

Vaccination – Part of the Answer for Mycoplasma Bovis

Vaccines provide well-recognised protection against disease in livestock – but what happens when they don't provide 100% efficacy? With some diseases – like *Mycoplasma bovis* – vaccinating is only part of the picture, and excellent biosecurity measures are also required for decent levels of control.

"It's really important to install all of your control measures first," explains Emmie Bland, director at Beacon Farm Vets, Lancashire. This includes keeping a closed herd or testing purchased stock, not mixing ages, keeping calves in small groups, disinfecting feed equipment, reducing stress, and ensuring good ventilation in livestock buildings.

"Feeding unpasteurised whole milk is also a key route of infection, as cows can be carriers without showing symptoms," she explains. "Often, producers will feed powdered milk to their heifers and whole milk to their bulls, but once one calf is infected the disease will easily spread."

Mrs Bland suggests using bulk milk PCR tests to ascertain the level of infection within a dairy herd, or blood tests for beef animals and purchased stock. "We're now adding *M. bovis* to our pre-purchase screening tests, alongside BVD, IBR, leptospirosis, neospora and Johne's."

M. bovis has definitely become more prevalent in recent years, causing pneumonia, contagious mastitis, swollen joints and middle-ear disease – and it's notoriously difficult to treat with common antibiotics, she adds.

"So if you feel that you've done everything you can and you're still not winning, then you need a vaccine to help you. Often, it will tip the balance in your favour." However, until recently, the only available vaccine was an autogenous one, produced specifically for an individual farm.

This requires a sample to be taken from a sick or dead animal, which is grown on into a culture. The type of sample will depend on the presentation of the disease – for example a deep nasal swab or lung tissue sample would be required in the case of pneumonia.

The culture is then grown in a lab and the isolate cloned to purity so that different strains can be identified, explains Tim Wallis, managing director at Ridgeway Biologicals. If one strain is identified, that will be used to create a single-strain vaccine, whereas where multiple strains are present they will be used to create a multi-strain vaccine. "It takes about two weeks to get a pure isolate, then we are able to supply the vaccine onto farm within eight to 10 weeks."

All vaccines are subjected to standard testing to ensure purity, sterility and activity, and then must be tested on farm before they can be widely used. "You must inject a double dose into a minimum of five animals and check them daily for a week for reactions." This includes monitoring temperatures every day.

After the initial week-long test, this must then be repeated for another week, says Dr Wallis. "If the vaccine is to be used

on calves, it must be tested on calves; if it's to be used on pregnant cows, it must be tested on pregnant cows."

Ridgeway made its first *M. bovis* vaccine in 2016 and farmers are now requesting them more widely.

However, the time and associated costs of an autogenous vaccine can be off-putting, says Mrs Bland. Fortunately, farmers and vets now have another option: An imported multi-strain *M. bovis* vaccine from the US, which can be prescribed in the UK under the Cascade system.

"I'm really interested in the imported vaccine, partly because of the convenience of having something on the shelf rather than waiting for months," says Mrs Bland. "Studies show that it's reducing the incidence and severity of symptoms in the US by about half – and as a one-dose shot it will be cheaper than an autogenous vaccine.

"We're yet to see any trials results in the UK but based on the US studies it should give a return on investment of over 700%. But neither the imported or autogenous vaccine are the only answer to *M. bovis*.

"The farm on which we've used an autogenous vaccine has seen a huge improvement – but we've also instigated significant management changes at the same time," she explains. "You can't rely on vaccinating without implementing the other biosecurity measures."

Ruth Fraser, a vet at Strathspey veterinary practice in Morayshire, used an autogenous vaccine on calves last year. "The farmer felt that there was definitely an improvement in pneumonia, although there are other respiratory issues on the farm and he's now vaccinating for the other pathogens too," she says.

"It can be astronomically expensive to culture *M. bovis* – it took us four oral-nasal swabs and several post-mortems." This year, the farmer is going to trial the autogenous vaccine against the import vaccine on calves and pregnant females in a bid to pass on resistance in the colostrum.

Most of Mrs Fraser's clients are tenant farmers with closed suckler herds – so while biosecurity is high, they can't do much to improve old buildings with poor ventilation. "This means that vaccination carries more weight – I would much rather that farmers vaccinate than have bottles of Draxxin antibiotics going out onto farm."



Ruth Wills

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