# Bovine mastitis prevalence and associated risk factors in dairy cows in Nyagatare District, Rwanda

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## Introduction

In response to farmer requests after milk from their herds was rejected by processors due to poor quality, we conducted a study to investigate the prevalence of subclinical mastitis in dairy herds in the Nyagatare district of the Eastern province of Rwanda. The major causative bacteria were investigated and conclusions of the types of mastitis and risk factors thereof were assessed.

## Materials and Methods

The study included 195 dairy cows on 23 randomly selected dairy farms that delivered milk to three milk collection centers in the Nyagatare District. Mastitis screening tests were performed with the Draminski® mastitis detector, which identifies cows with subclinical mastitis on the basis of conductivity changes in the milk. Sixteen cows with subclinical mastitis were randomly selected for identification of causative microorganisms using the Dairy Quality Control Inspection (DQCI®) method. Direct observations, standardized questionnaires, and interviews were used to identify risk factors for mastitis. Descriptive statistics, Chi-square analysis, and logistic regression were performed to determine mastitis prevalence, association of risk factors with mastitis prevalence, and relative importance of the risk factors on mastitis prevalence.

## Results

For the milk samples that were cultured, coliform bacteria were identified in 87.5%, *Staphylococcus aureus* was identified in 6.25%, and environmental *Staphylococcus* spp were identified in 6.25%. The overall prevalence of subclinical mastitis in the 23 herds was 51.8%. Prevalence of mastitis was associated with teat end condition ($P < 0.0001$), rearing system ($P < 0.0005$), hygiene ($P < 0.005$), stage of lactation ($P < 0.0005$), and breed ($P < 0.005$). The risk factors evaluated accounted for 62% of the mastitis prevalence, with teat end condition accounting for 30% of this figure. Additionally, teat damage, poor hygiene, extensive rearing conditions, and increasing level of dairy breed genetics were significant risk factors for mastitis prevalence.

## Significance

Results indicated a high prevalence of bovine mastitis in dairy cows in the Nyagatare District. All the herds except one had cows with mastitis, which suggests that mastitis is a serious problem across dairy herds in the Nyagatare District. Coliform bacteria were most commonly isolated from cultured milk samples; thus, we concluded that environmental mastitis was a bigger issue than contagious mastitis for the study herds. Our results indicate the need for post-milking teat-dipping of cows with disinfectants (a practice not common in these herds), improvement of cow hygiene, and the introduction of mastitis prevention and control programs. Implementation of these mastitis prevention practices is important because many producers are considering upgrading their local Ankole cows to cross-breed dairy cows or acquiring pure dairy breed cows that are more susceptible to mastitis.