

FARMER'S PERCEPTIONS AND PRACTICES OF ANTIMICROBIAL USE AND RESISTANCE AMONG FRONT RANGE COLORADO DAIRY FARMS

Solange Dubreuil

Dr. Sangeeta Rao, BVSc, MVSc, PhD
Taylor Travis, CSU Livestock
Extension Specialist

The Project

The purpose of antimicrobial stewardship is to establish the baseline and improve upon antimicrobial usage so we may optimize treatment outcome, prevent harm in patients caused by their overuse, and combat resistance. The goal of the project is to construct and validate a questionnaire that captures data on perceptions and practices of dairy farm owners, managers, and workers on antimicrobial use (AMU) and antimicrobial resistance (AMR) and in-feed antimicrobial use through the Veterinary Feed Directive (VFD).

Capturing the antimicrobial use (AMU), antimicrobial resistance (AMR), and Veterinary Feed Directive (VFD) perceptions and practices among livestock handlers and owners could be important to reveal gaps in understanding in antimicrobial stewardship.

These gaps could be important in helping prevent and control AMR pathogens entering food processing systems through livestock populations. This data could also help provide evidence-based recommendations to improve overall understanding of judicious use of antimicrobials on dairy operations as well to solidify VFD regulations for existing new employee training.

Thus, the long-term goal is to apply the findings to help design training and education programs on antimicrobial stewardship practices in livestock.

Internship Goals

- Gain experience in research project related to animal and public health
- Apply learning on Dairy Operations
- Business relations and outreach opportunities for education
- Development of survey to obtain significant data to provide recommendation for future training

Veterinarian Roles Within The Dairy industry

As a veterinary student, I learn in the classroom about our role in the veterinarian- client- patient relationship. This internship provided a hands-on understanding of everyone involved in the care for cattle in dairy production operations.

Learning in detail about dairy operations and current legislation was imperative in constructing a survey for producers, managers, and workers.

Collecting data about use and perception of antimicrobials helps producers with implementation of legislature changes, compliance, as well as training of existing and new employees to obtain a level of utmost efficiency when it comes to animal care and public health.

Building The Survey

An integral part of these process was to build a questionnaire. Several scientific papers from largest dairy producers in the world, including the U.S., India, etc. were researched to be able to build a comprehensive survey.

The survey is complete, and comprises of basic level questions, to more complex and in various formats such as multiple choice, ranking, and fill in the blank.

The translation to Spanish was an imperative part of the project as many workers in dairy farm speak Spanish.

The survey has two sections, five parts, and 72 questions total for managers and producers, however, the workers sections total 51 questions.

Qualtrics was used as survey tool to collect data. The questions in both languages were uploaded and formatted, and then the flow of the survey was created.

The survey can be accessed by link or QR code online. It was also distributed in PDF digital format and on paper when we visited the farms.



Figure 1 and 2. AMU and AMR survey's QR code (left) online, and mobile versions (middle and right)

