

Blood testing in BVD vaccinated herds

- To identify an animal persistently infected (PI) with BVD virus a blood or tissue sample is tested for BVD virus. This is done either by using the PCR test to detect the presence of the genetic code of the BVD virus or by the antigen Elisa that detects the presence of a particular part (antigen) of the virus. The use of BVD vaccine in an individual or herd does not interfere with the ability to detect PI animals through PCR or antigen testing.
- When cattle are vaccinated against BVD virus they will produce antibodies to BVD. The amount of antibody produced following vaccination will vary from animal to animal and they may or may not be detectable in a blood test for BVD antibody. The level of antibody in the animal following vaccination will decline over time until the next booster is given. An antibody negative result in an animal that has been vaccinated against BVD virus does not mean that the vaccine has not worked or that the animal is not protected.
- There is currently no BVD marker vaccine available so it is not possible to definitively differentiate antibody produced as a result of vaccination from that produced due to natural exposure to BVD virus. However the amount of antibody detected in a blood test following vaccination with any vaccine that has a BVD component, is usually lower than the amount of antibody produced as a result of natural infection.
- The use of respiratory vaccines containing a BVD component (e.g. Rispoval 3 and Rispoval 4) can interfere with check tests in young stock. It would therefore be preferable to wait until at least three months after the vaccination course has been completed before blood sampling the young stock. Alternatively they could be blood sampled either before vaccination or at the time that the first dose is being given. However if they are only around six months old when sampled there is a risk that residual maternally derived antibody from colostrum will be detected which could interfere with the interpretation of the test results. In most cases the maternally derived antibodies would be at a low or undetectable level after six months old. However some animals have higher levels of antibody that can be confused with natural infection. Therefore we may recommend that antibody positive animals be retested to show that the results are consistent with maternally derived antibody.
- If only the breeding herd is being vaccinated against BVD there should be no interference with the check test results in unvaccinated, 9-18 month old, young stock.

BVD check tests – what is a “group”?

For BVD check tests five homebred cattle from each group aged 9-18 months old need to be blood sampled. So what is a “group”?

- The young stock should have been mixing together for at least two months in order to be considered a group. The results from one pen or field of young stock do not reflect the status of another pen or field of young stock if there has not been contact between the cattle for a minimum of two months.
- If the groups are made up after weaning then five from each new group should be tested after the groups have been established for at least two months.
- If the young stock have been given a respiratory vaccine with a BVD component (e.g. Rispoval 3 or Rispoval 4) wait until at least three months have passed before sampling them or blood sample them at the time of the first dose, providing they are at least six months old.
- If there are fewer than five young stock in a group or the total number of young stock tested is fewer than seven and all are found to be antibody negative then one of the samples from each group will be tested for BVD virus. This is to ensure that they are not all PIs.
- If there is a wide age range in a group (e.g. a spread out calving pattern) then ten young stock from the group should be tested. The five oldest and the five youngest should be selected, providing the youngest are at least six months old.
- If groups of dairy heifers have had animals added over time then the five oldest and five most recently added animals should be sampled from the group.
- If young stock are being sold before nine months old they should be blood sampled before they are sold, from at least six months of age but the older the better. If they have not been housed together for at least two months at the time of sampling then ten should be tested from each group.
- Do not include bought-in animals in a check test as they may be antibody positive from having been exposed to BVD virus before they entered the herd and this can complicate the interpretation of the results. All bought-in cattle should have been quarantined and tested for BVD virus before being introduced to the herd anyway for those herds that are already in the BVD CHeCS programmes.



Initial Herd Screens – a cost effective approach to assessment of herd status

Can you assess whether you have leptospirosis in your herd without doing a whole herd test? An initial herd screen of separate management groups can be carried out. This can keep the cost down and provide a good indication of whether or not a whole herd is likely to be clear. In the dairy herd, bulk milk antibody testing provides useful information on the status of the herd, but animals not in the dairy herd and youngstock which may be managed on separate grazings and/or holdings are not represented.

