

BVD Factsheet

What is Bovine Viral Diarrhoea (BVD)?

- Bovine viral diarrhoea (BVD) is a disease caused by bovine pestivirus. Infection in non-pregnant animals results in diarrhoea, reduced conception rates and immuno-suppression. Infection in pregnant animals can result in abortion, the birth of stunted calves or calves born with 'persistent infection' (PI). Infection during the first third of pregnancy can compromise the development of the foetal immune system and the calf is unable to eliminate the virus. When the calf is eventually born, it produces large amounts of virus throughout its life. The calf may appear normal or be stunted but it is likely to succumb to fatal mucosal disease later in life. If PI animals come into contact with breeding cows, the cycle of infection continues with the creation of more PIs. Avoiding infection of the unborn calf and the detection and removal of PI calves from the herd are critical to the control and eradication of BVD in cattle.
- BVD is described as an RNA virus which is classed as a pestivirus, similar to the border disease virus which infects sheep and classical swine fever.
- BVD is spread by animal to animal contact and thought to be endemic in over 85% of UK dairy herds.

BVD is considered the most economically damaging cattle disease today.

- A complex disease that interferes with reproduction, reduces calf immunity to other infections, contributes to calf pneumonia and causes mucosal disease.
- One important aspect of the disease concerns infection of the cow in the first four months that results in a live birth. The calves are considered 'persistently infected' (PI), and unless removed from the herd, will provide a constant source of infection, continually shedding the virus.

Diagnosis

- In a lactating cow, fertility can become negatively affected as BVD can cause early re-absorptions from 6 to 8 weeks. Infection during the gestation period can result in abortions and deformities.
- BVD causes oral ulcers and lesions of the abomasum, intestine and colon.
- Symptoms of a PI animal suffering secondary mucosal disease can include diarrhoea, anorexia, ulcers inside the cheeks, nose and on the tongue, limping and prostration leading to death often within 5 to 10 days.

Monitor

- Looking for exposure to BVD virus by measuring antibody levels in bulk milk, individual cow milk or blood samples from cows and or young stock
- Looking for persistently infected cattle (PIs) by using either ear notch tissue tags, blood tests or screening the bulk milk for the possible presence of a PI with a PCR test

Testing options

- Bulk milk antibody Elisa
- Individual milk antibody Elisa
- Individual cow blood antigen Elisa (test for virus)
- Individual ear notch tissue Elisa (test for virus)

Interpretation

BVD Antibody

- Ab is an indirect enzyme immunoassay designed to detect BVDV antibodies (Ab) in serum, plasma and milk samples from bovines. A microtitration format has been configured by immobilizing BVDV antigens on the plates. BVDV antibodies of the sample are bound to the antigens on the plates. If the antibodies are present, the test results in the formation of a blue compound which when blocked become yellow. The intensity of the colour known as the optical density (OD) is an inverse measure of the antibodies concentration found in the milk sample.



- Any sample with a S/P % equal or lower than 0.2 (20%) is considered coming from an animal which has not been infected by BVD.
- Any sample with a S/P % between 0.2 (20%) and 0.3 (30%) is considered to be doubtful. A second test would be necessary to confirm this.
- Any sample with a S/P % equal or greater than 0.3 (30%) is considered to be from an animal which has been infected by BVD.
- For Bulk milk samples any result below 0.2 (20%) is negative, any result higher than 0.2 (20%) is positive.

BVD Antigen

- The BVDV Ag is an enzyme immunoassay designed originally to detect BVDV antigens (Ag) in serum, plasma and ear notch tissue from bovines. A microtitration format has been configured by immobilizing BVDV antigens on the plates. After incubation of the test sample in the well, captured BVDV antibodies are detected by anti-bovine horseradish peroxidase conjugate. Next unbound conjugate is washed away and a substrate / chromagen solution is added. In the presence of enzyme substrate is converted into a product which reacts with the chromagen to generate a blue colour. Upon the addition of stop solution a yellow colour is generated. The absorbance at a single wavelength of 450 nm is measured using a spectrophotometer. The sample to positive ratio is calculated by using the absorbance obtained with the test sample and a positive control, corrected for the absorbance of the negative control. Colour development indicates the presence of BVDV in the test sample (positive result).
- Any sample with a S/P % equal or lower than 0.2 (20%) is considered coming from an animal which has not been infected by BVDV.
- Any sample with a S/P % between 0.2 (20%) and 0.3 (30%) is considered to be doubtful. A second test would be necessary to confirm this.
- Any sample with a S/P % equal or greater than 0.3 (30%) is considered to be from an animal which has been infected by BVDV.

Treatment

- Reliable vaccines are available and considered the only effective long term protection against BVD on advice from your veterinary surgeon.

BVD Testing Protocol

Milk

- Analysis of milk samples taken as part of routine recording can be used to identify individual cow disease status.
- The milk recorder will need to be advised on the day of recording if the whole herd is to be tested or the line numbers of individual cows if part herd testing is required.
- The milk recorder will complete a submission form highlighting the line numbers and corresponding barcodes of the cows that require disease analysis.

Tissue / Blood

- Samples must be taken on farm by a trained sampler or vet

Results

- Milk disease analysis will not delay routine milk recording results.
- A report of the results will be available on 'Your Herd'.
- It is recommended that all results are discussed with your veterinary surgeon before any action is taken.