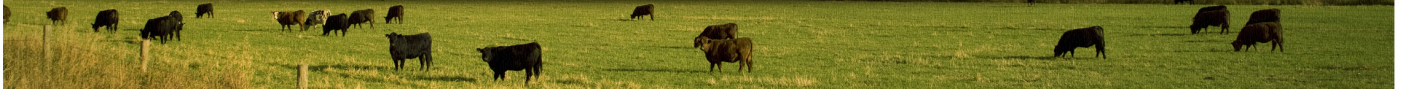




RESEARCH FACTS

RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

Beef Science Cluster



Evaluating a new PCR test for diagnosing vibriosis in beef bulls

Project Title:

Investigating Reproductive Failure in Western Canadian Cow-Calf Herds

Researchers:

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Background:

Venereal diseases like trichomoniasis (trich) and vibriosis (vibrio) remain common causes of reproductive failure in cow-calf herds in western Canada. The symptoms of both diseases are very similar: several open cows at the end of the breeding season.

Unlike trich, there is no good diagnostic test available for vibrio. The organism causing vibrio is very delicate. When samples are collected in the field, they often die before they can be returned to a diagnostic lab for culturing and testing. As a result, vibrio has traditionally been diagnosed by excluding all other common causes of reproductive failure or removal and culture of the reproductive tract at slaughter.

Polymerase chain reaction (PCR) tests may help develop cost-effective and practical diagnostic testing strategies for identifying cattle with vibrio. These PCR tests detect specific DNA sequences. DNA can still be detected even when the vibrio organism is dead, so keeping the organism alive after collection is not critical. However, closely related organisms are likely to have more similar DNA sequences. This means that if a PCR test is based on the wrong DNA sequence, *Campylobacter jejuni* (a bacterium commonly found in the digestive tract that does not cause vibrio) may be mistaken for *Campylobacter fetus venerealis* (which causes vibrio). This is known as a "false positive". This group of researchers has developed a real-time PCR assay for vibrio. However, before the assay is used by producers, clinical validation of the test is needed.

Objectives:

To confirm that a PCR test for vibrio can correctly classify bulls as positive (infected with vibrio) or negative (clean).

What They Did:

Bulls suspected to be infected with vibrio were sampled at the University of Saskatchewan. This allowed the sample to be cultured immediately before the vibrio organism died. A total of 13 infected bulls were sampled several times to obtain positive samples.

Virgin bulls that were known to be uninfected were tested by both culture and PCR for vibrio to determine the false-positive rate. These samples were then used to determine how often the PCR test correctly identified the infected bulls as positive.

What They Learned:

85% of the samples collected from the bulls with vibrio tested positive. Although not perfect, this is much better than the tests that are currently used for field testing in western Canada. These tests attempt to culture vibrio from transport media, and detect 38% of infected bulls. The PCR test did not work as well when samples were collected at temperatures below 5°C. 85% of the virgin bulls tested negative with the PCR test (15% false-positive results).

What it Means:

These researchers have developed a test for vibrio that is reasonably good at identifying positive and negative bulls when sampled in the field. While not perfect, it is an improvement in what has been available to practicing veterinarians.

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