Strategies and Technologies for Camel Milk Preservation and Utilization of Non-marketed Milk in Pastoral Regions

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Introduction

- Camel milk accounts for 60% of the total nutrient intake of the pastoral communities inhabiting the Arid and Semi-Arid Lands of Kenya.[1]
- Shift in its utilization from subsistence to commercial in these regions. [2].
- Kenya's 937,000 tonnes of camel milk ranked second after Somalia. [3]
- Only 12 % is marketed, 38 % consumed & 50 % can't reach the markets.[4] Therefore, how are these non-marketed milk utilized in different seasons?
- Of the marketed, 30% is sold in sour form[4]. Are there strategies and preservation technologies that are employed to ensure fresh milk reach the consumers?

Methodology

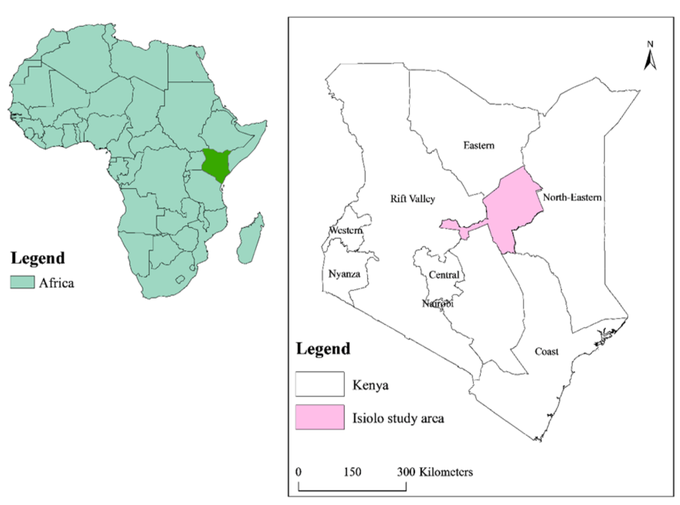
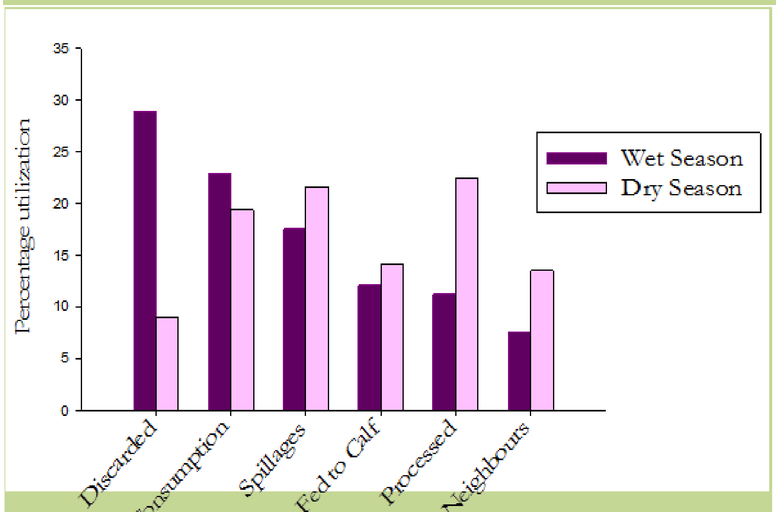


Figure 1: Map of the study site

- Sub-counties: Garba tula & Isiolo-central
- Villages sampled (15)
- Cross sectional survey
  - Semi-structured interviews
  - Focus Group Discussions,
  - Expert interviews
  - Participant observation.

Results

Non-Marketed Camel milk



The monthly non-marketed milk volume accounted for 8.1% (122.1±165.0 liters) and 2.4% (40.3±5.2 l) in the wet and dry season respectively per household.

