

BVD testing (under 35 days old) - FAQ

How do you test animals for BVD if they are under 35 days old ?

Collect a tissue sample using a dry TSU, send it to us, and we will test for the presence of BVD virus using a PCR testing method. Alternatively, we can test a blood sample also using PCR. The turnaround time and price for both tissue and blood PCR is the same.

Why don't you test calves under 35 days old with the BVD Antigen ELISA?

Protective BVD antibodies are transferred from cows to calves via colostrum (maternal antibodies). Calves can have high levels of maternal antibodies circulating in their body for days to several weeks after birth, if they receive pooled colostrum or colostrum from their dam.

The job of these antibodies is to bind to the BVD virus, which can interfere with the Antigen ELISA process creating a false negative result. A false negative result means that a Persistently Infected (PI) animal may be missed when tested using Antigen ELISA. A research trial was carried out in 2011 which provided data to support this issue.

A total of 11 PI calves were sampled at various ages under 35 days old. PCR on serum samples gave a positive BVD result for all days tested for all 11 calves. The same animals tested with BVD antigen ELISA on serum and tissue punches, resulted in several animals being undetected when under 35 days of age. A false negative result. Due to this diagnostic gap LIC has always applied the rule that calves must be over 35 days of age before using BVD Ag ELISA. For more information on this trial refer to the BVD - under 35 days old booklet.

Why do maternal antibodies from the cow not affect the BVD tissue PCR?

PCR directly detects unique genetic material (RNA) from the BVD virus. The presence of any maternal antibodies has no effect on this detection. In contrast, Antigen ELISA uses a special antibody-based capture system to detect proteins on the surface of the virus, which is why the maternal antibodies present in the calf can interfere with this test and cause false negative results.

Why do I have to use dry tissue sampling units if I want to do BVD tissue PCR?

The liquid preservative that is currently included in the Allflex wet TSU is not compatible with the PCR test. The test will not work if the tissue has been in contact with this liquid. Allflex and LIC are currently investigating an alternative liquid preservative that is compatible with PCR.

Can you distinguish between Persistently Infected (PI) and Transiently Infected (TI) animals using BVD PCR testing?

The results from our validation trials have allowed us to set PCR test thresholds which distinguish between animals that are likely to be a PI versus TI. The categories for BVD tissue PCR include the following, and are included on all results reports you receive:

High Positive: If High positive you may choose to cull based on a single test result, as there is a high chance animal's will be a PI. Alternatively, you may choose to confirm PI status by collecting and testing another sample 4 weeks later.

Positive: Likely to be a PI, but occasionally transient infections may give a Positive result. To confirm PI status, we recommend a second sample is collected and tested 4 weeks later.

Weak Positive: Low levels of BVD virus detected. The animal may be a PI but possibly transiently infected and recovering. Recommend PI status confirmation.

Negative: A single, negative PCR result is sufficient to confirm that the calf is not a PI. If the calf becomes infected in future, it will rapidly develop immunity and rid itself of the virus. In pregnant cows however, acute infection may lead to her calf becoming a PI.

Why does LIC recommend confirmation testing?

An infection may be transient rather than persistent, particularly if the result is 'Positive' or 'Weak Positive' (i.e. not 'High Positive'). The only way to confirm this is by testing for the BVD virus again 4 weeks later. If the animal is still positive, they are a PI. If they now have a negative result, they were transiently infected and have cleared the virus. In the 2020/21 season, less than 0.1% of calves tested by BVD tissue PCR were recommended for resampling and retesting ('Positive' or 'Weak Positive' result).

BVD tissue PCR trial:

Farm trials in 2019 compared the new BVD tissue PCR method against blood serum PCR as the gold standard, with excellent results.

Animals under 35 d of age	Tissue	Serum
High Positive, Positive, Weak Positive	18	18
Negative	466	466

All Tissue PCR results match the gold standard serum PCR results.

If you have any further questions please call our Animal Health Advisor team on 0800 436 362 or email testyourcows@lic.co.nz