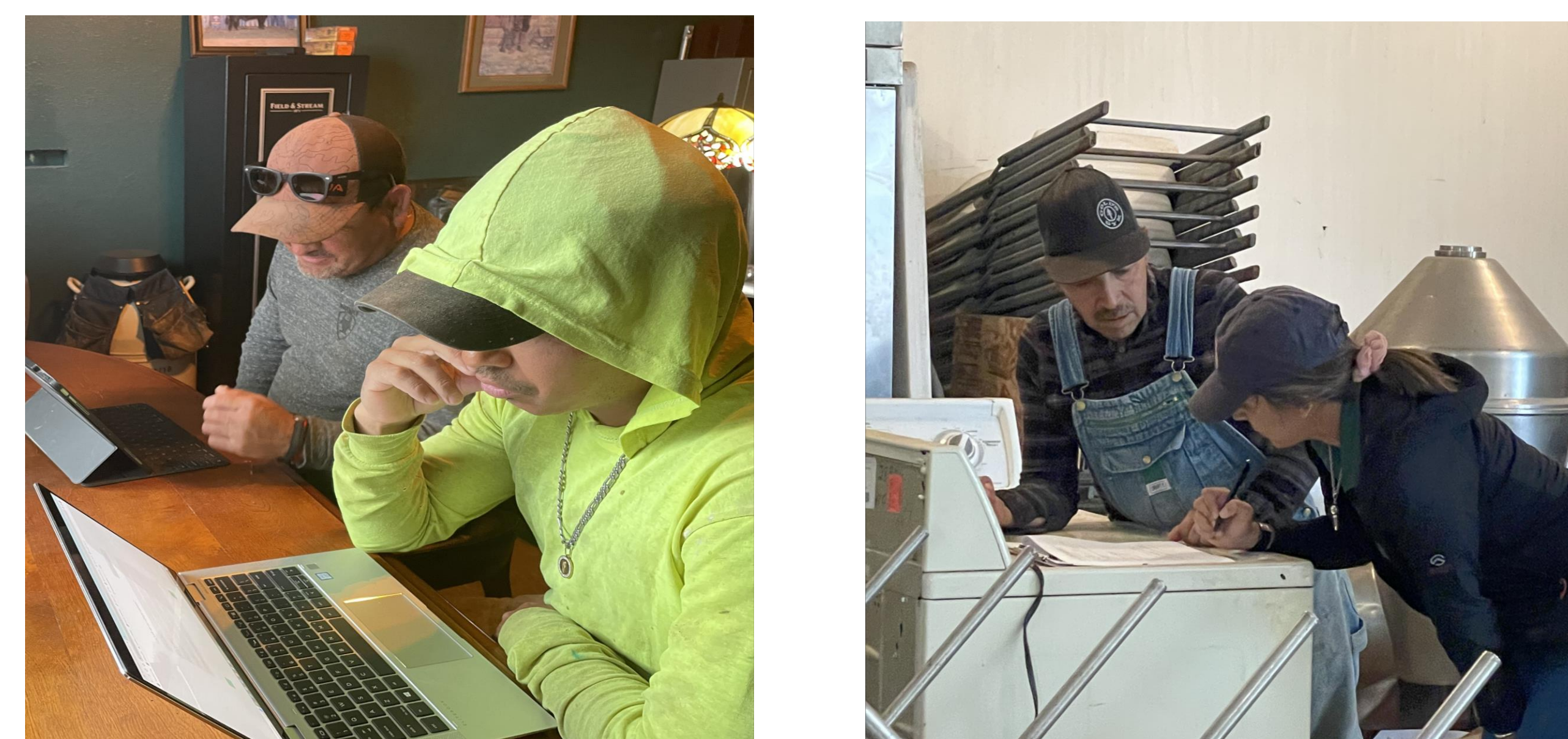


Figure 3 and 4. From left to right. Workers conducting surveys online at the farm and Student conducting survey in paper.

Field surveying

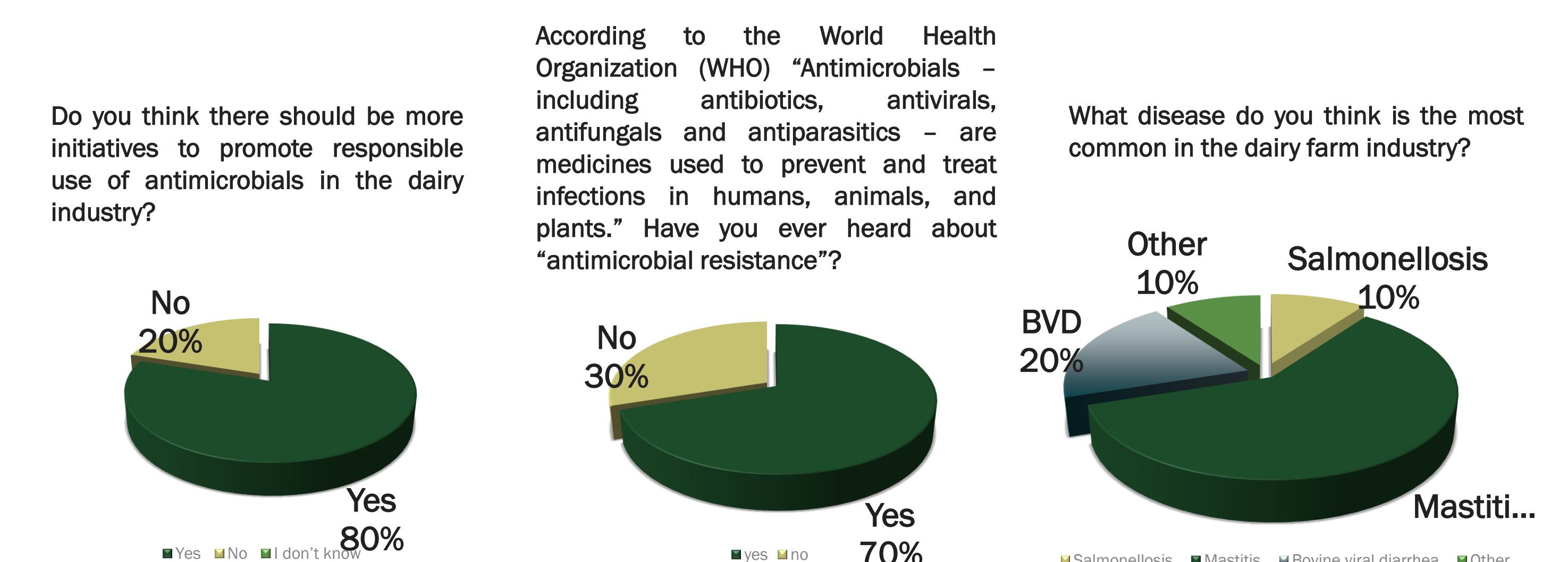
A list of producers in the areas with contact information was compiled from previous dairy farm research in the area.

Producers were contacted either by phone, email, or in-person visits to their farms. The project was explained; different survey formats were shared with those who showed interest in participating.

Some of the surveys were responded remotely and some others were obtained by in-person by later visits to the farms.

The survey was tailored for producers, managers, and workers, because of this the questionnaire had a wide range of difficulty. The producers and managers also had a more difficult and longer survey.

Currently, there are ten complete surveys. Some of the challenges to engage more participation has been the length of the survey and the lack of time, in some cases, a different Spanish dialect, and lastly hesitance to approach antimicrobial subject due to COVID 19.



Charts 1,2,3. Pie charts with data from survey questions based on 10 participants from different farms and roles.

Next Steps

- The next steps for this project:
- Continue to conduct surveys
 - Analyze data
 - Follow up with producers to develop training that fits their farms needs

Acknowledgements

- Development of the survey: Aracely Diaz, Dr. Mo Salman, Dr. Kelly Sill-Brooks, Ana Velasquez, Pablo Munoz Boettcher, Constanza Hernandez.
- Farm personnel who participated in the survey
- CSU extension internship and CRC funds.