

Risk Factors for Johne's Disease in Ontario Dairy Herds

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Introduction

Treatment of Johne's disease is not efficacious or economical for a commercial dairy herd. Efforts should instead be placed into management of the disease. However, prevention and control of Johne's disease can only be achieved if the risk factors are clearly identified. The objective of this study is to evaluate herd-level risk factors associated with the prevalence of Johne's disease in Ontario dairy herds

Materials and Methods

Veterinary practices from across southern Ontario nominated 44 dairy herds with a history of Johne's disease for this case-control trial. All herds also had to be enrolled in regular Dairy Herd Improvement (DHI) milk recording. A second group of 50 dairy herds was then randomly selected from a DHI database. Herds were selected proportionately from the five DHI districts in southern Ontario. Each farm enrolled in this study had an on-farm management questionnaire completed during summer 2003. The survey collected both background information and specific management information on the young-stock and cow herd. Milk samples preserved with bronopol were collected from each individual lactating cow at the following DHI test day. These milk samples were sent to AntelBio Systems (Lansing, MI, USA) for an in-house milk ELISA. Cows with a corrected (OD) of greater than 0.1 were considered positive for Johne's disease. Preliminary multivariable models were generated using an R/N logistic regression approach to measure the association between specific

management risk factors and herd prevalence of Johne's disease. Models were created for each of the management areas, and variables that were found to be significant at $P < 0.25$ were then included in the final model. The final model was reduced until remaining variables were significant at $P < 0.05$. The DHI district for each farm was forced into the model to control for regional differences between farms.

Results

Cow-level prevalence within the randomly and purposively selected herds was 0.9 and 2.0%, respectively. Herds were considered positive if two or more cows were positive on the milk ELISA. Herd-level prevalence was 20 and 43% for the randomly and purposively selected herds, respectively. Variables found to be associated with a higher Johne's disease prevalence in the preliminary final model included: 1) a history of Johne's disease; 2) housing type (free-stall vs. tie-stall); 3) number of milking cows; 4) calves able to nurse their dam; 5) monensin sodium usage; and 6) direct contact of pre-weaned calves with cows.

Significance

Some risk factors identified have previously been described for other regions beyond Ontario. Understanding the significant risk factors will hopefully improve development of voluntary control programs for Johne's disease.