

A REVIEW OF BVD TASAH INVESTIGATIONS IN 2018

Dr Maria Guelbenzu, BVD programme manager, Animal Health Ireland, provides an overview of the Targeted Advisory Service on Animal Health in 2018



Since 2017, all herds with test-positive calves are required to undergo Targeted Advisory Service on Animal Health (TASAH) herd investigation by a trained veterinary practitioner within three months of the initial positive result. These investigations, which are free-of-charge to the herd owner, are funded by the Rural Development Plan (2014-2020). These investigations follow a standard format and have several goals:

- **Identify a plausible source or sources of infection.** Based on the time period during which the dam could have been infected (the window of susceptibility), and her location during the period, the investigating vet, as part of a farm visit, can consider a series of possible transmission pathways from sources of infection that may be either inside or outside of the herd;
- **Ensure that the herd is left free from Bovine Viral Diarrhoea virus (BVDV).** Any animals within the herd whose status is either not known or is suspect (eg. animals with a DAMPI status due to their having

produced a persistently-infected [PI] calf) will be tested. This is to identify any previously unidentified PI animals within the herd. In addition, in 2019 enhanced sampling is being carried out to include animals that could reasonably have led to the birth of the PI(s) through their having a false negative status;

- **Review herd biosecurity and agree farm-specific measures to prevent its re-introduction.** Consideration of the various transmission pathways allows the vet to identify key risks on a herd-by-herd basis. From this, up to three recommendations to reduce the risk of reintroduction are agreed with the herd owner; and
- **Provision of advice on trojan dams.** To minimise the risk of the sale of trojan dams from herds with positive results in 2019, herd owners are being advised that they should not sell animals that were pregnant at the time of removal of the last PI(s) unless they are antibody-negative to a sample collected within two weeks of sale.

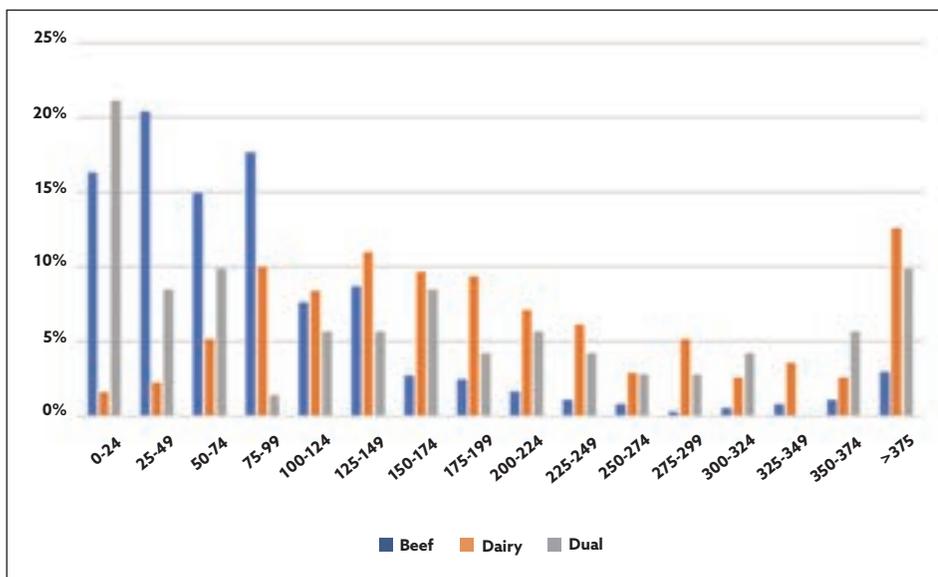


Figure 1: Distribution of 2018 BVD TASAH herds by herd size and type.

BVD INVESTIGATIONS IN 2018

737 investigations were completed during 2018 with biosecurity recommendations provided to herd owners and the results reported to Animal Health Ireland.

