Johne's Disease
in New Zealand Farmed Deer

Johne's Research Group

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Johne's disease: A large epidemiological study gets underway at last

Massey University

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An epidemiology study into on-farm aspects of Johne's disease (JD) in deer was begun in September 2004, in response to a growing concern within the New Zealand Deer Industry about an apparent increase in the prevalence of clinical JD. Veterinarian Jaimie Glossop has been employed by the Johne's Research Group (JRG) and Massey University to undertake this research under the supervision of Professors Peter Wilson and Dave West, and Drs Cord Heuer and Colin Mackintosh, with the strong support of industry, government and specialists in a number of related disciplines throughout New Zealand.

Other publications produced by the Johne's Research Group 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"
- **JRG Bulletin Four**:
  "How to manage Johne's disease"
- **JRG Bulletin Five**:
  "Research Update"
  - *Intra-uterine transmission of Johne's disease in farmed red deer*
  - *Is Johne's disease common in wildlife on infected farms?*
  - *Summary of the results of on-going Australian research on Johne's disease in sheep*
  - *Update on JD research in Australia*
- **JRG Bulletin Six**:
  "Glossary of technical terms relating to diagnostic tests for tuberculosis and Johne's disease in deer"

JD has been extensively researched in the beef, dairy and sheep industries, particularly in Australia where JD market assurance programs have been applied for over a decade. JD in deer, however, represents a unique challenge to deer farmers, veterinarians and researchers. In addition to sporadic cases of the disease in adult deer (as seen in sheep and cattle), deer also suffer from outbreaks of JD with reports of weaner deaths of up to 20% of the herd. While the occasional death of older stock results in lost income, weaner outbreaks can represent a serious and on-going economic burden.

The primary aim of this research project is to formulate practical and effective management practices to protect farms with clinical disease from unacceptable economic loss due to JD on a long-term basis.

To launch the epidemiology study, a pilot study was undertaken on 22 farms in the Otago and Canterbury districts in late 2004. Because of the small size of the sample and the wide range of variables no clear causal factors were identified in the pilot study. However it provided valuable insight into the type of data specific to JD that can be collected from deer farms and created the opportunity to gain an understanding of deer production systems, deer farms and the deer industry. The study also allowed the researchers to successfully trial a detailed questionnaire which is to be used in the nationwide case-control study in late 2005.

Fourteen farms were classified by the property owner as "no JD apparent" based on the following criteria:

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- No diagnosis of JD on-farm by blood test or culture
- No carcasses detained at a Deer Slaughter Plant
- No clinical signs typical of JD in the deer herd

The remaining herds were termed "JD confirmed" as there had been an obvious and recorded occurrence of JD manifested by deer deaths, detained carcasses or TB non-specific skin reactors, with JD confirmed by culture.

Ten percent of the MA hind herd were blood sampled and tested for JD via the Paralisa blood test developed by the Disease Research Laboratory at Otago University. Significantly twelve of the fourteen "no JD apparent" properties had deer that tested positive despite a lack of obvious clinical signs on-farm.

Until we have confirmation by faecal culture, diagnosis of herd infection status cannot be conclusive. These results do indicate, however, that a deer herd that is not currently affected with JD and in which JD has not previously been diagnosed may still contain blood test positive deer.

The pilot study results have stimulated discussions between researchers and industry on a number of topics including use and validation of diagnostic tests, herd JD status classification and possible risk factors.
A retrospective study, completed in four deer slaughter plants in early 2005, found there is an urgent need for a standardized system of JD diagnosis based on such factors as a property's JD and TB history. The epidemiologists are developing a specialized database where properties can volunteer to have information entered. Researchers will use the database to undertake a complex statistical analysis on data derived from the case-control study mentioned below. In the future the database may be used if participants agree to contribute to a reduction in carcass detainment in slaughter plants due to JD.

In late 2005, a nationwide case-control study will be completed comparing the infection status of deer herds and the presence or otherwise of clinical signs of JD with the management practices used on farm. There has been an excellent response to the initial call for volunteers to participate in this study. However, the North Island is currently under-represented. Properties which have not seen any evidence of JD on-farm (ie: "no JD apparent"), whether North or South Island are urgently required.

If you are a North Island deer farmer and/or have not experienced JD on your property, we would really appreciate your help. A small amount of your time will result in a valuable gain of knowledge concerning the probable JD status of your herd, at no cost to you. It will also provide the industry with useful information in terms of establishing important management practices to minimize the impact of JD on deer farms. If you would like to learn more about the study, please fill out the form attached and mail to Jaimie Glossop or contact her on the details below:

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