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RESEARCH FACTS

RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

Beef Science Cluster



Establishing a long term surveillance network to support Canadian beef cattle research

Project Title:

Implementation of a longitudinal disease surveillance network for cow-calf operations in western Canada

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Project Code:

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Background:

Animal health monitoring and disease surveillance is critical to an industry such as the Canadian beef industry that has a significant reliance on export markets. Infectious diseases can have devastating consequences on both the economic viability of beef operations but also on the ability to sell cattle and beef products to a variety of markets.

Surveillance systems can provide quantitative evidence of the impact of management decisions and management practices on our beef operations and the extent to which producers are adopting practices such as animal welfare practices or health management practices. The estimates of production parameters that are established through surveillance may help to prioritize investment in research and risk management. The importance of animal health monitoring and surveillance systems has been recognized in Canada with the formation of the Canadian Animal Health Surveillance System which is an initiative of the National Farmed Animal Health and Welfare Council and also includes broad based collaborative support of industry and governments. All of these partners recognize the importance of animal health surveillance systems and have a shared national vision to have effective and integrated animal health surveillance in Canada.

Objectives:

The primary objective of this research project was to provide a sentinel animal health surveillance system for cow-calf herds in Western Canada. It aimed to provide benchmarking productivity data, estimates of the prevalence of production limiting diseases and to evaluate various management practices such as antimicrobial use, animal welfare practices and biosecurity practices.

What they did:

National census data was used to target the geographic selection of cow-calf herds within each province to match the reported geographic distribution of herd sizes and herd density. Veterinarians across Manitoba, Saskatchewan and Alberta were asked to identify beef cow-calf clients who might be interested in participating, who pregnancy checked on a regular basis, and who kept basic calving and production records. Producers were offered a small honorarium for surveys completed each year. Recruitment was contingent on a willingness to participate in questionnaires, biological sample collection and a minimum herd size of 100 cows.

Overall, thirteen full surveys on a wide variety of production, management and disease topics, four follow-up surveys and 3 quick fact sheets were distributed to participants of the surveillance network. As part of the surveillance network, 2 biological sample collections were performed by the local veterinarian at pregnancy testing which provided samples of blood and feces from approximately 20 cows per herd in 2014 and 2016. In addition, in a subsample of the herds, samples were collected from breeding bulls in 2015 to test for reproductive diseases and fecal samples were obtained from a sample of calves in 2016 to test for parasites.

This is an example of an extensive community-based participatory research project. The producers who participated in the sentinel surveillance network and the local veterinarians were fundamental to the success of the project.

What they learned:

This project generated a great deal of information on a wide variety of topics pertinent to the cow-calf industry in Western Canada. One of the key highlights was the multi-year description of reproductive performance and calf mortality over time in these herds. This benchmarking productivity data allows producers across Western Canada to compare their own productivity levels and to evaluate what is realistically attainable. One of the studies within the network project which focused on marketing and economics demonstrated that producers who utilize benchmarking and keep good records can potentially increase production by 60 lbs per exposed female.

Overall averages for the years 2014-2017 of five important productivity indexes from the herds who provided data within the surveillance network:

1. Proportion of cows and heifers not pregnant at pregnancy testing (Cows – 6.8%; Heifers – 9.7%)
2. Percentage of cows and heifers exposed to breeding that calved (Cows - 86.2%; Heifers – 78.7%)
3. Abortion risk for cows and heifers (Cows – 0.8%; Heifers – 1.3%)
4. Stillbirth risk for cows and heifers (Cows – 2.1%; Heifers – 3.6%)
5. Risk of mortality for calves from 24 hours of age to weaning (Cows – 2.5%; Heifers – 2.9%)

The surveillance network also provided estimates of the prevalence of some of the production limiting diseases within Western Canadian cow-calf herds. Evidence of infection with Johne's disease was observed in 1.6% of cows sampled and 5.4% of herds were identified as infected (classified as two or more cows with positive blood tests). Evidence of infection for the parasite *Neospora caninum*, an important cause of abortion in cattle, was observed in 6.7% of cows and 66% of herds were identified as infected (at least one cow with positive blood tests). Evidence of infection for Bovine leukosis virus was observed in 2.3% of cows and 14.6% of herds were identified as infected (at least one cow with positive blood tests).

What it means:

The surveillance network was highly successful in providing benchmarking productivity information, estimating prevalence estimates for a variety of production limiting diseases and monitoring a variety of market access issues such as antimicrobial use and animal welfare practices. It was also able to identify a number of risk factors for productivity loss such as trace mineral deficiencies and establish baseline estimates for the adoption of many management and production practices, including vaccination to minimize the need for antimicrobial use.

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