

# The National Cohort of Dairy Farms – A Research Platform for Mastitis Management, Planning and Control in Canada and Beyond

**K. K. Reyher<sup>1</sup>, DVM; D. L. Scholl<sup>2</sup>, DVM, PhD**

<sup>1</sup>*Atlantic Veterinary College, Department of Health Management, Charlottetown, Prince Edward Island*

<sup>2</sup>*Faculty of Veterinary Medicine, University of Montreal, Montreal, Quebec*

## Introduction

Individual mastitis management, planning and control research projects are often limited in impact and scope by the high costs of extensive field data collection and processing. To mitigate this, the Canadian Bovine Mastitis Research Network (CBMRN) has created a single mastitis research platform – the National Cohort of Dairy Farms (NCDF) – to optimize data collection for several different research endeavours simultaneously. The platform is multi-institutional and national in scope and supports the collection, archiving and distribution of data for the applied and fundamental mastitis research projects currently forming the CBMRN research program.

## Materials and Methods

In the planning stages of the CBMRN, preliminary classification of the Canadian dairy industry was undertaken to aid in Cohort farm selection. Coordinating universities were identified in each of the four regions (Atlantic, Quebec, Ontario and western Canada). Primarily Holstein farms participating in Dairy Herd Improvement data collection were selected within strata of high, intermediate and low 12-month rolling average bulk tank somatic cell counts (SCC). Herds were also selected to achieve a proportion of freestall systems to reflect their regional freestall percentages. Ninety-three commercial dairy farms in six provinces were enrolled in 2007 for a two year period of data collection. Uniform protocols are implemented for repeated quarter milk samplings on clinical mastitis cases, on fresh and randomly selected lactating cows, and on a selection of cows at dry-off and after calving. Milk bacteriology results are recorded in a central database and bacterial isolates are archived in a culture collection. Management, demographic, health, treatment and production data are collected at the individual cow and farm levels and archived in the central database as well as cross-referenced with the culture collection database. Innate host resistance data and host DNA from a sub-population of cows are also archived.

## Results

Herd participation was higher than expected with a lower attrition rate than anticipated (91 of 93 farms remained after one year). Specific information on these herds and on the results of sampling is still being collected, entered and analyzed and will be more readily available by October. Demographics of these herds will be defined and sampling results from the first year (2007) will be presented. Compliance with each of the three milk sampling schemes will be described. Preliminary pathogen recovery and contamination levels will be presented – so far there has been a greater pathogen recovery than originally expected, particularly among species commonly known as ‘minor’ pathogens (coagulase-negative Staphylococci and Corynebacteria). General information regarding other samples is also available for presentation: blood samples and skin thickness measurements associated with immune responsiveness research, the DNA archive, antimicrobial use data collected *via* health and treatment documentation, as well as results of a garbage can audit used for validation on farm and others.

## Significance

These data and biological materials provide a nationally uniform and comprehensive data set enabling interlinked applied and fundamental research leading to mastitis solutions at the cow, herd and regional levels. A strong team of technicians and regional coordinators has been established and has led to increased communication amongst Canadian researchers, as well as interest from researchers worldwide. International scientists are encouraged to make use of this extensive archive of data and material to enhance their own research projects, and one of our goals is to publicize and extend the use of our data set to all interested parties. Likewise, practitioners and producers alike will benefit from exposure to the purpose and goals of the CBMRN and our continuing efforts to further mastitis treatment and control.