

## What tests are carried out to identify the cause of lymph node lesions?

It is often not possible for the meat inspector to distinguish between lymph node lesions caused by bovine Tb, JD and one of the relatively harmless bacteria. Diagnosis requires further testing, and the first test carried out is histology (microscopic examination of lesions). The results are usually available within a few days. When lymph node lesions are present, the carcasses are “detained” for a few days until histology results are available, then, depending on the results, the carcasses can be exported or sold on the local market.

The timing is crucial, because the carcasses can only be held for 3 days before processing. So there is considerable interest in developing new diagnostic tests that can provide results within 3 days while still being accurate. The proposed national database of JD prevalence and individual herd history could also be used to hasten clearance. The JRG is promoting these developments although they are still in the early stages.

### Histology will usually show one of the following:

- The cause of the lesions is a relatively harmless bacterial infection such as *R. equi*, and Tb is ruled out.
- JD is the cause of the lesions and Tb is ruled out
- Tb is confirmed or Tb cannot be ruled out. Many JD cases fall into the second of these categories, because the lesions are so like those of Tb that even the histologist can't tell them apart.

In all cases in which Tb can't be ruled out, fresh samples from the lesions are forwarded to a specialist laboratory for further testing (usually the new BACTEC test or culture, or in a few cases the Polymerase Chain Reaction [PCR] test on bacterial DNA, which is quicker but not so sensitive). When samples are sent away for these tests, it may be 3-8 weeks before results are available. Unless Tb can be ruled out in the interim, the carcass cannot be exported. However it can be sold on the local market.

---

## What are the implications of lymph node lesions in your deer?

The lesions caused by bacteria such as *R. equi* or *M. avium* are of no real significance (other than complicating bovine TB diagnosis). If Tb is the cause of the lymph node lesions, then there are profound implications for your herd, which is put on movement control and the requirements of the Tuberculosis Control Scheme take effect. Sometimes when culture or BACTEC test results are pending and until the suspicion of Tb is resolved, your farm's Tb status will be down-graded to “suspended”. Your local Disease Control Manager makes this decision.

If the cause is JD, this means that JD is established in your herd, although it may be present only at a low level. Because JD infection usually occurs when the fawn is young, the significance of the diagnosis depends on whether or not the deer were bred on the farm. If they were, the disease is present in the hinds. If you bought in the deer as weaners, they will have been infected before they arrived, but since they have been on the farm for some time, the bacteria are on the farm for the long term. Lesions in adult deer at a DSP mean that JD is well established in your herd and the yearlings are probably at risk of outbreaks.

## If you have JD on your farm – don't despair!

If you have JD in your deer, you will need the help of an experienced veterinarian, but there are tools that can help control the disease, including blood testing, and management and culling strategies. The JRG has a store of practical information that you can use, and it can put you in touch with other farmers and their advisers who have successfully controlled JD in their deer herds.

### The Johne's Research Group: What is it?

The Johne's Research Group (JRG) is a group of South Island NZDFA Branch leaders and selected deer farmers and deer veterinarians. It operates with a management group of eight. It is supported by DINZ and the NZDFA and is a special interest NZDFA branch in its own right.

The JRG is an industry signatory to the 5-year FORST grant for research and investigation into vaccination laboratory tests and epidemiological studies for Johne's disease in deer. The research is carried out mainly by AgResearch Invermay, AgResearch Wallaceville, Massey University and the Deer Research Lab and there is a coordinated national approach.

In supporting research, the JRG is actively involved in an epidemiology study (a study of what the disease does on farms), although all the different research projects are integrated to some extent.

The JRG has undertaken to communicate existing and new JD research findings to NZ deer farmers, and this Bulletin is one a series being produced to help fulfill this obligation.

Financial support has been provided by the Sustainable Farming Fund, many NZDFA Branches, special funding projects (eg Words and Pictures Calendar) and private donations. Industry financial support is strongly underwritten by the Deer Industry New Zealand Board through DEEResearch Ltd. DEEResearch also funds other projects related to Tb and JD research projects.

