm profitability. Many countries, particularly European nations, have eradicated or are in the process of eradicating the virus. Those that have succeeded look at those that have not as potential sources of infection. A point may be reached where products from

a nation that has BVD will carry such a stigma that they are refused entry to virus-free markets. It may not make patho-aetiological sense, but it could make for a good marketing strategy.

So is it time to consider eradicating BVD from New Zealand? And is it possible with current resources?

Eradication programmes in Europe vary considerably. Some countries have voluntary schemes, whereas others have compulsory programmes; some have user pays, others are heavily government subsidised. Unsurprisingly, those that are compulsory and subsidised are generally effective, whereas those that are voluntary and have user-pays systems do not make headway at the same rate. Consequently, several countries that started with voluntary programmes have moved to compulsory testing in order to progress.

The question has arisen as to why voluntary programmes have been less effective when there is clear evidence that BVD-infected farms have lower incomes and the welfare of stock is compromised. A UK study (Heffernan et al., 2016) asked

this question of farmers and found several factors contributing to the mediocre uptake of schemes. These included that ownership of the problem was not readily taken up (ie 'I' don't have a problem, or 'we' as a collective group don't have a problem), and opposition to user-pays policies. Additionally, 20%-30% of farmers stated that they perceived no economic benefit in controlling the disease. The study found that farmers overall supported greater regulation, believing that otherwise there would always be recalcitrant members.

Yet even when schemes are compulsory, some factors impede progress. Three years into a mandatory control programme in Germany, it was determined that veterinary recommendations were not consistently adhered to after the discovery of a persistently infected animal (PI) or the declaring of a farm as BVD-free. For example, rather than immediate removal, a PI animal might remain on a farm for weeks to months, and there was evidence of contact between tested and non-tested animals and other deficits in security measures (Schirrneier, 2014).

There could well be the same diverse opinions among New Zealand farmers as to the personal effects of BVD, their willingness to control the disease and the enthusiasm with which veterinary recommendations are followed.

New Zealand has a voluntary and user-pays scheme, which makes it more difficult to control the disease. Consequently, to get the greatest number of farmers on board, a control programme must be cost-efficient and must be seen to be doing something rather than simple 'monitoring'.

The dissemination of accurate information is vital for getting people to buy in to a voluntary system. Schemes based on sound education and advice to the farming community have been the basis of effective voluntary eradication programmes in some regions of the US.

Perhaps New Zealand veterinarians need to raise awareness again of BVD and appropriately guide and inform farmers

ERADICATION PROGRAMMES IN EUROPE VARY CONSIDERABLY. SOME COUNTRIES HAVE VOLUNTARY SCHEMES, WHEREAS OTHERS HAVE COMPULSORY PROGRAMMES; SOME HAVE USER PAYS, OTHERS ARE HEAVILY GOVERNMENT SUBSIDISED.

on how to get the most cost-effective and useful testing programme on their farms.

Currently, inaccurate information hinders even those who diligently test their dairy herds. For instance, there appears to be a widespread misconception that PI calves come only or predominantly from PI cows within the herd. Consequently, the monitoring of bulk tank milk is considered adequate for an overarching picture of BVD status on a property. However, data from various studies shows that 90% of PI calves come from cows transiently infected during that vulnerable period of their pregnancy.

In countries that have BVD eradication programmes, the testing of calves is mandatory and the removal of PI animals is compulsory or strongly recommended, depending on the particular policies of the countries.

Perhaps New Zealand should be looking at testing more young stock in order to come to grips with BVD. Ireland tests the ear notches of all newborn calves (up to 20 days of age, with a 'soon as they are dry' policy recommended), including aborted and stillborn animals. In contrast, Germany tests calves at any time within the first six months of their lives.

The advantage of testing very young animals is that PIs can be removed before they consume time and resources. If it is determined that early testing is best for the New Zealand situation, then current testing for the BVD antigen may need to be reassessed, because ELISA antigen assays face the potential problem of maternal antibody interfering with antigen testing in PI calves under 35 days of age.

Fortunately, this is much less of a problem with PCR, and blood or ear notch testing of calves could be carried out from the first days to weeks using this methodology.

If New Zealand eradicated the BVD virus, what then? Constant surveillance and the associated costs would markedly reduce. However, the need to test all imported bovine embryos, semen and live animals would be paramount, because immunity to the virus in the New Zealand herd would be low to non-existent.

In summary, the control and eradication of BVD is fraught with difficulties on a number of fronts. There is a lack of awareness of the immunosuppressive qualities of BVD, perpetuating the misconception that 'other' diseases are the cause of poor production. There is also the mistaken belief that PI calves arise only from PI cows. Additionally, there is the perception that BVD isn't as significant as it is made out to be, and there may be the cynical attitude that BVD testing has become a nice little earner without it necessarily being effective.

We could start by examining current monitoring/control schemes to see if they are achieving their goals, and also look seriously at testing calves if we are to control or eradicate the virus. ¹⁶

REFERENCES:

- Heffernan C, Azbel-Jackson L, Brownlie J, Gunn G.** Farmer attitudes and livestock disease: exploring citizenship behaviour and peer monitoring across two BVD control schemes in the UK. *PLOS ONE*. dx.doi.org/10.1371/journal.pone.0152295, 29 March, 2016
- Schirrneier H.** Three years of mandatory BVD control in Germany – lessons to be learned. *Proc XXVIII World Buiatrics Congress*. Pp 245-8, 2014