



How to manage Johne's Disease

In the last 20 years, Johne's disease (JD) has become established in New Zealand's deer herds, and it is a significant concern to the whole deer industry.

The disease has been the subject of much research in recent years, both in the field and in the laboratory.

The research is aimed at understanding the disease, detecting it, preventing it, and learning to control it.

Progress is being made in all three areas (see Bulletin Three).

Farmers have a number of management options to help limit their losses, and management strategies are constantly being upgraded as the results of research become known. This Bulletin outlines the best management options currently available.

How do you know you've got JD in your deer?

JD can show up in several ways:

- as clinical cases (veterinary confirmation)
- at the DSP (where the carcass will be detained and subsequent returns will be reduced)
- as a result of further diagnostic testing of Tb reactors

What to do when you've got JD

If JD is confirmed on your farm, you have a range of options to help detect and control the disease, including blood and faecal testing, culling and management strategies.

Firstly, and before you begin to deal with the outbreak, you, your veterinarian and/or specialist advisor should assess the significance of the outbreak and develop a management plan that you can afford, that incorporates the most up-to-date scientific knowledge and that is appropriate and practical for your type of farming operation. The plan will include the following steps:

1 Cull clinically affected deer

The first step is to cull all deer that are clinically affected with JD as soon as possible. They contaminate the pasture with JD bacteria in their faeces, and deer become infected ingesting bacteria principally from other infected deer.

Note that when pregnant hinds are found to have clinical JD they too should be culled promptly. Don't wait until they have calved, because unborn deer can be infected in the womb, and new born deer may be infected by colostrum from an infected dam.

2 Identify sub-clinical cases

Follow up confirmation of JD in the herd by looking for sub-clinical cases. These are the deer that are infected but not yet showing signs although they will be passing Johne's bacteria in their faeces. They can be detected using one of the following ancillary tests:

The **PARALISA** is a blood test for JD available from the Disease Research Laboratory, Otago University, Dunedin, and it is claimed to be more sensitive (detects deer at an earlier stage of disease) and more specific (very few false positives) than other blood tests. It is used for testing live animals by detecting antibodies (a type of marker) in blood samples. Results can be made available within a week.

Other publications produced by the JRG include:

- **JRG Information Leaflet**
"Johne's disease in farmed deer".
Dr C G Mackintosh, Invermay AgResearch (August 2002)
- **JRG Bulletin One**
"Johne's disease in New Zealand farmed deer. What does this mean for you and your farm in 2004?"
- **JRG Bulletin Two**
"Detained carcasses: Johne's disease lymph node lesions in slaughtered deer and their implications"
- **JRG Bulletin Three**
"Update of current research on Johne's disease in deer"

continued

The **Indirect ELISA** has been developed by Gribbles' Laboratory, Palmerston North for the diagnosis of JD in sheep, cattle and deer, but it is not yet in widespread use.

Faecal culture involves taking an individual faecal sample from a suspect animal for BACTEC culture. The results are available in four to six weeks.

Pooled faecal culture, also using BACTEC, is useful for screening groups of 20 to 25 animals cost-effectively, where infection is absent or at a low level.

The **PCR** is a quick test for a specific sequence of DNA (genetic material) in particular bacteria or viruses in blood or body tissue samples such as lymph node. The PCR can be used for JD and Tb diagnosis. It is not as sensitive as culture but it can be very specific. It can be useful for rapid diagnosis, in for example a sale situation. It is more often used to test post mortem samples. It is not yet in common use by veterinarians.

3 Cull sub-clinically affected deer

When tests confirm that deer are sub-clinical cases they should be culled promptly.

4 Management strategies

Management strategies can help prevent new cases occurring. A study of the epidemiology of JD in deer is underway and this is expected to indicate the ways in which JD is spread. Until the results of this study are available, the best advice is along the following lines:

Apply "Good Farming Practice"

- Provide optimal nutrition.
- Ensure good preventive health strategies, eg prevent yersiniosis, and ensure there are no mineral deficiencies or parasite problems.
- Provide good shelter, and minimise disruption of established social groups.

Reduce faecal ingestion

- Provide water in troughs. Fence off streams and wet areas and try to prevent wallows being formed.
- Provide concentrate feed in troughs or containers rather than on the ground. If this is impractical, feed on clean areas of pasture.
- Maintain high post-grazing pasture heights, use a faster rotation, and lower stocking density.
- To reduce JD contamination of pastures, spell them, finish beef cattle on them or take commercial crops from them for 18 months or more. (preferably over two summer periods) before putting deer back on, then use them for finishing deer for slaughter, and use DSP returns to monitor for JD.

Vaccination

Currently vaccination is not an option, because vaccines like Gudair cause positive reactions to many of the tests for Tb including the skin tests (MCT and CCT). At present, several investigations are underway to find a suitable vaccine, but currently no solution to the problem seems imminent.

What to do if you haven't got JD

The following guidelines should help prevent the introduction of JD to land that is free of it:

- Establish a closed herd policy; ie, don't bring any deer, cattle or sheep onto your farm unless they are from herds or flocks that have been shown to be free of JD. (ie tested by faecal sampling or Paralisa).
- Introduce new genes by AI, using semen from stags tested free of JD.
- Reduce risk by quarantining and testing groups of ruminants coming onto the farm. Quarantine for at least 12 months. Test incoming deer.
- When bringing more paddocks into your deer farm, don't move deer on until you have spelled the land, finished beef cattle on it or taken commercial crops from it for 18 months or more (preferably over two summer periods), then use it for finishing deer for slaughter, and use DSP returns to monitor for JD.

Erratum: In Bulletin Three, page four, 'Definition of Technical Terms', in the second paragraph of the item on MCT, delete 'false' in the second line, and delete the last line ('...CCT, MCT. CCT or BTB') and substitute '...CCT, ETB or BTB'.

Please note: An expanded list of the available diagnostic tests for JD will be published shortly to complement this series of Johne's Research Group Bulletins. This list will include costs, turnaround times and practical applications.

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