

Bovine Viral Diarrhoea Testing



There's always room for improvement



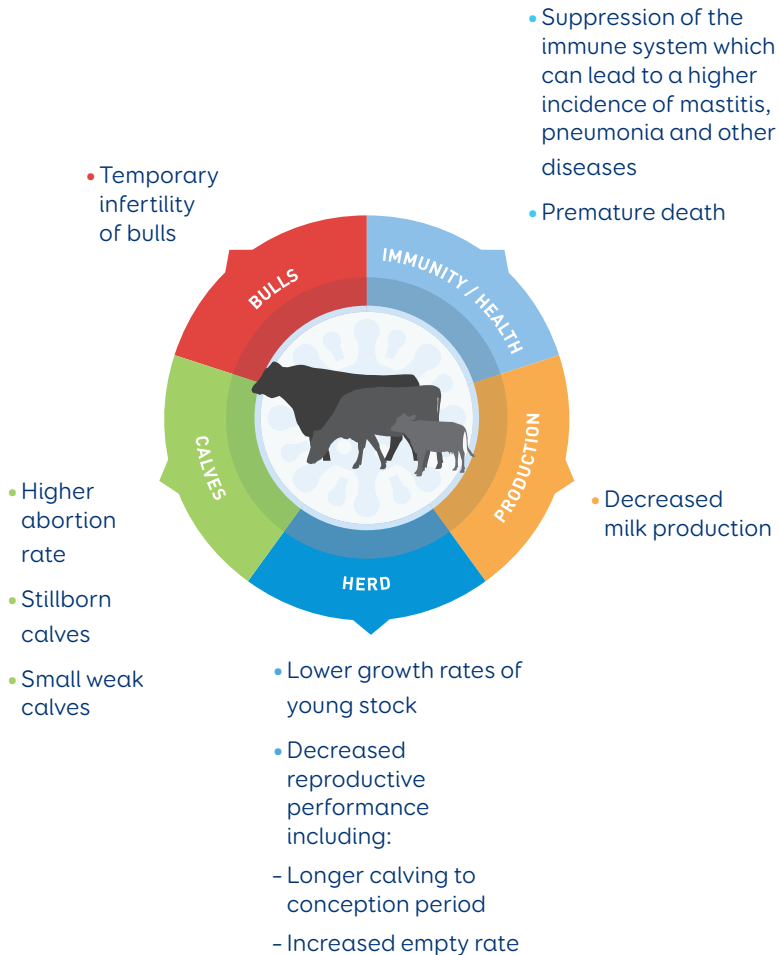
What is BVD?

BVD (Bovine Viral Diarrhoea) is a highly prevalent viral disease found in New Zealand, and in many other countries around the world.

BVD can be tested at both a herd and individual cow level. This brochure is designed to help you identify BVD in your herd, remove the source of infection and prevent BVD from infecting your herd in future.

BVD can have damaging effects on the health, reproductive performance, growth and productivity of a dairy herd.

Potential effects of BVD



How is BVD transmitted?

The BVD virus can be spread between animals through all bodily fluids.

All natural mating bulls should be tested for BVD virus, and obtain a negative result prior to entering the farm. These bulls should also be vaccinated for BVD annually to prevent them spreading BVD virus onto your farm.



Think about In, Out and Over*

In	Out	Over
<ul style="list-style-type: none">• Cattle coming on to the property, including their fetuses.• People coming on to the farm as well as any contaminated equipment and vehicles.	<ul style="list-style-type: none">• Cattle going off the property and returning pregnant at a later date - eg. heifers and carry-over cows grazing off the farm.	<ul style="list-style-type: none">• Contact with neighbours' cattle across the boundary fences

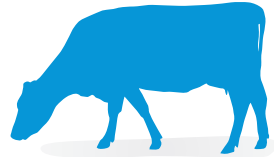
*BVD Steering Committee

Stages of BVD

The stages of infection with BVD virus have been colour coded throughout this brochure. Please use the following key as a guide.

