

## BOVINE VIRUS DIARRHOEA - BVD

BVD is a complicated and economically very important disease. It is a virus disease that infects cattle, sheep, deer and goats. It is present on 80-90% of NZ farms with approximately 60% of cattle having been exposed to it at some time.

The virus is spread in all body fluids including saliva, tears, nasal discharge, semen, urine and faeces. Close contact with other animals is required for transmission. Incubation period is about 1-3 weeks. The virus only lives a short time in the environment. BVD affects both young and adult stock.

In young cattle usually 3-12 months of age symptoms include,

- scouring
- ulcers in the mouth with dribbling from the mouth
- ulcers between the toes causing lameness
- coughing
- nasal and eye discharge
- rough coat,
- reduced appetite with nil or poor weight gain and loss in body condition.
- some animals will be sub clinically affected and not show symptoms except reduced weight gain.

BVD in young stock is frequently not diagnosed; because symptoms can be similar to parasitism, with farmers thinking their stock have worms therefore drench them without getting a diagnosis. As a lot of stock are recovering a month after getting infected, farmers get the false impression that their stock have responded to a drench when in fact they have not had worms at all.

In adult breeding cows the disease can cause huge economic reproductive wastage, the costs of which are often hidden and difficult to calculate. Effects include

- reduced conception rates
- increased number of long returns
- spread calving pattern
- high empty rates
- abortions fresh or mummified
- calf losses around calving from
  - .. premature births
  - .. still births
  - .. weak/dummy calves
  - .. birth defects
  - .. carrier animals

Reproductive wastage occurs when a heifer or cow becomes exposed to the virus for the first time when it is pregnant. The effect seen depends on the stage of pregnancy the cow is infected at i.e.

Day 10-30 Early embryo loss with reduced conception rate.

Day 30-125 Apparently normal calves may be born which are persistently infected with virus. These are known as PI animals or 'carriers'

and they never develop immunity and shed virus continuously for the rest of their lives representing a constant source of infection.

Day 30-180 May cause abortions or mummified fetuses.

Day 100-150 May cause abnormal calves to be born e.g. hydrocephalus, cataracts, cleft palate, bent legs etc.

From Day 180 Usually no effect with these calves born with good immunity. Carrier animals often don't survive full term and abort. Others are born weak and die at or soon after birth. Those that survive are often stunted and don't thrive invariably dying from a disease called mucosal disease later on. Those that do survive and get in calf will always give birth to another 'carrier' animal, which perpetuates the disease in the herd.

Diagnosis can be made on a blood test or skin or isolating the virus from tissues particularly the spleen of a dead animal. A milk test is available that will diagnose what the level of infection is within a herd of dairy cows; this information can then be used to initiate the best control programme. On a blood test either BVD antibody or BVD virus antigen can be identified. Animals that have been infected and that have developed immunity will be positive for antibody and negative for antigen. A 'PI carrier' negative for antibody but positive to antigen.

Control of the disease requires Veterinary assistance because of the complicated nature of the disease.

A few simple rules can help for a start;

.. Any animal that you suspect of being a 'carrier' should be blood tested and culled if found to be positive immediately.

.. Known or possible 'carriers' must be kept away from anything in calf or about to go to the bull.

.. All breeding bulls used on the farm must be blood test -ve for BVD antigen. All brought in bulls onto the farm must be quarantined for at least 3 weeks then blood tested negative before introduction to the herd. The introduction of a 'carrier' bull to the herd at mating is a not an uncommon way for the virus to be introduced often with catastrophic consequences especially if a lot of the herd has not been exposed to the virus previously.

.. Don't use 'carrier' animals to immunise the herd. This is a dangerous practice, is not effective and will often result in a disaster.

The disease can be controlled by either whole herd blood testing and culling all carriers or by vaccination. Blood testing is expensive and not full proof especially if there is subsequent contact of 'clean' stock with infected stock whether they are bought in or are the neighbours. The virus is easily spread. Biosecurity is a big issue. If effective Biosecurity is not possible the best option at least initially will be to protect stock by vaccination

With a vaccination programme young stock need to be vaccinated twice from 3-4 months of age; a booster given 3-4 weeks later then an annual booster given prior to mating after that.

Some farmers will only need to protect their breeding stock. In this case 2 vaccinations are given prior to mating with an annual booster prior to mating if required after that.

In conclusion; it is essential that you get your vet involved with the diagnosis and developing a control programme. The control programme needs to be based on a cost benefit analysis, which can be done after getting information on what effect the virus has had on different classes and ages of stock on an individual farm. There can be wide ranging effects between farms necessitating different control programmes.

Farmers sending stock out to graze e.g. dairy heifers are strongly advised to get them vaccinated especially if they are going to be mixed with other stock. There is no guarantee that they won't come into contact with infected or 'carrier' animals. A booster vaccination prior to mating is also advisable in this case to guard against a BVD induced fertility problem.

Being a virus disease there is no effective antibiotic treatment that can be used to treat infected animals. Affected stock need to have access to plenty of good quality feed and water. Keep stress down to a minimum. Keep in sheltered paddocks. Most affected stock will recover in a month or so and the death rate will be low (less than 3%) provided they are well cared for.