For non-milking animals and beef herds a different approach has to be adopted. Here we assume that if the disease is active in the herd at least 10% of the animals will be positive for antibody. We drew up a sampling table to detect at least one

Sample size to demonstrate freedom from IBR or L Hardjo infections with a confidence of 99%, test sensitivity of 95% and expected number of positives 10%

Group Size	10	20	30	40	50	70	100	150	200
Sample size	10	19	24	28	31	34	38	40	42

Bull Livery – Do not compromise your health status

The rules for CHeCS schemes are clear: all animals leaving the herd of origin and encountering non-accredited cattle lose their status and need to be managed as added animals when they return to the herd of origin or are sold. The only exception to that is Johne’s disease. Because of the less infectious nature of this disease the risk of spread is low where periods of contact with other cattle are for less than a week.

However when bulls go to livery to be trained and turned out for the sales they are usually out of the herd of origin for several months. In such situations the animals no longer have any herd status and cannot be sold as having herd status unless all animals entering the livery are of the same health status or are all treated as added animals (i.e. quarantined and tested on entry to the livery). Even when that is done the animal can only be sold as Johne’s disease accredited if they have originated from Johne’s disease accredited free herds.

You should be aware of this when sending your bulls to livery and you should discuss with the owner of the livery what precautions are being taken to safeguard the health status of your stock while they are under their care. Livery owners should work out a suitable biosecurity programme with their veterinary surgeon using the added animal protocols of the health scheme.

test positive animal. This table takes into consideration the number of animals in the group, the sensitivity of the test for the disease and the level of confidence in the result. The sampling frame applies individually to each separately managed group as the risks for disease being present in each group may be different.

Where the initial herd screen provides no evidence of active infection, and certification of freedom from disease is the objective, the sampling frame has to be increased to achieve a clear first qualifying test as low numbers of reactors may be present in herds where infection is not active. For both IBR and leptospirosis there is the risk of spread of infection from infected immune animals to other animals in the herd.



PCHS Member in the Hills of Perthshire

Drew Kennedy farms Tom of Cluny extending to 215 ha close to Aberfeldy. The farm is mainly grass but the recent addition of 20 ha of arable land will help to alleviate the high cost of straw and cereals.

He is an ardent advocate of PCHS.

I joined PCHS in 2003 after discussing the benefits with my local veterinary practice and being aware of clinical cases of Johne’s in my herd. The value of cows was low at the time and it was decided not to cull test positive animals, unless they were showing the clinical symptoms of losing condition, but to segregate them from others. This prolonged the efforts in trying to eradicate the disease.

As cull cow prices improved the test positive animals were culled.

A factor in the spread was the difficulty in keeping the environment clean at calving time as all cows were out wintered and calved outside and inclement weather conditions around feed rings, etc made it difficult to keep cows clean.

A new shed has been erected to winter the herd and to ensure that cows are much cleaner, with ample bedding at calving time and the water troughs are designed so that

faecal contamination does not occur. Self locking yokes simplify handling.

Although the herd numbers 81 cows it has been the intention to push numbers upwards to around 120 but the number of test positive cows has prevented this happening.

After 2 years of clear tests there was a positive cow this year. She and her calf have been segregated from the main herd and she will be culled on rearing the calf. This was a blow as I was on the point of being accredited. The cow was retested with a faecal sample and was still positive. Even if the faecal sample was negative I would still have culled the cow.

I have kept heifers in the past out of test positive cows and this has been a mistake – the cow tested positive this year was out of a previously test positive cow.

This one cow that has stalled my accreditation will make £750 - £800 on culling and I will be able to replace her with two young heifer calves.

Bulls are sourced from Johne’s accredited herds and are BVD virus free and vaccinated.

My herd achieved BVD accredited status after 2 clear tests of a representative calf sample.