Figure 2: Utilization of non-marketed milk during the dry and wet season at production level

Table 1: Strategies employed for milk loss reduction at production and marketing level

Strategies mentioned for milk spoilage prevention	Percentage producers respondents (N=145)	Percentage traders respondents (N=51)
Hygienic practices	88%	61%
Smoking the jerry cans	68%	10%
No mixing of spoilt and non-spoilt milk spoilt milk	-	35%
Simple cooling technologies	13%	2%
Boiling of milk	8%	2%
Treatment of sick camels	4%	8%
Sieving of Milk	-	10%
Timely delivery of milk	5%	-

Preservation technologies along the camel milk supply chain.

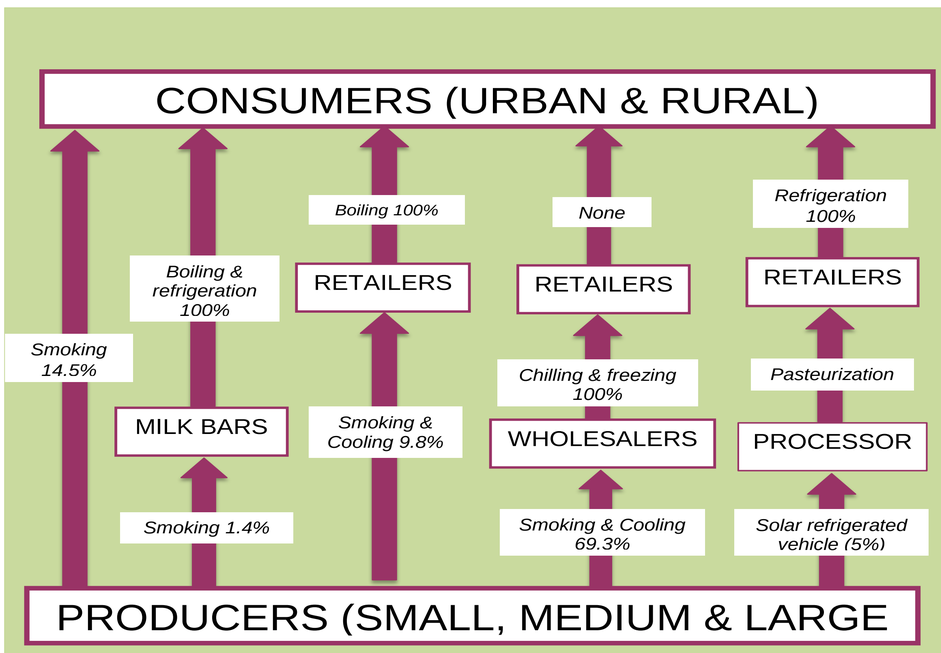


Figure 3 Preservation techniques along the camel milk value chain

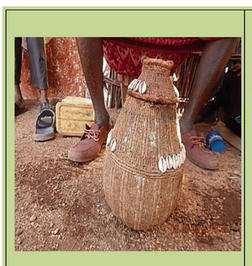


Figure 4a Qoodha

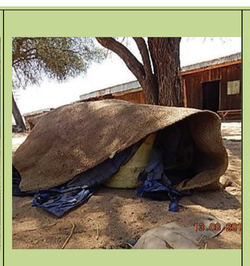


Figure 4b Hemp bag

Figure 4c Charcoal cooler

Figure 4d: Chillers

Figure 4e Freezer

Figure 4f Butter making

- Yoghurt, cheese and butter were processed in the wet season.
- Preservation technologies rely on conventional bio-fuels.
- Limited uptake due to high cost of fuel and unreliability of electricity.

Figure 4: Pictorial representation of the different preservation technologies in Isiolo, County

Conclusions and Future work

- Utilization of non-marketed milk is season dependent.
- Strategies for milk spoilage reduction and preservation technologies available can only preserve camel milk for a shorter period of time and thus cannot be utilized during the dry seasons when the fresh milk is unavailable.
- Availability of high solar irradiance and nominal radiation coupled with the long sunshine hours in Isiolo County provides a good source of energy for longer and shorter shelf life milk preservation.

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