

Appropriate technology improves traditional cheese making in Ghana

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One of the distinguishing characteristics of Ghana’s dairy industry is the high demand for traditional soft cheese (*wagashi*) and other processed milk products as opposed to fresh milk. However, traditional methods used in dairy processing are often marred by inefficiency. *Wagashi* is traditionally prepared by heating fresh milk then coagulating it with an extract of stems from the Sodom Apple plant (*Calotropis procera*). The resultant cheese curd is then scooped into perforated calabashes to allow the whey to drain off.

During the process of whey separation, small cheese fragments pass through the calabash perforations giving rise to loss of product. Also, for lack of appropriate preservation technologies, *wagashi* sellers are forced to boil the cheese daily in order to preserve it. This practice negatively affects the appearance of the cheese, which can then only be stored for a maximum of one week before it spoils.

In an effort to improve the efficiency of traditional *wagashi* processing, a team of scientists from Ghana’s Animal Research Institute and the Kwame Nkrumah University of Science and Technology (KNUST) carried out a series of laboratory-based experiments to investigate the use of appropriate technologies to increase yields of *wagashi* and prolong the product’s shelf life.

The study was part of the DFID-funded project “Improving the market mechanisms, processing and marketing efficiency and reducing the public health risks in developing peri-urban small-



A *wagashi* processor uses perforated calabashes to drain whey from the cheese. This step in the traditional processing of *wagashi* often leads to high cheese losses.

holder dairy systems.” The other institutions involved in the collaborative project were Sokoine University of Agriculture in Tanzania and ILRI in Kenya.

The study, which was carried out in peri-urban Kumasi, found that lining the calabashes with cheesecloth before draining the whey significantly improved cheese yields by up to 4 per cent. Soaking *wagashi* overnight in a 15 per cent brine solution extended the product’s shelf life from 3 to 14 days, under normal sale conditions. Panelists involved in consumer acceptance tests stated that brining of *wagashi* did not affect

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Welcome to “The Milk Run”. This issue carries a special feature on East Africa’s first camel milk dairy which has started commercial production of pasteurized camel milk.

For information on or contributions to the smallholder dairy network contact Steve Staal (s.staal@cgiar.org).

Your comments and feedback are always appreciated.

Special feature: Marketing camel milk in a different way

Until very recently, raw camel milk only reached urban consumers in Kenya via informal marketing chains as a commodity of very poor if not risky hygienic quality, often adulterated, frequently sour and which had to be consumed immediately. With the registration of a new Kenyan company—Vital Camel Milk Limited—that is processing camel milk to modern hygiene and quality standards, this situation has changed for the better.

In this feature article by **M. YOUNAN, H. MARBACH** and **M. EVANS** of Vital Camel Milk Limited, we gain more insights into this new company that promises to improve the way camel milk is sold in Kenya.

Vital Camel Milk Limited, East Africa's first private camel milk dairy, started operations at its new milk plant in Nanyuki, Kenya in June 2005. The company receives raw camel milk from small-holder pastoralist producers in the surrounding Isiolo, Laikipia and Samburu districts. All pastoralist producers supplying milk to the dairy are trained and supervised on clean milking and milk handling practice by milk collectors from within their own communities.

Upon delivery at the dairy, the quality of the raw camel milk is tested at the laboratory. Milk that passes the quality tests is then pasteurized, hygienically packaged and refrigerated until it reaches outlets in Nairobi, some 200 kilometres away from Nanyuki. Retail outlets that sell pasteurized camel milk are found mostly in Nairobi's Somali quarter, Eastleigh, but also in some of the city's upmarket shopping centres.

The emerging market for top quality camel milk comprises traditional camel milk consumers—mostly urbanized Somalis—who appreciate the purity and superior hygienic quality of our unadulterated product that has a guaranteed refrigerated shelf life of 10 days. There are also increasing numbers of non-traditional consumers of camel milk who appreciate its medicinal properties or are just curious to try out a new kind of milk.

Vital Camel Milk Ltd. (VCM) is committed to fair producer prices, social standards and honest business. In the informal sector, raw camel milk fetches three to four times the price of raw cow milk, making it a rather expensive commodity. Unlike milk hawkers, VCM offers weekly payments and guarantees a constant high price for raw camel milk of acceptable quality. This has attracted many camel milk producers to supply their milk to the dairy. VCM soon plans to expand its camel milk processing portfolio to include ice cream and sour milk (*susa*). At present, the market for processed camel milk is still very limited but growing slowly. It will be some time until all interested camel milk producers can participate in this new evolving marketing system.

Vital Camel Milk Ltd. is supported by DFID-UK and GTZ-Germany.

Contact information: P.O. Box 173, Nanyuki, Kenya or <email@vitalcamelmilk.com>

Website: www.vitalcamelmilk.com

Camel milk good for health



Photo/Vital Camel Milk Ltd.

Camel-keeping communities in Africa and Asia value the medicinal properties of camel milk. The milk is said to have remedial effects against different ailments such as heart diseases, stomach ulcers and chronic infections like tuberculosis. Camel milk is also notably rich in vitamin C and polyunsaturated fatty acids.