With a good health status in the herd, and more cows, the intention is to sell animals of known health status as it is evident there is a growing market for this type of stock.

I am pleased that I joined PCHS and it has caused ‘head scratching’ over the years but endeavouring to pay attention to detail and continued advice from my vet and PCHS suggest that I am close to reaping the benefits.

Health scheme membership is a must – health and welfare must not be compromised.

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Changes to the CHeCS Programmes

We are continually reviewing our programmes in the light of our experience and the advancing knowledge of the target diseases. This leads to fine-tuning in the most part, but each year some important change is made to safeguard the health of your cattle.

Johne's disease

This disease remains the most challenging of the four diseases that can be tested for in PCHS.

The most important change for Johne's disease was our finding that herds that achieved accreditation after two years of clear tests were more likely to break down in the third year than at any other time. Therefore the programme has changed so that herds where Johne's disease has never been diagnosed now require three annual herd tests to be clear before accreditation is achieved (that is two full calendar years).

The option for biennial testing has been removed for herds where there are fewer than 20 animals in the herd. Herds of this size must stick with the annual herd test. The biennial option is available for larger herds, but only after they have been accredited for two years.

These changes are certainly more demanding but will make the accreditation programme more robust.

To balance these changes we need ways in which non-accredited herds can have their efforts to control the disease recognised. Perhaps finding a way to show that test positive animals have all been culled along with the offspring of test positive females and that a hygiene programme is being followed satisfactorily can provide the answer. All of this needs to be easily and robustly verifiable and therein lies the challenge.

This would create four statuses for herds.

- at the top we would have Johne's disease accredited free or Johne's Disease Monitored Free (let us know your preference);
- next it would be Johne's Disease Qualifying where the herd had one or more clear test;
- thirdly we would have Johne's Disease Controlled where the herd had positives but these were shown to be culled and a hygiene programme was in place;
- fourthly we would have herds with no Johne's status and these would be ones where there was no effective control in place whether or not the herd was being tested.

We are aware that the term "Johne's Disease Controlled" may not be favoured as it clearly implies that a herd is infected, but it is difficult to come up with another term and herds in this category are infected.

We are very interested to hear your views on this and would like you to write to or email Ian Pritchard with your thoughts.

BVD virus - ear tissue testing

Ear tissue testing can be used in calves from birth to identify likely PI animals. The tissue sample is collected by the simple act of ear tagging the calf. There are a few manufacturers of these special ear tags and some are now DEFRA approved as UK identification tags. Samples can be sent to us in batches but we would advise that they are sent to us within two weeks of being collected. They should be stored in a cool, dark, dry place until they are posted and they should be sent by first class post. The samples can also be frozen if they are being

collected over a longer period of time and do not need to be sent within the two week period.

If these storage recommendations and timings are not followed the results may be unreliable and there would be a risk that a PI could be missed.

If a positive result is obtained a confirmatory blood test should be carried out at least three weeks after the sample was collected.

in removal of the herd from the CHeCS programmes. Those making the charges may remain unimpressed by this sanction, but farmers and vets both sign that the herd is abiding by the rules. A false declaration at that time is a fraudulent act that could result in action from trading standards or, in the case of the vet, referral to the disciplinary board of the Royal College of Veterinary Surgeons. It's difficult to see how sanctions could be any tougher for a voluntary programme.



Breaches of Rules can mean removal from Scheme

It has been claimed that some members break the rules of the programme by carrying out tests through another laboratory and removing any reactor in advance of the scheduled annual herd test. We have no evidence that this has occurred, but to answer the charge, we have made changes to make it clear that such action breaks the rules. Any breach of the rules will result

Johne's disease frequently asked questions

1. What are the risks of AI and ET?

The Johne's disease organism can be found in the semen of bulls as the disease progresses. All the work done on this indicates that infection from semen from such animals is very unlikely and that the resulting calf can be expected to be uninfected.

