

Case Control Investigation of *Neospora* Seroprevalence and Risk Factor Analysis for Infection and Associated Abortion in Ontario Holstein Dairy Herds

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Introduction

In the last 10 years *Neospora caninum* has been identified as a major cause of abortion in dairy cattle worldwide. The objectives of this study were to characterize the impact of *N. caninum* infection on production and health in Ontario Holstein dairy herds and to identify possible risk factors for *N. caninum* serostatus and related abortions.

Materials and Methods

Utilizing Ontario Dairy Herd Improvement services, 90 herds were selected and divided into three groups. Case and first control herds were selected from 1998/99 fetal abortion submissions to the Animal Health Laboratory (AHL), University of Guelph, Ontario, Canada. Case herds fetuses that were histopathologically positive for *N. caninum*.

A second control group was selected from multiple sources of previously sampled herds that had a low prevalence (<7%) of antibodies to *N. caninum* and control herd fetuses were histopathologically negative. Historical serology for identification of these herds was not more than 4 years old.

Between May and October 1999 all available cows on all farms in parity one or greater were blood sampled.

Sera was analyzed at the California Veterinary Diagnostic Laboratory System, Davis, using a kinetic ELISA for anti-*Neospora* antibodies. A comprehensive survey administered at the time of sampling collected information on housing, manure management, reproduction, biosecurity, peri-parturient cow management, as diagnosed by the AHL, exhibited seroprevalences that ranged from 0 to 66.4% and averaged 18.9%. Herds that experienced an abortion due to a pathogen other than *N. caninum* had a seroprevalence that ranged from 0 to 77.6% with an average of 9.9%. For the low prevalence control group the values ranged from 0 to 19.7% with an average of 6.2%. Herds are currently being analyzed for management or production differences based on case/control status.

Conclusions

To date, this research has demonstrated a higher overall *N. caninum* seroprevalence in herds that have submitted a *N. caninum* positive fetus, compared to other herds. When completed, it is hoped that this research will quantify the effect of *N. caninum* on production and cow health in Ontario. Also, any associated risk factors for *N. caninum* infection and abortion, including those specific to the province of Ontario, will be used to rationalize control recommendations for the parasite.