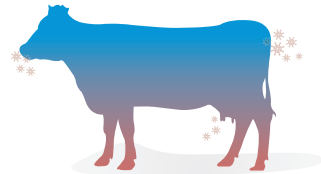
Naïve Animal

Has not been exposed to BVD animal.
Has low to no antibodies against BVD
and therefore has very little natural
immunity to infection.



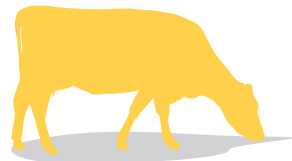
Transiently Infected Animal (TI)

A naïve/low antibody animal that has
been infected with the virus.



Immune Animal

Animal that has antibodies to BVD
virus. Immunity is not life-long, the
antibody level will wane over time.



Persistently Infected Animal (PI)

An animal that is a permanent carrier
of the disease and will shed large
amounts of BVD virus throughout its
entire life.



How are healthy animals infected with BVD?

An uninfected (naïve) animal can become a Transiently Infected (TI) animal when in contact with BVD virus.

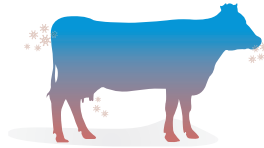
Stage One

A TI or PI animal spreads the virus to a naïve animal.



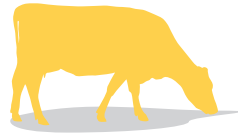
Stage Two

The naïve animal becomes transiently infected with the BVD virus for approximately four weeks. During this time she is a TI animal.



Stage Three

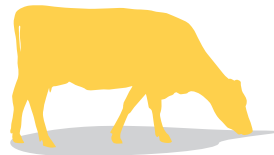
The TI animal will produce antibodies and develop immunity to the BVD virus.



A TI animal will shed BVD virus for approximately four weeks.

During the period of transient infection an animal will produce antibodies and develop immunity. At this stage the BVD virus infection will be cleared and the immune animal will no longer be a source of infection.

Immunity is not lifelong and will lessen over time.

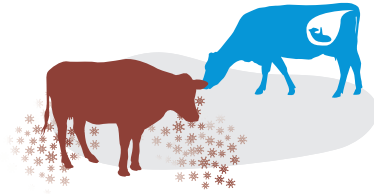


How is a PI (Persistently Infected) animal created?

A PI animal is a born carrier of the BVD virus and will shed large amounts of virus for its entire life. A PI animal is created when its mother is exposed to BVD in the first four months of pregnancy.

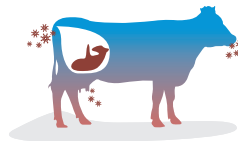
Stage One

A TI or PI animal spreads the BVD virus to a naïve cow during the first four months of pregnancy.



Stage Two

The cow becomes transiently infected with BVD virus. The foetus is also infected and due to its immature immune system is unable to clear the BVD virus.



Stage Three

The cow becomes immune, but is now considered a 'Trojan Cow' and will give birth to a PI Calf.

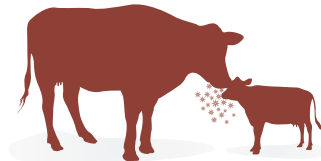


A PI animal will spread the disease for its entire life.

Animals which are persistently infected are the main sources of infection for a herd and should be removed once identified.

They are often slow growing, poor producing animals that rarely live past five years of age. However, they can also potentially be some of the best animals in the herd.

A PI cow will always give birth to a PI calf.



A PI animal is the main source of infection within your herd.

How can LIC's animal health testing services help you?

In order to protect your herd against the detrimental effects of BVD, the following steps are recommended:

1. Determine the current BVD status on farm by BVD testing

2. Allowing you to remove active infection

3. Continue to monitor and/or screen your herd for BVD

LIC can provide you with the tools to achieve the above steps, and tailored packages can be created to suit every farm.

Monitoring your herd is essential

Here are our BVD testing options:

LIC Bulk Milk Monitoring Pack*

Annual bulk milk monitoring is important to assess the BVD status of your milking herd throughout the season.

