Vaccinating for Mycoplasma Bovis – The Future of Disease Control

Cases of Mycoplasma bovis in the UK have soared in recent years; it's the main cause of pneumonia in calves and is extremely difficult to treat. Prevention is therefore the best option – stringent biosecurity is a must – but now a new multi-strain import vaccine could offer another tool in the armoury.

The disease affects both young and adult cattle, and does not respond to some common antibiotics, says Graeme Fowlie, director of Meadows Vets. "Mycoplasma bovis is a bacterium which doesn't have a cell wall, which makes it extremely difficult to treat, as many antibiotics work by attacking the cell wall."

The most common presentation of Mycoplasma bovis is respiratory disease in calves, but it can also cause a plethora of other symptoms, including mastitis, arthritis, immunosuppression and otitis, leading to increased antibiotic use and hampering herd performance, explains Mr Fowlie. "UK Veterinary Investigation Diagnosis Analysis data shows a sharp rise in Mycoplasma bovis diagnoses since 2013 – it is a serious problem, which needs addressing."

He believes that the industry should treat the disease like bovine viral diarrhoea; adopting a nationwide strategy to identify the prevalence of the disease and adopting best practice to prevent it. "You shouldn't be living with BVD on your farm and it's the same with Mycoplasma bovis – it needs to be the next target for eradication."

Given that the disease cannot be treated by many common antibiotics, prevention is much better than cure – and with a multi-factorial disease like Mycoplasma bovis, it's important to adopt a multi-pronged approach to tackle it.

One consideration is when buying in stock – farmers should check that animals are coming from a farm without a history of clinical problems and buy from as few sources as possible, says Mr Fowlie. An additional option could be an antibody test to check if stock are carriers before bringing them onto the unit.

On farm, focusing on good building design and husbandry will help to limit the risk of any disease – therefore producers should ensure good ventilation in housing and minimise stresses at challenging times like weaning.

It is also important to be aware of the clinical presentation of the disease and to follow up if there is no response to control methods.

"Control is difficult and involves individual or group treatments, and isolation of clinical cases," says Mr Fowlie. "As a vet it's frustrating not being able to prevent the most common cause of pneumonia, despite utilising extensive vaccines for other diseases. I'm also keen to promote best practice in trying to reduce antibiotic dependence."

Unlike many other diseases, there is no licensed vaccine for Mycoplasma bovis in the UK; autogenous vaccines are an option but can be slow and expensive to produce. However, Mr Fowlie has recently assisted the VMD in securing a license to import, via Kernfarm, a multi-strain bacterin-based vaccine from the US, which can now be prescribed in the UK under the Cascade system. "I'm delighted to be working to introduce what might be the missing link to pneumonia prevention. The vaccine has been used across the UK this winter, with very positive comments from vets who are reordering stocks."

He has also set up the UK's first on-farm study to ascertain the effectiveness of the vaccine. This features four dairy farms, varying from 170 to 400 cows, which have tested positive for Mycoplasma bovis. Cows and in-calf heifers are vaccinated at drying off or at least four weeks pre-calving, and calves born into the trial will receive a booster at 60 days old in line with the standard vaccine licence.

Calf performance will be recorded before and after the use of the vaccine to assess its efficacy, with assessments made on changes in liveweight gain, mortality, antibiotic usage and farmer opinions.

"My belief is that Mycoplasma bovis is too complicated a disease for a young calf's immune system to control by vaccinating at 7-10 days old," says Mr Fowlie. "Some calves are also born with the disease, which is why I'm looking at vaccinating the cows so they can pass on the immunity through their colostrum. I expect to see an impact from weaning onwards, when calves are most susceptible to the disease."

In US trials, arthritis cases fell by 45%, with the severity of arthritis falling from 72.7% of animals with three or more affected joints in the control group to just 15% in the vaccinated group. As a result, lameness more than halved in the 13 days post-challenge. The trials showed a net saving of $2,500/100 head (£1,975/100 head).

"Mycoplasma bovis is often well advanced by the time it is picked up, so prevention is definitely better than cure, and will help to reduce antibiotic use on farm," says Mr Fowlie. "But as the disease is endemic in the UK dairy and beef herds, it can be hard to avoid it unless you run a strictly closed herd. I'm extremely hopeful that this new vaccine will be the answer that I and lots of other vets and farmers are looking for."

Ruth Willis

Coming from a sheep farm in Cornwall with a degree in Rural Business Management Ruth Willis joined the Agri-Hub team in May 2018. She regularly contributes to a wide range of publications and was runner up in the John Deere / BGAJ training award in 2018.

Email: ruth@agri-hub.co.uk