BCRC
BEEF CATTLE RESEARCH COUNCIL
RESEARCH FACTS
RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

Can samples collected from water bowls make feedlot antibiotic resistance surveillance easier?

Project Title:

Evaluation of feedlot water bowls for pen-level surveillance of antimicrobial-resistant bovine respiratory pathogens

Researchers:

Dr. Trevor Alexander (Agriculture Agri-Food Canada; Lethbridge) and Dr. Murray Jelinski (Western College of Veterinary medicine)

Project Code:	POC.05.19
Completed:	*In Progress. Results expected in December 2021.*

Background:

Preventing antimicrobial resistance (AMR) is a major priority for the beef industry, but currently all methods to determine antibiotic resistance in BRD bacterial pathogens require the collection of deep nasal swabs from individual animals. This is costly, labor intensive, and not that easy to do, so it isn't ideally suited to routine surveillance data collection. In contrast, sampling for AMR in gastrointestinal microbes is easy, because it can rely on fecal samples collected from the pen floor – no individual animal handling or sampling is needed. An ability to collect informative samples for antibiotic resistance in BRD pathogens using pen level samples rather than individual animals would benefit both AMR surveillance and research efforts.

Project objectives and deliverables:

1) To investigate whether water bowl samples from within feedlot pens can be used in place of individual cattle nasal swabs

2) To generate accurate data on pen-level resistance profiles of bovine respiratory disease (BRD) pathogens

What they will do:

Since water bowls are known to be a place in which infected animals can pass BRD pathogens to other animals, these researchers want to see if water bowl samples could be used to accurately determine pen level AMR in BRD pathogens. Researchers will work with a commercial feedlot to evaluate ten 250 head pens. Researchers will collect water bowl samples from each of these pens and 20 animals will be randomly selected from each pen for collection of deep nasal swab samples 7-14 days after arrival. Researchers

will then isolate BRD-associated bacteria from the two sample types and compare whether bacteria strains with similar antibiotic-resistant profiles are shared between the samples.

Implications:

If proven successful, feedlot surveillance for AMR in BRD pathogens would be much simpler, facilitate earlier detection of emerging trends in AMR and help to establish better practices for industry-wide AMR surveillance.

Proudly Funded By:

CANADIAN BEEF CATTLE CHECK-OFF

BCRC
BEEF CATTLE RESEARCH COUNCIL

For more information, visit www.beefresearch.ca