This pack consists of three vat samples taken at specific times during the milking season. Vat samples are obtained by LIC through your dairy company, so no on farm sampling is required.

one-off payment covers the entire season of testing and results can be sent to both you and your nominated veterinarian.



LIC Bulk Milk Monitoring Pack

Three milk samples sourced from your dairy company throughout the season to monitor possible BVD virus and exposure level in the milking herd.

SAMPLE ONE**

Taken at the end of calving (most animals in milk and before the start of mating)

**PCR + Antibody
ELISA**

A virus PCR test will determine if there is active BVD infection within the milking herd (a positive virus result). An exposure test (Antibody ELISA test) will determine the level of exposure to BVD virus (level of antibodies in herd).

SAMPLE TWO**

Taken two weeks after the first test

**PCR + Antibody
ELISA**

A virus (PCR test) and exposure test (Antibody ELISA) are carried out. The second test two weeks later allows any animals not milking for the first test to be included and any transient infections to have cleared from the herd.

SAMPLE THREE**

Taken at late lactation

Antibody ELISA

An exposure test is carried out. This indicates any exposure to the virus throughout the season and highlights any potential issues for the following season, i.e. untested natural mating bulls.

* This monitoring pack is based on a seasonal calving pattern. If your herd is split calving, or year round, please call the LIC Animal Health team to design a tailored plan to monitor your herd.

** The test dates are approximate sample dates and animals not milking into the vat must be recorded 3 days either side of these dates.

BVD Status Pack

Our Bovine Viral Diarrhoea (BVD) Status pack helps monitor the BVD status of your herd throughout the season and identify any persistently infected animals.

Benefits

- Cost-effective individual BVD testing
- Identifies both positive and negative animals present at herd test
- All bulk tank milk monitor pack tests included
- Lifetime animal BVD status uploaded to MINDA®.

How does this work?



Bulk Milk Tests

Three bulk milk samples taken throughout the season detecting active BVD virus and antibody levels.



Individual Herd Test Samples

Identifies all non PI and PI animals present at the herd test. The BVD status is uploaded to MINDA® as a lifetime status. Animals that already have a BVD status in MINDA® will not be included within the test.

Results

The turnaround time for results will be within five working days for the bulk tank milk samples and within seven working days from when you receive the herd test lab strip results.

Your results report will be emailed for the three bulk milk samples. The individual herd test sample results will be emailed to you and uploaded to MINDA®. All individual BVD positive results are tested twice to confirm result.

Animals must have a management tag recorded in MINDA® to be included in the individual test. We cannot test animals identified with birth IDs at the herd test. MINDA® records must be up to date. If cows are present at the herd test but not in MINDA®, they will not be included in the individual test.

Scan QR code to view pricing



BVD individual testing

We offer several tests that use blood and tissue samples to identify PI animals so you can remove them from your herd.

Use these tests to:

- Screen new additions to your herd
- Screen calves and yearlings
- Screen natural mating bulls before introducing them to your herd.

Individual animals can be tested for the BVD virus by either a tissue or blood sample.

Tests available are:

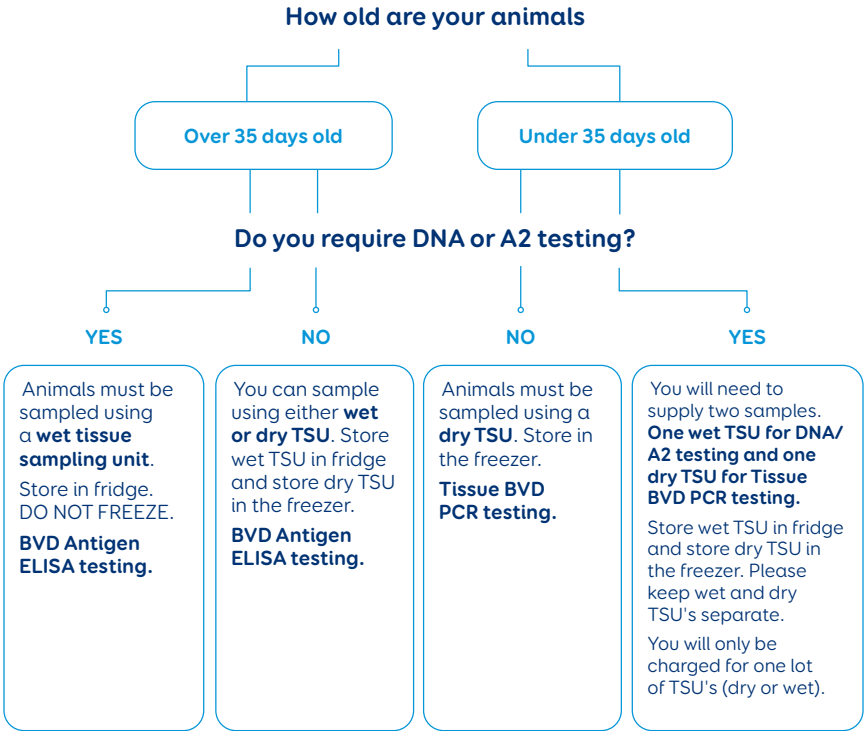
Blood

- BVD PCR — detect the virus in animals over 35 days old
- Calf PCR — detect the virus in calves less than 35 days old
- BVD antigen ELISA — detect the virus in animals over 35 days with a slightly faster turnaround time for results.

Tissue

- BVD Antigen ELISA - detect the virus in animals over 35 days with a slightly faster turnaround time for results
- BVD PCR - detect the virus in animals of any age.

Find out what BVD test to get for your animals and what Tissue Sampling Unit you will need to use



Below is a table that outlines the test types that are compatible with wet and dry TSUs.

	WET TSU	DRY TSU
DNA	✓	✗
A2/A2 Testing	✓	✓
BVD Ag ELISA (calves over 35 days)	✓	✓
BVD PCR (any age calves)	✗	✓

Our Research & Development team are working on the validation of a new buffer for the Wet TSU that will allow DNA & BVD testing on calves under 35 days on the one sample.

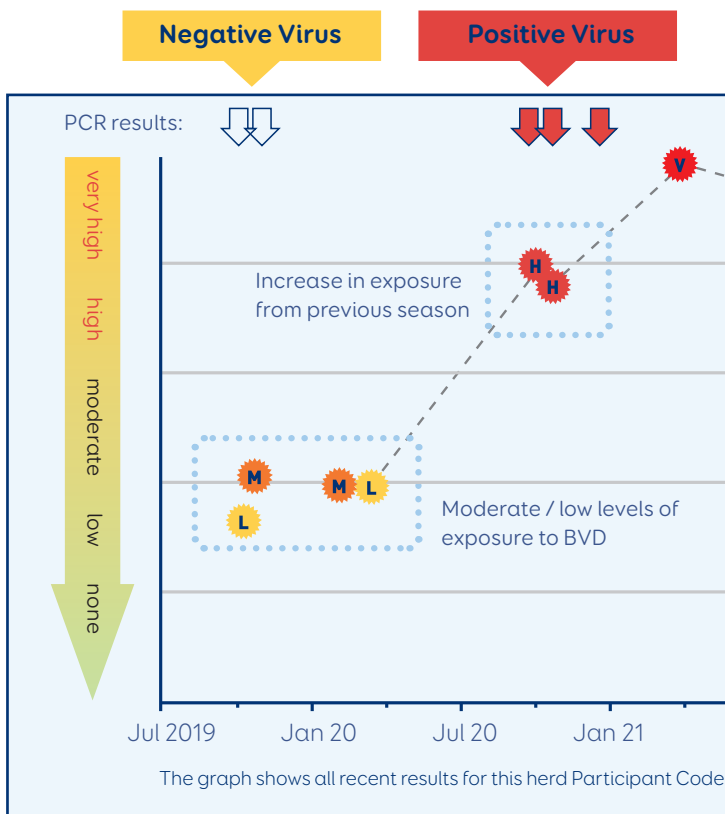
Bulk milk results

How to read your BVD Bulk Milk Monitoring Report.

