

Identifying Infection, Improving Flock Health & Increasing Profits

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Collaborating with the University of Guelph, the Ontario Sheep Marketing Agency will receive up to \$46,750 under the Ontario Farm Innovation Program (OFIP), to investigate the prevalence of Maedi-visna virus (MVV) and Mycobacterium avium subsp. paratuberculosis (MAP) co-infection in Ontario sheep flocks. This project will also investigate the host immune response to these pathogens and how they interact.

MVV and MAP, the causative agents of Johne's disease, are two major sheep pathogens that contribute substantially to economic losses incurred by Ontario sheep producers. Given the widespread nature of these two pathogens in North America, it is likely that many sheep are co-infected with both MVV and MAP; however, the prevalence of co-infection in Ontario is still unknown. It is also unclear how MVV and MAP interact within the host cells they infect. Given that both pathogens are known to modulate host immune responses, understanding how these pathogens interact is necessary for vaccine development, improved diagnostic testing, and improved flock management strategies.

First, a scientific literature review will be conducted to investigate the immune response, and discuss the potential for selectively breeding for disease resistance, which will serve as a knowledge-sharing tool for producers. Next, the prevalence of MVV and MAP co-infection will be estimated using serum samples from approximately 397 sheep from 21 different Ontario sheep operations. Maedi-visna infection status will then be assessed using an ELISA kit that detects the presence of MVV-specific antibodies.

This project will contribute to the development of new strategies to combat economic losses associated with MVV and MAP infections. Knowledge gained from this study will also highlight the importance of on-farm applications of innovative health management strategies that exist in other livestock sectors, such as the dairy cattle industry, to reduce the incidence of disease.

This project was funded in part through Growing Forward 2 (GF2), a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of GF2 in Ontario.