Tropentag, September 10-12, 2025, hybrid conference

"Reconcile land system changes
with planetary health"

Implications of low-quality milk for processors and public health in Kenya

Lisette Phelan[1], Henrietta L. Moore[2], Ndungu Nyokabi[3]

[1] *Harper Adams University, The School of Sustainable Food and Farming (SSFF), United Kingdom*
[2] *Institute for Global Prosperity, University College London (UCL),*
[3] *University of Edinburgh Business School,*

Abstract

Raw milk is the primary ingredient required to produce dairy products, including milk, cheese, yoghurt, and butter, which play an important role in household diets globally. In low- and middle-income countries, milk is produced by smallholder farmers and collected, bulked and transported to milk processing plants by intermediary actors. The quality of raw milk received by milk processing plants is often low and compromised by poor hygiene, handling, storage and transport practices at farm and post-farm gate levels. This paper explores the so-called regulation-reality gap as regards milk quality, taking Kenya as a case study in exploring how milk processing plants are constrained in their ability to produce dairy products by the quality of raw milk received. The study draws on longitudinal data derived through milk quality tests conducted at factory gate by a medium-sized milk processor in central Kenya. The tests performed by the milk processor were conducted to identify microbial and chemical contamination, adulteration and physicochemical composition of raw milk. The results of this study reveal that there are spatial and temporal variations in raw milk quality, as evidenced by milk composition (e.g., butter fat and solid non-fats) and by contamination (i.e., antibiotic residues and aflatoxins). This variation reflects inadequate physical infrastructure, such as roads and cooling plants, and low enforcement of regulations and standards that could safeguard the nutritional quality and food safety of dairy products. Our results suggest that milk quality testing at factory gate provides invaluable insights into animal health and hygiene practices at farm level and the value of mapping milk quality post-farm gate level. The results underscore the imperative for policymakers and practitioners to take a holistic systems thinking approach to identifying factors influencing the quality of raw milk and a participatory approach to developing policy and intervention strategies aimed at improving milk quality, involving formal and informal value chain actors. The results indicate that milk processing plants could play a key role in realising improvements in farm- and post farm-gate quality of milk by incentivising behaviour change among farmers and intermediary actors through the establishment of milk quality based payments systems.

Keywords: Dairy value chains, food safety, food safety governance, food systems

Contact Address: Lisette Phelan, Harper Adams University, The School of Sustainable Food and Farming (SSFF), 29 buccleuch place, EH8 9JS Edinburgh, United Kingdom, e-mail: lisette.phelan@gmail.com