Example of report below:

The herd was BVD negative in season 2019/20 with low to moderate exposure. Testing for year 2020/21 showed a positive BVD result indicating a BVD carrier (Persistently Infected animal) in the milking herd. The exposure level has increased to high.

The BVD carrier(s) have left the herd during Autumn/Winter 2021 and the herd tested PCR negative the following seasons. Note a decreasing exposure level due to no contact with BVD.



KEY for PCR results:



BVD virus detected in bulk milk



No BVD virus detected

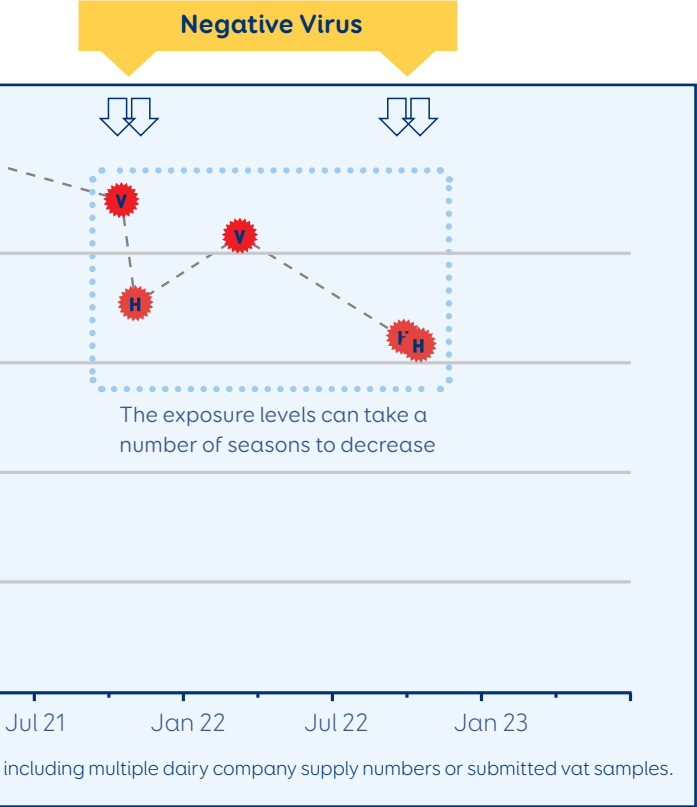
BVD Virus Test Key:

- Positive PCR test
- Negative PCR test

Antibody ELISA Test Key:

- Very High Exposure
- High Exposure
- Moderate Exposure
- Low Exposure
- No Exposure

The graph shown on this page is showing results from a herd that has been BVD testing on the LIC BVD Monitoring Pack for four seasons.



Note: Pls (or persistently infected calf or bull) are BVD carriers that shed virus and spread disease throughout life. Pls should be culled.

Received a Positive Result?

If your Bulk Milk Monitoring Pack shows that you have PI animals in the milking herd, these animals will need to be identified and removed. Individual animal testing will be required and the following testing methods can be used:

OPTION ONE

Herd Test Samples (PI Hunt)

This must be discussed and arranged directly with the LIC Animal Health team or through your vet. Please see PI Hunt for more information (page 17).

OPTION TWO

Blood Samples

This can be arranged through your vet.

OPTION THREE

Tissue Samples

This can be arranged directly with the LIC Animal Health team or through your vet*.

* Individual Animal BVD tests processed through the LIC Diagnostics Lab can be uploaded to MINDA®.

Animals must already be created in MINDA for their BVD status to be uploaded automatically.

What is PI Hunt?

LIC offer a convenient test to identify PI animals in your herd using individual herd test samples.

The PI Hunt can be completed on the whole herd or nominated animals and this should be discussed with your vet or the Animal Health advisory team. This must be scheduled before your herd test date.

What are the benefits?

- Identifying BVD carriers within your herd.
- An easy and convenient testing method using herd test milk samples.
- Lifetime BVD status of individual animals tested are uploaded to MINDA®.

Notes



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