**For further information contact the JRG Convener:  
Peter Aitken, Levels Valley, R D 4, Timaru, 03 6147482.**

## What is the effect of lymph node lesions on your venison processing cheque?

- If the lesions are caused by bacteria such as *R. equi* or *M. avium*, and the carcass passes meat inspection, you should still get export prices for the carcass.
- If the cause is Tb or JD and the lesion is considered minor and not a risk to venison quality or food safety and the carcass passes meat inspection, it can be sold on the local market, but at a price that is much lower than export price.
- In some cases of JD, the carcass can be passed for export, but only if it passes meat inspection, if certain lymph nodes only are affected, if there is a known history of JD on the farm and if histology confirms JD within 72 hours. The industry is trying to streamline this process by encouraging better co operation between all parties concerned and consistent application of ground rules across the DSPs.



## Detained Carcasses: Johne's Disease Lymph Node Lesions in Slaughtered Deer and their Implications.

*This Information Bulletin is provided by the Johne's Research Group*

**Johne's disease (JD) is a significant problem on New Zealand deer farms, for five main reasons:**

- It causes outbreaks of disease (scouring, weight loss and deaths) in yearlings. These outbreaks can be large and very difficult to control
- It causes sporadic losses in mature deer
- JD complicates interpretation of the skin test for Tb
- On stud farms particularly, the stigma of JD can result in a drop in sales potential. Equally, if a property can provide assurances that is JD-free, this could add value to the deer it sells.
- JD lesions found at slaughter can look like Tb lesions, and unless Tb is ruled out quickly, the carcass cannot be exported and it is sold on the local market at a much lower price

**This Bulletin (Bulletin Two) discusses the immediate problems of detained carcasses and the losses involved. Bulletin One presented some general background information on JD in deer.**

### What are the differences between **Tb & JD?**

There are differences in the distribution of lesions caused by *M. bovis* and *M. paratuberculosis*. In bovine Tb in deer, by far the majority of lesions are in the lymph nodes of the throat area and sometimes also in the lungs or in the lymph nodes that drain the intestine or the lungs. Usually in JD the only obvious lesions are in the mesenteric lymph nodes that drain the intestine. Sometimes the DSP carcass inspectors can use the characteristics of the lesions and their distribution to help diagnose Tb at the on-chain inspection stage.

### What are the similarities between **Tb & JD?**

Bovine Tb is caused by *M. bovis*, and this bacterium is closely related to *M. paratuberculosis*, the cause of JD. The two organisms look similar under the microscope, they cause a similar reaction in the body, and the immunological reactions they provoke are similar too. This is why in the TB skin test, bovine tuberculin causes a reaction lump in deer that are infected with *M. paratuberculosis*. In other words, deer with JD give false positive reactions to bovine tuberculin on standard intradermal skin testing.

The cause of the problem at carcass inspection at Deer Slaughter Premises (DSPs) is that the two organisms can both cause gritty, cheesy or pus-filled lesions in the lymph nodes that drain the intestine (these are the mesenteric lymph nodes). The most important function of the inspection routine is to detect Tb lesions, and JD lesions complicate this process, because at inspection, deer with JD often have lymph node lesions that look just like bovine TB lesions. There are a few other bacteria (including *Rhodococcus [R.] equi* and *Mycobacterium [M.] avium*) that can also cause similar lymph node lesions. Even the most experienced inspectors usually can't tell these lesions apart. Diagnosis requires, firstly, testing by histology, and then, if this doesn't provide answers, further culture or BACTEC tests (a new culture method involving liquid medium that can be more sensitive and quicker [3 to 6 wks] than standard culture).

Lymph node lesions can be present in deer that have not developed any clinical signs of disease, and the deer may even be in good body condition. You the owner may be unpleasantly surprised when the DSP return shows that some of your deer have been down-graded from export quality for sale on the local market (at a much reduced price) because of lymph node lesions.

### Other publications produced by the JRG include:

JRG Bulletin One: "Johne's disease in New Zealand farmed deer. What does this mean for you and your farm in 2004?"

JRG Information leaflet: "Johne's disease in farmed deer". Dr. C G Mackintosh, Invermay, AgResearch (August 2002).