



Milk production practices, udder health and their impact on milk quality, safety & processability in Rwanda

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Objectives

- 1) Evaluate udder health, risk factors and impact of subclinical mastitis on dairy productivity in Rwanda.
- 2) Evaluate microbiological and chemical quality of raw milk in Rwanda by evaluation of the prevalence of zoonotic bacteria, their antimicrobial resistance and the anti-microbial residues in milk at different sites of the milk chain in Rwanda.
- 3) Train dairy farmers, MCCs managers/technicians, IAKIB's extension officer/veterinarians, district's veterinarians and students in best practices for good udder health and best milk production practices.

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Introduction

- Mastitis is an inflammation of the mammary gland and is expressed as clinical (CM) or subclinical mastitis (SCM)
- It is caused by a range of microorganisms and is multifactorial (animal, environmental & management factors).
- It leads to decreased milk yield and reduced milk quality & safety. That milk may end up being discarded. Other negative effects include costs for veterinary service and treatment drugs, extra labor, and early culling.

Methods

- We screened 572 cows for SCM mastitis from 404 herds linked to eight milk collection centers, studied its etiology and risk factors.
- We collected 406 bulk milk samples for quality and safety analysis and assessed associated risk factors.

Results

- The prevalence of SCM was 66.3% at cow level, and Presence of *E. Colie*, Salmonella and brucella antibodies in

Prevalence of SCM at cow level ranged from 47 to 82 % in MCCs in Rwanda signifying widespread of the disease and low milk production and its quality from infected cows

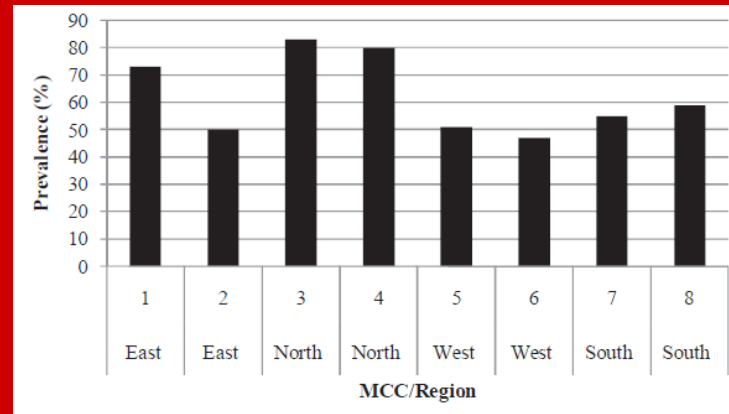


Fig. 1. Cow level prevalence of subclinical mastitis, defined as a California Mastitis Tests score of ≥ 3 in at least one udder quarter of a cow, in 572 dairy cows linked to 8 milk collection centers (MCC 1, n = 73, MCC 2, n = 72, MCC 3, n = 69, MCC 4, n = 66, MCC, 5 n = 71, MCC 6, n = 72, MCC 7, n = 75, MCC 8, n = 74) in four provinces in Rwanda in 2017.

Table 1: β -lactamase production evaluated by clover leaf method in staphylococci species isolated from subclinical mastitis cases, defined as a California Mastitis Test score of ≥ 3 in at least one quarter of a cow, in 572 dairy cows from 404 herds linked to eight milk collection centers in Rwanda in 2017.

Bacterial species	Number of isolates tested	Number of β -lactamase positive isolates	Prevalence of β -lactamase positive isolates (%)
<i>S. aureus</i>	175	138	78.8
<i>S. epidermidis</i>	49	32	65.3
<i>S. sciuri</i>	3	3	100.0
<i>S. chromogenes</i>	126	58	45.3
<i>S. xylosus</i>	12	9	75.0
<i>S. haemolyticus</i>	6	3	50.0
Other	12	9	75.0
Total	383	252	65.8

Other: *S. pasteurii*, *S. warneri*, *S. hyicus*, *S. equorum*, *S. equorum*, *S. simulans*, *S. saprophyticus*, *S. sciuri*.

Results (Cont.)

Risks for SCM related to hygiene of cow environment, poor milking routine, and poor management of lactating cows

Recommendations

- Establish and disseminate farm Standard Operating Procedures (SOPs) and benchmark periodically farms on mastitis prevention and control practices (including 10 point-mastitis control plan)
- Consider on the use of SCC of pooled MCC milk and its interpretation in evaluating MCC performance.
- Apply innovative tools to monitor regularly farm performance and provide feedbacks to them periodically (i.e: dairy assessment and advisory tool)

Research gaps or future opportunities

- Evaluate application of mastitis control methods, e.g., the 10-point mastitis control approach
- Develop cost effective diagnostic tools to evaluate mastitis and milk quality at farm level
- Introduce technologies such as bucket milking machine to improve milking hygiene or cooling systems for milk transport.