Embryos can be collected from infected females and if they are washed and processed according to the internationally accepted protocols, they offer negligible risk of spreading disease.

2. Infection at birth or in the months immediately after this is the main way animals become infected, but can older calves or adults become infected?

Experimental infection has been achieved in adults although it is unknown how often adult to adult spread occurs in infected herds. We do know that relatively young animals (from six months on) can shed infection. Therefore there is a risk that all animals can become infected at all stages of their life. The degree to which this happens is related to the amount of the organism they encounter or how much faecal contamination from other cattle they are exposed to. The message remains the same: Johne's disease is spread by faecal material and clean stock is one of the best ways to reduce risk.

3. What is the thinking behind biennial testing?

In large herds where there has been no infection identified testing every second year helps reduce the costs of the programme. It also has the potential to weaken the programme. To prevent that happening all animals that are to be culled in the second year have to be tested before they leave the herd so that the disease is not hidden. Animals that have been added to the herd have to be tested each year as their risk of being an infected animal is related more to their herd of origin and without referring back to the testing history of the originating herd this is not known.

4. What's the point in the different Johne's tests and why does one carry more weight than another?

The blood test detects the presence of antibody to the Johne's organism; antibody is one of the body's protective responses to an infection, although just to confuse antibody is not protective for Johne's disease. All such blood tests can produce false positives due to antibody stimulated by some other organism. This occurs relatively rarely, and to safeguard the status of the animal or the herd there is the option to retest an animal that tests positive for antibody in

the blood by following it up with a test of the faeces. Here we are looking for the Johne's disease organism. If the faeces is positive then it means that the animal is shedding the organism and is considered to be infected. This is the deciding test for the Johne's programme. The use of the faeces test is restricted to occasions when the number of blood test animals at the herd test is very low. Otherwise in herds in the control phase of the disease, animals testing positive for antibody to Johne's disease should be considered to be infected and managed accordingly.

5. What new tests are there on the horizon?

Currently the gamma interferon test is being trialled by our colleagues at the Moredun Research Institute. This test may come to have an application in infected herds allowing the detection of animals in the early stages of infection far sooner than the current blood test allows.

In dairy cattle it has been shown that there is a genetic susceptibility to Johne's disease. It may be that gene markers will become available to allow cattle to be selected for resistance to this disease. Whether or not such an approach can be translated to the beef sector is open to question. A great deal of research work is required to take this from a reasonable hypothesis to a working programme.



Breed Society commits to CHeCS approved Health Schemes



The British Simmental Cattle Society has taken the stance that all breeders selling cattle at Society Sales must be members of a CHeCS approved health scheme.

All sale cattle must be BVD tested and vaccinated if not from accredited herds and vaccinated if from accredited herds.

From the 1st of January 2012 all herds must be screening for Johnes. As a leading maternal and terminal breed we need to lead on health issues as the long term health of the

UK herd relies on the health of the breeding cows within it and the sires used to create it.

Using CHeCS allows for the policing of health rules by bodies independent to the Breed Society and, in conjunction with CHeCS schemes knowledge, we can further develop the breed's direction on health requirements in the future. With the consumer becoming ever more interested in the origin of the food they consume, it is imperative that we continue to raise the profile of healthy cattle across the whole of the UK.

Neil Shand, Breed Secretary, British Simmental Cattle Society

Breed Societies

Sales through 2011 have seen the commitment by many breed societies come to fruition.

Breed society councils are wanting to ensure that animals sold at society sales meet certain minimum standards to ensure a quality product for the purchaser.



For BVD animals have to come from BVD accredited herds and be vaccinated prior to sale or must be BVD virus tested free and vaccinated prior to the sale.

Some societies are also stipulating that herds have to join a CHeCS licensed health scheme and have done a herd test for Johnes's.

Improving animal health and welfare can only be to the benefit of the vendor and purchaser. **Congratulations to all involved.**