HERD DESCRIPTION

49% of investigated herds were beef, 42% dairy and 9% were of dual purpose. The distribution of herds by herd size and type can be seen in Figure 1.

In all, 58% of the herds that required investigation following positive results in 2018 had negative herd status (NHS)

on January 1, 2018, 24% had NHS not awarded due to the presence of persistently-infected (PI) animal(s) and 18% had NHS not awarded due to the presence of animals of unknown BVD status (Figure 2). Taking into account the number of herds with NHS at the start of 2018 (70,970), herds without NHS at that time were 4.2 more times likely to produce one or more PI calves in 2018 compared to those with NHS.

BIOSECURITY PRACTICES

Prompt identification and removal of BVD+ calves is critical to ensuring that optimum progress is made in the BVD eradication programme. Previous studies based in Ireland have shown that retention of BVD+ calves into the breeding season increases the likelihood of further PI births (Graham et al., 2015). Of the investigated herds, 6% contained a persistently-infected (PI) animal at the time of the visit and 26% contained animals of unknown BVD status. Of the herds with PI(s) present, 35% had retained the PI(s) for more than five weeks after the initial positive test. In addition, in 15% of all the investigations there were one or more PIs present during part or all of the window of susceptibility (WOS).

Of the investigated herds, 41% had previously had PI animals identified in the herd at some point in the programme. Of those, 39% of herds reported PIs being present for more than five weeks after the initial positive test.

Purchasing animals is another recognised risk factor for introduction of BVD (Graham et al., 2013). In 45% of herds, there were animals added to the herd immediately prior to the WOS:

- In 64% of those, the introduced animals had contact with cattle from other herds during the sale/transport process;
- None of these herds had a quarantine policy for introduced animals; and,
- In 54% of these, introduced animals first had direct contact with the dam(s) that went on to produce PI animal(s) less than one week after introduction.

In 79% of the herds (74% of beef, 84% of dairy and 85% of dual herds), dams of PIs were grazing at a boundary at some point during the WOS. In only 52% of these herds was the quality of the boundary reported to be sufficient to prevent nose to nose contact and in 55% to prevent the break in or out of cattle. Only 2% of all the herds reported shared grazing with cattle from other herds.

In 10% of the herds cattle left the herd and subsequently returned during the WOS e.g. from shows or unsold from sales.

When asked about biosecurity/hygiene measures applied during the WOS by the herd owner following contact with other cattle before interacting with cattle in their own herd, only 29% reported changing boots and clothing, 50% reported disinfecting boots and clothing and 83% washing of hands (Figure 3).

VACCINATION IN INVESTIGATED HERDS

Of the investigated herds, 20% were reported to be vaccinating for BVD (17% of beef, 25% of dairy and 10% of investigated dual herds). Although 46% of vaccinating herds had been vaccinating for less than one year, 25% of them had been vaccinating for over five years.

The birth of PI calves in these herds could reflect sub-optimal storage, application or efficacy of vaccines, as well as the birth of PI calves to trojan dams. Analysis indicates that trojan dams were identified as a plausible source of infection in 11% of herds vaccinating for one or more years.

SOURCE OF INFECTION

One or more plausible sources of infection were identified in 73% of herds, with a single plausible source identified in 43% of herds. In 43% of cases, the source was considered to be within the herd, while in 57% of cases it was outside the herd.

