University of Prince Edward Island

Faculty of Veterinary Medicine
Summary of Dissertation

Submitted in Partial Fulfilment
of the Requirements for the

DEGREE OF MASTER OF SCIENCE

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Bovine Viral Diarrhea Virus (BVDV) Vaccine Usage In Atlantic Canada And The Evaluation Of A Novel Method To Detect BVDV Persistently Infected Individuals By Swabbing Consumption Surface

The overall research goal was to evaluate control methods for bovine viral diarrhea virus (BVDV) in dairy cattle within Atlantic Canada (AC). This consisted of two primary objectives: BVDV vaccine use surveillance, and BVDV prevalence and screening evaluation.

BVDV vaccine use questionnaires were sent to all registered dairy herds within AC (n=647). Serial bulk tank milk (BTM) samples were collected and evaluated with enzyme-linked immunosorbant assay (ELISA) for antibody and with reverse-transcriptase polymerase chain reaction (RT-PCR). BVDV vaccinated herds comprised 67.9% of respondents. Of these vaccinated herds, 89.2% used “modified-live virus” (MLV) vaccine and 46.7% used “killed virus” (KV) vaccine, at some level in the herd. Use of both MLV and KV vaccine occurred in 35.9% of herds. In respondent vaccinated herds, 37.1% were vaccinated once annually, while 62.9% vaccinated at multiple times throughout the year. A total of 5 herds had a positive PCR on BTM and 8 were suspect-PCR-positive. Although vaccine use was common, a multimodal approach to BVD control is advised.

Objective 2, evaluation of the prevalence and two screening methods for BVDV persistently infected (PI) individuals, involved screening for and identifying PI animals throughout the Maritime Provinces. All registered dairy herds had BTM screening with antibody ELISA and RT-PCR. Herds considered likely to have a PI animal on BTM results, underwent whole herd animal testing by antigen ELISA. 8 herds had a PI identified, for a herd level PI true prevalence of 1.49%. A novel screening method using a consumption surface swab assay (CSSA) was evaluated and compared to another screening method, sentinel animal monitoring (SAM). The sensitivity of SAM was 83.3%, while specificity was 81.6%. The sensitivity of CSSA was 50%, while specificity was 100%. The CSSA, as used in our study, may be utilized as a confirmatory test but not a screening test.

Biographical Data

Born in Springfield, Vermont USA