BVD HerdCheck
Surveillance programmes

BVD HerdCheck is a CHeCS approved BVD surveillance scheme which allows the farmer and vet to establish the BVD risk level of a herd on a rolling annual basis. There are two schemes; Dairy and Beef. A Flying Herd option is also available.

**Dairy**
- Quarterly bulk milk screen for antibody (ELISA)
- Quarterly bulk milk screen for virus (qPCR)
- Youngstock screen

**Beef**
- Tag and Test all youngstock and animals entering the herd
- Youngstock screen
Bulk milk

Quarterly BVD antibody (using ELISA testing method) and BVD virus (using qPCR testing method – which looks for the RNA of the virus) tests will be scheduled on bulk milk samples that are already held within the NML fridge, so there is no need for additional sampling. Where multiple tanks are sampled on one farm, one composite sample will be formed from samples held in the fridge.

Why two bulk milk tests?

The combination of these two tests will allow for monitoring of the BVD challenge and will give an indication of protective antibodies in the herd. Monitoring antibody levels in bulk tank samples quarterly is useful in non-vaccinated herds to monitor for the entry of disease and can also be useful in vaccinated herds to look for unusual spikes which may indicate active infection.

Surveillance of the bulk tank using qPCR is useful to identify herds with active infection and / or Persistently Infected (PI) animals in the adult milking herd.

It must be remembered that on any given day not all adults will be contributing to the bulk tank as some will be dry and some will be withheld due to illness or drug treatments. By repeating this test quarterly the adult herd can be effectively monitored for PI animals reducing the chances of any adults being missed from the screening.

The chart below illustrates how testing for antibody and virus levels together can offer a dynamic picture of the herd’s risk level. These results can also help to track when breakdowns may have occurred and identify animals this may have affected. This chart highlights four scenarios that can be indicated by using this two test approach:

1. Ab - & Virus - = Naive herd
2. Ab + & Virus - = Antibodies rise in response to vaccination.
3. Ab + & Virus + = Virus infected animal present amongst the herd. Ab increase is likely response to virus but it could also be vaccinal.
4. Ab + & Virus - = Virus infected animal leaves herd or infection dies out and Ab levels lower accordingly.

![Chart illustrating testing scenarios](chart.png)
Dairy youngstock screen

This programme will also involve testing of unvaccinated youngstock. To complete BVD HerdCheck surveillance, 10 blood samples taken by your vet, from animals between the ages of 9-18 months are required representing the management groups on your farm.

These samples will be tested for antibody (ELISA) and can be split into two batches of 5 (biannual) or all 10 blood samples sent together in one batch per year. It is recommended that your blood samples are sent in for testing as soon as possible to aid early detection of disease. Your vet may recommend that additional blood samples are required to give a more complete and accurate surveillance of your youngstock, depending on your management groups and number of management groups. Additional samples can be submitted to the lab and the results will be reported alongside your other results.

Why use a youngstock screen?

The antibody test is used, rather than looking for virus itself, because this test is cheaper and you do not need to test all of your youngstock. Animals are tested from the age of 9 months because any maternal antibody present to BVD (they may have carried from colostrum) will have waned by this time. The animals tested must not have been vaccinated against BVD.

From 9 months of age any antibodies present indicate that the animal has met BVD virus itself, been infected and recovered. Representative samples from a group indicate whether the group has been exposed to BVD virus. Positive antibody results in the youngstock screen indicate there has been active BVD infection in the herd during the lifetime of the sample group. If the sample group all test negative for antibodies, the group has not met virus, and is naïve. Such a group is at risk of infection.

Persistently Infected (PI) animals do not make antibodies to BVD virus or vaccine, and consideration should be given to negative results to rule out the presence of PIs.

A management group consists of those animals that can freely achieve nose-to-nose contact. Persistently Infected (PI) animals spread the virus very efficiently when in nose-to-nose contact with other cattle. This is the principle of a youngstock screen, by looking for antibody in the batch of calves we are looking for exposure to the virus. Because BVD spreads so easily it is not necessary to test every animal in every group. If antibody response indicates there is virus amongst the group then a PI hunt can be undertaken.

IT IS ADVISED THAT YOU CONSULT YOUR VET TO SELECT THE ANIMALS REQUIRED TO PROVIDE AN EFFECTIVE YOUNGSTOCK SCREEN AND TO INTERPRET THE RESULTS.

Dairy testing schedule

BVD HerdCheck bulk milk testing will be scheduled quarterly. The blood samples may be submitted at any stage during the 12 month period. Reminders will be sent to farmers and their vets throughout the course of the year. Some farmers may be already using Tag & Test for their youngstock – if the vials are tested with NML, this testing data will be compiled alongside the bulk milk and blood results on Herd Companion (our online portal to view results).

A progress status will also be shown within Herd Companion offering a simple way of checking which samples are outstanding in order to complete surveillance for that year.
Tag and Test

Ear tissue samples, taken when tagging an animal, will be tested for the presence of BVD virus itself using an antigen test (ELISA testing method) allowing you to accurately identify PI animals. To complete BVD HerdCheck surveillance, each calf born on the premises within 12 months from commencement of the scheme should be tested.

An ear tag is inserted into the ear of animals of ANY age (even from birth). On insertion, the tag cuts a disc of tissue and seals it into a small tube which disconnects after the event. Both tube and tag display an identification number. Tissue samples can be taken using official identification tags or management (button) tags and the sample vials will be tested by our laboratory in Hillington. Results will be received within five working days of sample receipt at the laboratory.

Any age of animal can be tested using this method but it is recommended that animals are tagged as young as possible so that PI calves are identified quickly and the spread of virus is reduced. A PI animal can be identified within the first week of its life, if tagged at birth.