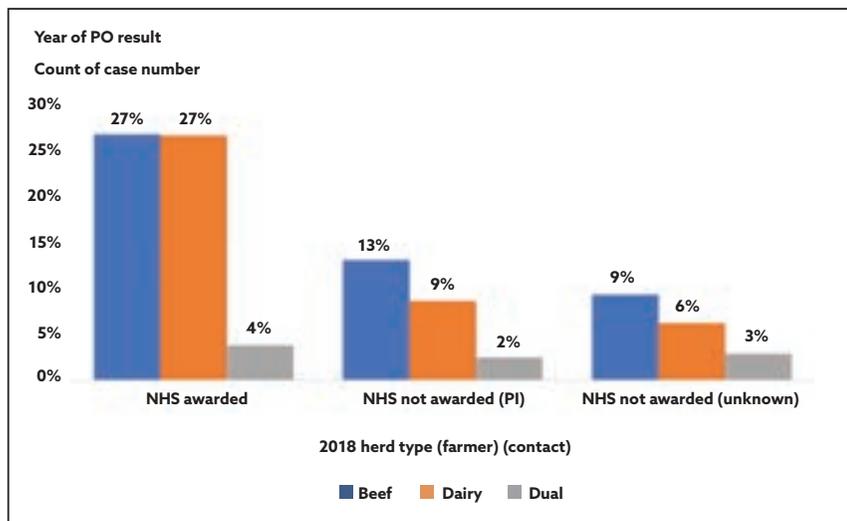


Figure 2: Herd status of investigated herds after a positive result in 2018 at January 1, 2018.

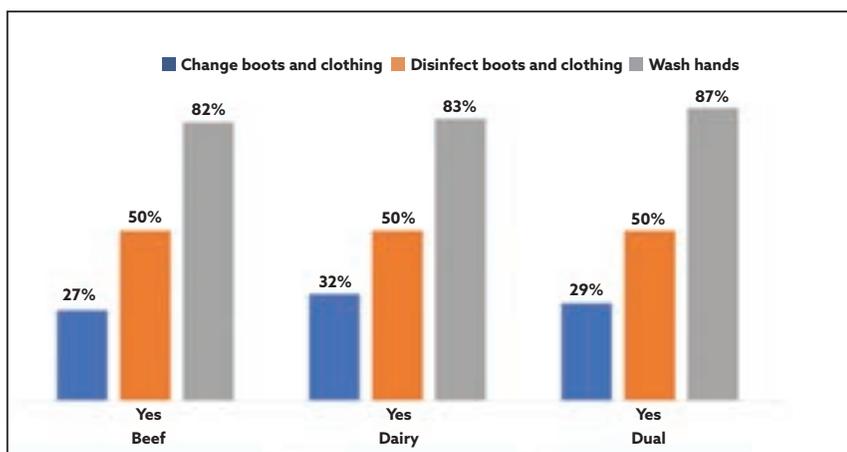


Figure 3: Level of biosecurity/hygiene applied by herd owner before interaction with cattle in their own herd following contact with cattle elsewhere.

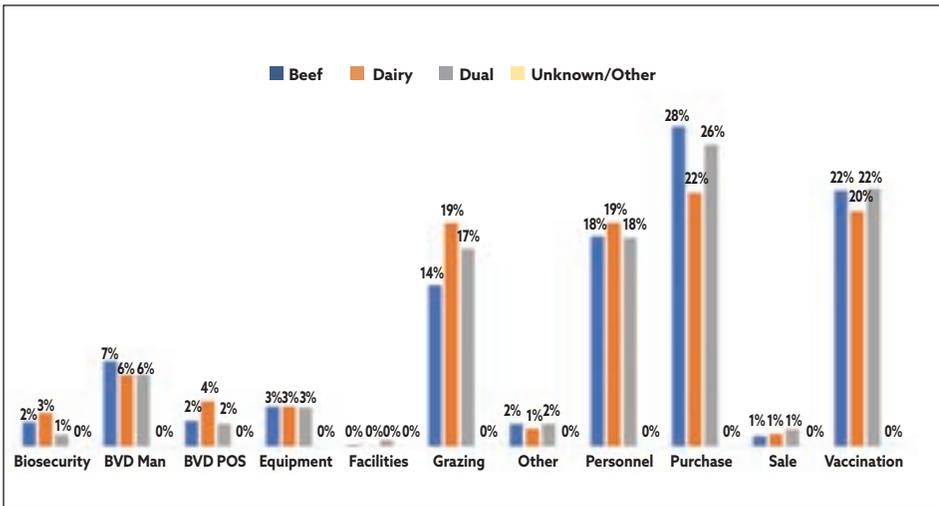


Figure 4: Summary of BVD TASAH biosecurity recommendations for 2018.

