

Johne's Disease in Ontario's Small Ruminant Dairy Industries: Prevalence, Potential Risk Factors, and Performance Comparison of Serum, Milk and Fecal Diagnostic Methods

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Background: Johne's Disease (JD) is an economically important disease impacting the dairy industries, however; information on the prevalence of this disease in Ontario, as well as Canadian, dairy goat herds and dairy sheep flocks is scarce. The epidemiology of this disease is further hampered by a lack of rapid, reliable diagnostic tests. Test validations will allow for informed recommendations to be made to veterinarians, industry groups and small ruminant producers on diagnostic testing, test interpretation, and surveillance for JD. The results of this study will contribute to our understanding of epidemiology of JD in Ontario dairy goats and sheep, and will help to inform future JD management and control programs in these growing industries.

Objectives:

1. Determine the herd level prevalence and within-herd prevalence of Johne's disease in Ontario dairy goat herds and dairy sheep flocks;
2. Determine the level of agreement between various diagnostic methods for Johne's disease, and validate them against the reference test. The tests to be evaluated are:
 - a. Individual animal serum AGID
 - b. Individual animal serum ELISA (Prionics)
 - c. Individual animal serum ELISA (IDEXX)
 - c. Individual animal milk ELISA (Parachek)
 - d. Individual animal milk ELISA (IDEXX) – currently 25% of samples
 - e. Bulk tank milk PCR
 - f. Bulk tank milk hyperELISA
 - g. Individual animal direct fecal PCR
 - h. Individual animal fecal culture (*reference test);
3. Identify potential risk factors for herds and flocks being Johne's disease-positive through a herd / flock management questionnaire; and
4. Bank fecal specimens for a future project involving molecular techniques and strain-typing of the causative agent of Johne's disease (*Mycobacterium avium* subspecies *paratuberculosis*).

Sampling: Ontario dairy goat herds and dairy sheep flocks will be selected using randomized, stratified sampling to ensure adequate representation of small, medium, and large-sized farms. Twenty randomly selected animals, 2 years of age and over, will be sampled from 29 goat herds and 20 sheep flocks.

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