

# “Healthy milk for the Sahel” From research to intervention

B. Bonfoh <sup>a,e</sup>, J. Zinsstag <sup>a</sup>, Z. Farah <sup>b</sup>, B. Rehberger <sup>c</sup>, C.F. Simbé <sup>d</sup>, I.O. Alfaroukh <sup>e</sup>

<sup>a</sup> Epidemiology and public health, Swiss Tropical Institute, 4002 Basle, Switzerland; <sup>b</sup> Institute of food science, Swiss Federal Institute of Technology, 8092 Zurich, Switzerland; <sup>c</sup> Swiss Federal Research Station for Animal Production and Dairy Products (Agroscope Liebefeld-Posieux), 3003 Berne, Switzerland; <sup>d</sup> Central Veterinary Laboratory, BP 2295, Bamako, Mali; <sup>e</sup> Institute of Sahel, BP 1530, Bamako, Mali

## Introduction

The extensive livestock system (milk yield 1-2 litres/day/cow) is the main meat (and/or milk) supplier in the subregion. In Sahel countries, most people consume regularly small quantities of milk and other dairy products (heated or not), often as a component of local dishes. The project “Healthy milk for the Sahel” beyond the conventional quality perception, focused on the whole dairy system and on the local strategies with regard to milk as a source of income and employment.

But the hygienic standard of the milk products on the local market is usually poor with regard to contamination with potentially pathogenic and spoilage bacteria. The poor milk quality is mainly a result of the fairly low level of the local production (adulteration), high environmental temperatures (rapid multiplication of bacteria), lack of energy, absence of appropriate equipment and improved starter cultures for pasteurization and neglected hygiene.



Fig. 1: Hand milking in calabash

## Methodology

The viability of local milk production system was assessed. The project evaluated the bacteriological quality (fig. 2), quantified potential zoonotic health hazards. Physical and chemical characteristics were also measured as well as the zebu milk composition. Risk factors were identified considering system, tools and methods for production and quality improvement.

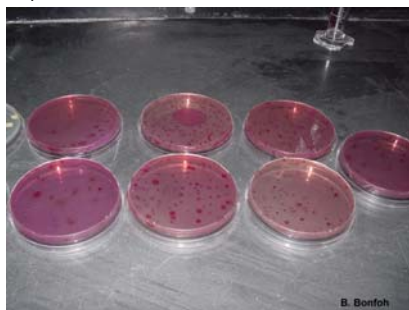


Fig. 2: Enterobacteriaceae counts

## Conclusions

The results of zebu cow milk composition and yield will be used for defining local standards for milk products and measures for the improvement of general hygiene implying all involved stakeholders. We assume that improving local milk production will ultimately improve milk quality and public health in the Sahel.

## Funding

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## Results and Discussion

### Local milk production

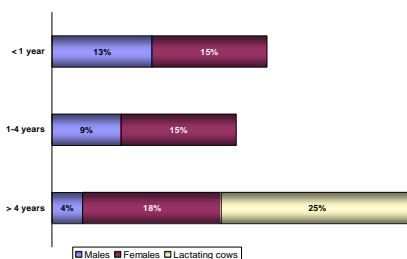


Fig. 3: Cattle herd structure

The local production hardly covers 40% of the milk consumption (fig. 3). Low fertility and the breed (Zébu, N'dama) access to feed resources were identified as the main constraints. But in the coming years, the expanding crossbreeding (Zebu x Exotic), health services and supplementary feeding activities are expected to lead to an increase of animals able to produce under the hard local conditions (5-12 litres/day/cow). Farmers with capital constraints tend to use lower levels and combinations of input. Hence, improved access to credit schemes, adapted technologies and carefully targeted neo-breeders may facilitate higher levels of input and improve production (fig. 4) and hygiene status (fig. 5).

### Milk quality improvement

The innovations (fig. 5) were proven to be technically feasible and cost-effective. But if the outcome of hygiene improvement is not directly perceived by the stakeholders, interventions will not take place unless consumers pay or share with the producers the costs of the quality improvement (fig. 6 & 7).

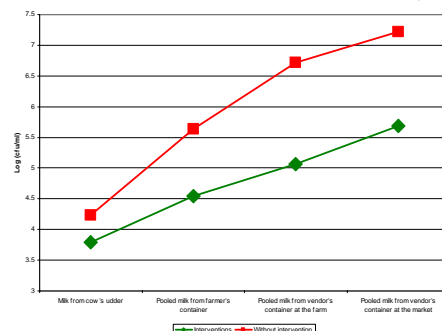


Fig. 6: Milk contamination chain

### Variation of Zebu milk composition

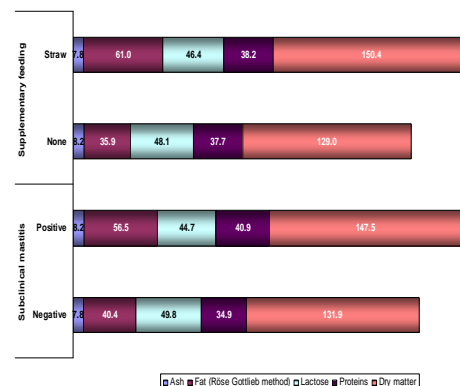


Fig. 8: Zebu cow milk composition variation according to supplementary feeding and subclinical mastitis

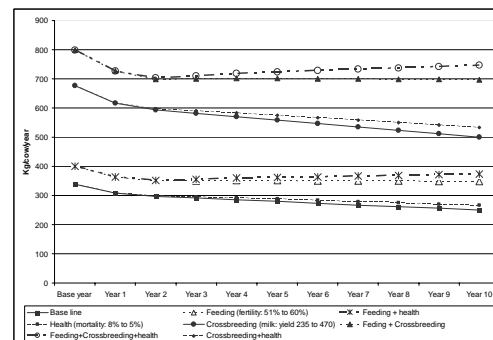


Fig. 4: Milk production simulation over 10 years



Fig. 5: Local milk handling „Washing + disinfecting + appropriate material improve milk quality“



Fig. 7: Improved method

Malian Zebu cow milk composition (fig. 8) shows the evidence that subclinical mastitis and supplementary feeding affect the content and the composition of Zebu milk. Changes in certain milk variables are specifically related to the metabolic status of the cow. Current diet provided by farmers are inadequately balanced and Zebu cows mobilise their body fat to produce milk. The supplementation to the diet of Zebu cows with either low quantity of pasture straw significantly affects milk composition and the improvement of milk yield.