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Aspects of *Trichinella spiralis* in New Zealand

A thesis presented

*in partial fulfilment of the requirements for the degree of
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Abstract

In New Zealand, *Trichinella spiralis* appears absent from commercial pigs, and is not a significant cause of zoonotic disease. Surveillance testing at slaughter has not ever detected *T. spiralis* in a commercially raised pig in New Zealand, yet many importing countries still require individual testing of all pig carcasses for export. This thesis comprises four studies designed to evaluate the risk of *T. spiralis* infection in commercial pigs in New Zealand.

In the first study, the prevalence of *T. spiralis* was surveyed in selected populations of rats, cats, stoats and weasels from landfills, piggeries and Department of Conservation lands as they are considered potential reservoirs of *T. spiralis* for domestic pigs. No positive samples were detected in this survey. The second study investigated rodent activity and baiting efficacy on three commercial piggeries in the Manawatu region of New Zealand over 72 weeks. This study found that while baiting and on-farm sanitation can effectively control rodents, the efficacy of the control depends largely on staff commitment.

The third study used a mail questionnaire sent to 123 piggeries, to survey current management practices on commercial piggeries that could pose a risk for *Trichinella* transmission. The survey had a 69% response rate and found that risky management practices occur infrequently in commercial piggeries.

Lastly, a quantitative risk model was developed comparing individual carcass testing with alternative risk management strategies to assess the annual probability that a consumer in an importing country will eat a pork product of New Zealand origin containing at least one larva per gram of *T. spiralis*. Offals were found to always be safe. However, the unrestricted risk for fresh pork was over one in a million (1.87×10^{-5}), which was above the safety threshold and therefore various risk management options were considered. The strategy of only exporting pigs reared in certified, confined commercial herds has now been accepted and is in place by the importing country. This means that individual carcass testing is no longer compulsory for every exported pig carcass.

The overall conclusion from this research established a very low risk of *T. spiralis* infection and transmission in New Zealand commercial piggeries. These findings have directly led to successfully changing export legislation by removing compulsory carcass testing pre-export, which has advanced New Zealand's ability to competitively export high quality pork and pork products.

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