

## BULK TANK MILK BVD PCR

Control of BVD is a long-lasting process. PI animals may be missed if laboratory monitoring is not implemented at a herd level. These animals shed a significant load of BVD throughout their entire life and they are the main source of infection. Removing PI animals from the herd is the most efficient method of controlling and preventing the disease from spreading.

Testing of milk from the bulk tank has been an accepted practice for many years<sup>1</sup>. With the advent of real-time polymerase chain reaction testing for BVD, sampling costs for Bulk Tank Milk are much less expensive. We can now test the whole herd or groups of calves by pooling individual samples for screening.

## BULK TANK MILK BVD PCR TEST RESULTS INTERPRETATION

The BVD PCR test is designed to detect strands of viral RNA. It does not distinguish between virus shed by persistently infected (PI) and transiently infected (TI) cows. Persistently infected (PI) cows shed large amounts of virus. Transiently infected cows generally excrete smaller amounts of virus, but this is dependent on the stage of infection.

Formerly it was considered that the chances of detecting a transiently infected animal in a bulk tank milk sample were very small, mainly because in large New Zealand herds, the relatively small amounts of virus excreted by TI cows would be diluted out by milk from the uninfected animals in the herd.

However, improved RNA extraction techniques have increased the sensitivity of the assay, and the BVD PCR test is able to detect even smaller amounts of viral RNA in the milk. Not surprisingly, we have found that TI animals may be detected by the bulk tank milk PCR.

The chances of a positive BVD bulk milk tank PCR occurring in response to the presence of a TI animal within the herd are increased if:

- 1) The herd is relatively small (for example, fewer than 200 animals)
- 2) There are multiple TI animals

It is impossible to know for certain whether a single bulk tank milk BVD PCR positive result is due to the presence of transiently or persistently infected animals. If these two conditions are or may be present, it is wise to consider the possibility that a positive BVD bulk tank milk PCR may be due to the presence of TI animal(s), before embarking on an expensive test and cull exercise to eliminate PIs.

If a subsequent (more than two weeks after the first one – but the longer time between tests, the better) bulk tank milk BVD PCR is negative, it demonstrates that the infection was transient (provided all the original cows remained in the milking herd). If a subsequent test is positive, it is more likely that a PI is present but does not rule out transient infection, as the infection may be passed from cow to cow within a single herd for many months. Monitoring bulk tank milk antibody levels at the same time as PCR testing does give a better idea of what is going on in the herd. Low bulk tank milk antibody levels indicate herd-level susceptibility to acute infection and thus an increased chance that any positive BVD PCR test is due to transient infection. If bulk tank milk antibodies are high, most cows have seroconverted due to transient infection, suggesting that they have previously been exposed to other TI or PI animals. Nevertheless, some animals will remain susceptible to transient infection.

Bulk tank milk BVD PCR remains a valuable tool to determine whether active BVD infection is present in a herd. This test may be at its most valuable in ruling out the presence of circulating BVD virus within the milking herd.

<sup>1</sup> Veterinary Microbiology 44 (1995) 77-92