The most common within-herd sources of infection identified included the introduction of transiently-infected animals without adequate quarantine, retained PI animals and trojan births. The most commonly-identified plausible sources of infection from outside the herd were contact at boundaries and with herd owner and other personnel in the absence of appropriate hygiene measures. These data provide a basis for targeted biosecurity advice to prevent accidental introduction of BVD virus to herds that are currently free of infection.

BIOSECURITY RECOMMENDATIONS

The majority (90%) of herd owners were provided with three biosecurity recommendations, with these most commonly relating to the risks of introduction of virus associated with personnel (including the farmer), the purchase of cattle, contact with neighbouring cattle at pasture and the role of vaccination.

CHANGES TO THE INVESTIGATIONS IN 2019

In 2019 the following changes have been introduced:

Overdue investigations (> 3 months) will be referred to DAFM, which will contact herd owners to advise that failure to have the investigation completed by their chosen private veterinary practitioner within the following four weeks will lead to it being carried out by a Veterinary Inspector.

Enhanced sampling: in addition to the previous requirement for sampling animals whose status is not known or is suspect (including DAMPI animals), extra sampling is taking place in order to ensure that there are no virus-positive animals left in the herd. A list of the animals to be sampled is available through the 'TASAH Sample List' option on the herd's ICBF dashboard. This includes animals over five months of age at the date of birth of the index PI and that have only a single negative BVD status (directly or indirectly). Animals with a single direct negative test which have also produced one or more calves that have also tested negative and animals that were introduced to the herd within five months of the birth of the index case, or subsequently, are excluded. In dairy herds, in addition to the blood sampling, a bulk tank milk sample is taken to be tested by RT-PCR for the presence of BVD virus. As previously communicated to practitioners, collection

of these samples (11th and subsequent) and their testing is funded through the programme.

Provision of advice on trojan dams. Herd investigations in previous years have highlighted the role of trojan dams in introducing BVDV into previously free herds. Already in 2019, 7% of PI calves detected have been born to dams that entered the herd within 240 days of calving and were, therefore, potential trojan births. As the programme moves towards eradication, it is

increasingly important to prevent onward spread of infection. To minimise the risk of the sale of trojan dams from herds with positive results in 2019, PVPs are required to advise herd owners that they should not sell animals that were pregnant at the time of removal of the last PI(s) unless they are antibody-negative to a sample collected within two weeks of sale. This message is also being communicated through other channels, including programme letters and the BVD Helpdesk.

Back-tracing potential trojan dams. The ICBF database will be used to identify the birth of calves with positive or inconclusive results that could be due to trojan dams. These will be traced back to their source herds. Where a review finds that the source herd for a given potential trojan dam is not already known to have been infected during the window of susceptibility of the calf born to the potential trojan dam, a TASAH investigation will be scheduled, with the primary goal of ensuring that there is no unidentified source of infection in the source herd.

In conclusion, the TASAH-funded herd investigations have played an important role in facilitating veterinary involvement in positive herds, allowing detailed investigation, provision of herd-specific advice and the accumulation of data from which key biosecurity messages can be drawn. As the programme moves towards eradication, enhanced investigations in 2019 continue to be a vital element.

REFERENCES

- Graham, D.A., Clegg, T. A., O'Sullivan, P., More, S.J., 2015. Influence of the retention of PI calves identified in 2012 during the voluntary phase of the Irish national bovine viral diarrhoea virus (BVDV) eradication programme on herd-level outcomes in 2013. *Prev. Vet. Med.* 120, 298–305. <https://doi.org/10.1016/j.prevetmed.2015.04.019>
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