This testing strategy also gives you information about the calf’s dam, as a PI animal will always produce a PI calf.

Why tag EVERY calf?

It is important that ALL calves born on the premises are tagged (even those that will not be kept as replacements) to ensure that any PIs are identified quickly to limit damage from the virus.

It is recommended that dead calves, stillborn and aborted foetuses are tested by tagging with a management tag. This is because they could have died as a result of BVD virus and can provide important information on the dam. Incoming stock or suspect animals can also be tested using the Tag and Test method. Vaccination does not affect Tag and Test results. Vaccination has no effect on the presence of virus in PI animals and thus they will still test positive after vaccination.

T&T positive result – what next?

An animal with a BVD positive antigen result is likely to be a PI and should be moved to isolation for three weeks prior to a follow-up test to confirm it’s disease status. The dam should also be tested. Consult your vet for advice on retesting animals that have tested positive for BVD and to look for further infected animals.
Empty vials

The vials are visually checked by laboratory staff to ensure that sufficient tissue is present to test. If an empty or damaged vial is found, you will be contacted and a replacement vial is sent out to retest the animal free of charge.

Recommended tag suppliers

Nordic Star are the recommended tag supplier www.nordicstar.co.uk
Please note that animal eartags are not included in the price of BVD HerdCheck Beef Scheme.

Beef youngstock screen

This programme will also involve testing of unvaccinated youngstock. To complete BVD HerdCheck surveillance, 10 blood samples taken by your vet, from animals between the ages of 9-18 months are required representing the management groups on your farm. These samples will be tested for antibody (ELISA) and can be split into two batches of 5 (biannual) or all 10 blood samples sent together in one batch per year. It is recommended that your blood samples are sent in for testing as soon as possible to aid early detection of disease.

Your vet may recommend that additional blood samples are required to give a more complete and accurate surveillance of your youngstock, depending on your management groups and number of management groups. Additional samples can be submitted to the lab and the results will be reported alongside other results.

Why use a youngstock screen?

The antibody test is used, rather than looking for virus itself, because this test is cheaper and you do not need to test all of your youngstock.

Animals are tested from the age of 9 months because any maternal antibody present to BVD (they may have carried from colostrum) will have waned by this time. The animals tested must not have been vaccinated against BVD.

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Persistently Infected (PI) animals do not make antibodies to BVD virus or vaccine, and consideration should be given to negative results to rule out the presence of Pis.

A management group consists of those animals that can freely achieve nose-to-nose contact. Persistently Infected (PI) animals spread the virus very efficiently when in nose to nose contact with other cattle. This is the principle of a youngstock screen, by looking for antibody in the batch of calves we are looking for exposure to the virus. Because BVD spreads so easily it is not necessary to test every animal in every group. If antibody response indicates there is virus amongst the group then a PI hunt can be undertaken.

IT IS ADVISED THAT YOU CONSULT YOUR VET TO SELECT THE ANIMALS REQUIRED TO PROVIDE AN EFFECTIVE YOUNGSTOCK SCREEN, AND TO INTERPRET THE RESULTS.
Beef testing schedule

Ear tags and blood samples may be submitted at any stage during the 12 month period. If insufficient blood samples have been submitted, reminders will be sent to farmers and their vets throughout the course of the year.

A progress status will also be displayed offering a simple way of checking what samples are outstanding in order to complete surveillance for the year.
Enrolment and reporting

Enrolment

Farmers are required to complete a BVD HerdCheck enrolment form to include details and a signature from their vet so they can be involved in the testing regime, scheduling of bloods and receive testing results. Invoicing details are also required.

Results

Farmers can access their results in the NMR Herd Companion portal www.nmr.co.uk/herd-companion/ or via email and fax as required.

Herd Companion

Herd Companion is an online portal where test results and data can be accessed quickly and easily. Users do not have to be NMR milk recording customers.

Registration is free and very simple – to create a username and password please contact customerservices@nmr.co.uk or 0844 7255567.
All results will be shown in a summary table and available as more detailed downloadable reports. The bulk milk results will also be plotted in a graph – a useful tool to monitor and compare antibody and virus levels over time.

The Ct value (cycles to threshold) represents the number of cycles of RNA multiplication before a sample tests positive for BVD virus. The lower the number, the larger the amount of virus in the original sample. Samples in which no viral material has been detected in more than 45 cycles are considered negative.
Risk level status

Once the required samples have been submitted a risk level of Red, Amber or Green will be assigned.

Please note that all herds will be classed as Amber until the minimum annual surveillance has been completed. No herd will be allocated green risk status until at least 12 months surveillance testing has been completed.

Red
One or more positive results, indicating active or recent infection.

Amber
Yet to indicate that the herd is free of infection - no indication of active infection but insufficient samples.

Green
Sufficient negative results to indicate the herd is not affected by active BVD infection.

A risk level certificate can be downloaded for veterinary authorisation of the herd. Guidance notes will be available on request or as a download from Herd Companion.
Enrolment and blood submission form

To request an enrolment form or blood submission form please call 01902 749920 or visit www.nationalmilklabs.co.uk
NML Four Ashes
Unit 26-29, Laches Close, Calibre Business Park
Four Ashes, Wolverhampton, WV10 7DZ

NML Hillington
32 Kelvin Avenue,
Hillington, Glasgow, GL52 4LT

For more information contact NML Customer Services on
01902 749 920 or email milk@nationalmilklabs.co.uk or
visit www.nationalmilklaboratories.co.uk

NML RECOMMENDS THAT FARMERS DISCUSS BVD CONTROL WITH THEIR VET.