

Feed the Future Innovation Lab for Livestock Systems

INNOVATION SUMMARY:

CALIFORNIA MASTITIS TEST (CMT) FOR DIAGNOSIS OF SUB-CLINICAL MASTITIS

The California Mastitis Test (CMT) is a useful, simple technique for detecting sub-clinical cases of mastitis in dairy animals. The test kit consists of a paddle (made of plastic or painted aluminum), which has four wells with one well per each udder teat of the dairy animal. Milk is sampled from each teat into the respective well and then a reagent is added to determine the presence of markers for mastitis. The results in a visual demonstration to identify an otherwise invisible problem. It is a simple technique that trained farmers or extension agents can do on their own without the need to consult a veterinarian.



INNOVATION QUICK FACTS

Lead Implementing Institution: University of Rwanda



Category: Livestock Management



Innovation Type: Technology



Created for: Women and Men



Created in: Rwanda



New/Adapted: Adapted



Nutrition Linkage: Consumption

APPLICATION OF THE INNOVATION

The California Mastitis Test (CMT) works by reacting with white blood cells, which indicate presence of mastitis, and creating a gel-like substance⁵. Subclinical mastitis prevalence can be evaluated by CMT using the Scandinavian scoring system (grades 1 - 5) based on color change^{6,7}. Technical training about milk quality and management practices for a combination of veterinarians, students, extension workers, Milk Collection Center technicians and farmers will be required to spread the innovation. These training courses should address topics including dairy management practices, milk handling, and the prevention of mastitis. Extension and development agency organization participation will be an asset to accommodate the level of knowledge required for both farmers and livestock professionals.

THE PROBLEM & ITS IMPORTANCE

Mastitis is an infection of the udder that can be caused by different pathogens, including *Staphylococcus aureus* and *E. coli*. The disease can be clinical with visible signs of illness or subclinical without visible clinical signs¹. Sub-clinical mastitis (SCM) is 15 to 40 times more prevalent than clinical mastitis and cows infected with SCM can be a source of infection for other cows on a farm¹. Prevalence of sub-clinical mastitis in Rwanda ranges between 50.4% and 76.2% at the cow level, indicating that the issue is common and widespread^{1,2,3}.

POTENTIAL BENEFITS

The presence of SCM in cows can negatively affect milk production, which reduces the amount of milk available for consumption in the household or for sale to markets. Economic losses from mastitis have been quantified in some European countries and the United States, but losses due to mastitis in Africa are not well documented^{1,4}. Improving management practices through the utilization of the CMT will help improve milk safety, allowing farmers to produce a better-quality product for sale and home consumption. The California Mastitis test (CMT) allows producers to easily identify the infection and treat it.

See reverse for references.

REFERENCES

1. Ndahetuye, J. B., Persson, Y., Nyman, A. K., Tukei, M., Ongol, M. P., & Båge, R. (2019). Aetiology and prevalence of subclinical mastitis in dairy herds in peri-urban areas of Kigali in Rwanda. *Tropical Animal Health and Production*, 51(7), 2037-2044.
2. Ndahetuye, J. B., Twambazimana, J., Nyman, A. K., Karege, C., Tukei, M., Ongol, M. P., ... & Båge, R. (2020). A cross sectional study of prevalence and risk factors associated with subclinical mastitis and intramammary infections, in dairy herds linked to milk collection centers in Rwanda. *Preventive Veterinary Medicine*, 179, 105007.
3. Mpatswenumugabo, J. P., Bebora, L. C., Gitao, G. C., Mobegi, V. A., Iraguha, B., Kamana, O., & Shumbusho, B. (2017). Prevalence of subclinical mastitis and distribution of pathogens in dairy farms of Rubavu and Nyabihu districts, Rwanda. *Journal of veterinary medicine*, 2017.
4. Motaung, T., Petrovski, K., Petzer, I., Thekisoe, O. and Tsilo, T., (2017). Importance of bovine mastitis in Africa. *Animal Health Research Reviews*, 18(1): 58–69.
5. Marshall, R.T., Edmonson, J.E., & Stevens, B. (1993). Using the California mastitis test. University of Missouri Extension. <https://extension.missouri.edu/publications/g3653>
6. Schalm, O. W., Coroll, E. J. and Jain, N. C., (1971). *Bovine Mastitis*. Lea and Febiger. Philadelphia, PA, USA
7. Saloniemi, H., (1995). Use of somatic cell count in udder health work. In: Sandholm, M., Honkanen-Buzalski, T., Kaartinen, L. and Pyörälä, S. (ed.) (University of Helsinki, Faculty of Veterinary Medicine), *the Bovine Udder and Mastitis*, 105–110. Gummerus Kirjapaino, Jyväskylä.