



“Best management practices for the prevention and control of Johne’s disease in Western Canadian beef herds”

PREVENTION AND CONTROL OF JOHNE’S DISEASE

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RESEARCH INSTITUTION: Western College of Veterinary Medicine

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Background: Johne’s disease is caused by a bacterium (*Mycobacterium avium paratuberculosis*; MAP). Calves are believed to be infected early in life, likely through exposure to infected manure. However, the disease organism hides within the immune cells of the animal and doesn’t become active until the animal is older (typically 4 to 7 years of age). Affected animals progressively lose weight and have a long-standing diarrhea. This will affect the cow’s feed efficiency and shorten their productive life. Milk yield may also decline in infected cows. Surveys indicate that Johne’s disease is present in between 4.4 to 7.9% of beef herds and 0.6 to 1.6% of beef cows in Alberta.

Johne’s disease is very difficult to diagnose, particularly in carrier animals. Because the organism lies dormant with the animal’s immune cells, the immune response is weak until the disease has developed. The organism is also very difficult to culture from manure samples.

Because Johne’s disease is difficult to diagnose without repeated, regular testing, elimination of the disease through “test and cull” approaches have been very expensive, time consuming, difficult, and unsuccessful. A better approach may be to reduce the risk that calves will get infected in the first place.

Objectives: The objective of this project is to identify best management practices to help prevent and control Johne’s disease in cow calf herds in Western Canada.

What they did: These researchers identified 23 Johne’s disease infected and 29 uninfected beef herds in B.C. (4 herds), Alberta (25 herds), Saskatchewan (20 herds) and Manitoba (3 herds). More than 35 different factors (e.g. biosecurity practices, wildlife exposure, feed and water sources, calving management, grazing practices, etc.) were compared between the infected and uninfected herds to determine whether certain management practices may help reduce the risk of Johne’s disease infection or transmission.

What they learned: Three factors were significantly associated with the risk of Johne’s disease.

1. Presence of wild deer: herds that interacted with wild deer were over 14 times more likely to be infected with Johne’s disease. It is important to note that the deer were not sampled for Johne’s disease, so it is not fair to conclude that the deer infected the cattle.
2. Commercial colostrum replacer: herds that used a commercial colostrum replacer were nearly 4 times more likely to be infected as herds that did not. Note that the colostrum was not tested for Johne’s, so we cannot say that the colostrum infected the herds. In contrast, the infected herds may have used commercial colostrum as a means of

controlling the spread of Johne's within their herds.

3. Grazing management: Operations that used continuous grazing were 5 times more likely to be infected than herds that practiced rotational grazing.

Some commercial colostrum products (eg. Saskatoon Colostrum Company) are manufactured using a method that destroys the MAP organism while retaining the beneficial antibodies needed to protect calf health.

What it means: Recommended practices to prevent the introduction and spread of Johne's disease largely revolve around biosecurity and early calfhod management. Biosecurity recommendations (do not buy or sell high risk cattle, or buy from herds that you suspect are infected) are aimed at reducing the risk of introducing Johne's disease. Early calfhod management recommendations are designed to help minimize the spread of Johne's disease to young calves (manage foster cows, supplemental colostrum, bedding, shelter, housing density and segregation carefully to minimize the risk that young calves will come into contact with the bacteria through infected manure or colostrum). Besides reducing the incidence of Johne's disease, these recommended best management practices will likely help to minimize other risks facing newborn calves (e.g. scours due to *E. coli*, *Salmonella*, *Clostridia*, rotavirus, coronavirus, and *Cryptosporidia*, as well as hypothermia and trampling).

More research is needed to confirm whether wildlife can carry and spread Johne's disease to cattle, and whether commercial colostrum supplements may be a source of Johne's disease infection. Although the incidence of Johne's disease is low in Canadian beef cattle and herds, there are concerns that the same organism may also play a role in Crohn's disease in humans. Adopting best management practices to reduce the risk of introducing or spreading Johne's disease should also help to improve longevity of the cow herd, improve productivity and feed efficiency, and reduce losses due to more common calfhod illnesses.