Modern research has shown the anti-bacterial and anti-viral properties of camel milk, a fact also reflected in the superior keeping quality of camel milk. A recent clinical study revealed that regular drinking of camel milk among patients suffering from Type-1 diabetes significantly reduces their insulin requirements by an average of 30 percent.

Camel milk also provides a safe and very nutritious alternative for persons suffering from allergy against cow milk protein. Unlike soybean-milk, camel milk can be safely used as a cow milk substitute in baby and infant foods.

The growing demand for health foods has the potential to provide a long-term niche market for VCM's camel milk products in Kenya and beyond. However, VCM must first overcome some almost insurmountable obstacles in order to establish itself in the market place. To mention only one: camel milk is not recognised as human food by the Kenya Bureau of Standards and EU food legislation. How does one market a product that legally does not exist?

—M. Younan, H. Marbach and M. Evans

Online support for raw milk in the developed world

Raw milk. Opinion is divided over whether or not it is safe to drink. Opponents cite the dangers of pathogens in raw milk and the reduced shelf life caused by spoilage microorganisms, advocating instead for heat treatment by pasteurization to make milk safe. Conversely, supporters of raw milk believe that it contains certain bioactive systems that can significantly reduce the numbers of pathogenic bacteria.

The Real Milk website (www.realmilk.com) is one such proponent of raw milk and its consumption, and calls for 'a return to humane, non-toxic, pasture-based dairying and small-scale traditional processing'. According to the real milk campaigners, pasteurization laws favour large, industrialized dairy operations and squeeze out small farmers. The website adds that farmers can make a decent living, even with small herds, when they have the right to sell unprocessed milk to consumers.

According to the Real Milk website, sales of raw milk are legal in 28 of 50 states in the USA while in some of the remaining states raw milk is available through cow-share programs where farmers milk cows owned by individuals. The number of states that now allow raw milk sales has increased significantly in recent years, and it is the real milk campaigners' goal to have raw milk available to consumers in all 50 states.

Similar trends are occurring in some European countries, such as Germany. Here, instead of scaling up production to maintain economic viability, farmers can instead maintain small-scale production by offering a higher value product. Costs are likely to increase as the farm shifts the organic production associated with raw milk sales, but some consumers who value the attributes of high quality, organic raw milk are apparently willing to pay the higher price required.

Growing consumer interest in raw milk and products made from it, particularly in developed countries, is largely due to perceived health benefits associated with 'natural' as opposed to 'processed' foods. Supporters of raw milk believe that it preserves the natural flavours of milk and that several enzymes and micronutrients are destroyed during pasteurization of milk.

Similarities exist in traditional milk markets in developing countries where raw milk is an important commodity. However, whereas consumers in the developed world opt for raw milk because of perceived superior nutritional benefits, consumers in poorer countries—where up to 80 percent of milk is sold informally—buy raw milk primarily because of tradition and lower cost.

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WHY A Campaign for Real Milk?

Back in the 1970s, a couple of blokes were sitting in an English pub, bemoaning the consolidation of the brewing industry in England and the decline of British beer and ale. A commodity that represented the soul of Britain carefully brewed lagers from countless small-scale manufacturers, each with a distinctive color and taste had been edged out by the insipid canned beers of a few large monopolistic breweries. What was needed, they decided, was a return to traditional brewing methods. They launched A Campaign for Real Ale, which soon became the force that turned back the mega-brewers and reinstated varied and delicious ales to English tables and pubs.

Back in the 20s, Americans could buy fresh raw whole milk, real clabber and buttermilk, luscious naturally yellow butter, fresh farm cheeses and cream in various colors and thicknesses. Today's milk is accused of causing everything from [allergies](#) to [heart disease](#) to cancer, but when Americans could buy Real Milk, these diseases were rare. In fact, a supply of high quality dairy products was considered vital to American security and the economic well being of the nation.

What's needed today is a return to humane, non-toxic, pasture-based dairying and small-scale traditional processing, in short . . .

A Campaign for Real Milk

A Project of the
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A Campaign for Real Milk is a project of [The Weston A. Price Foundation](#)
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Home page of the Real Milk Campaign website

www.realmilk.com

ILRI's research themes

Theme 1 <i>Targeting opportunities</i>	Theme 2 <i>Enabling innovations</i>	Theme 3 <i>Market opportunities</i>	Theme 4 <i>Biotechnology</i>	Theme 5 <i>People, livestock & the environment</i>
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Improving traditional cheese processing in Ghana

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its acceptability in terms of colour, odour or appearance. However, the panelists indicated that cheese preserved in 15 per cent brine tasted too salty, pointing to the need for further investigations on suitable methods of de-brining *wagashi* to make its taste more acceptable since lower brine levels were found to be ineffective in preserving the cheese.

This and other project findings have recently been taken up in a new study led by scientists at KNUST. The study plans to disseminate improved cheese processing technologies and general dairy hygiene techniques to smallholder herdsmen, milk producers, processors and market agents in northern Ghana. This will go a long way towards enhancing food safety while improving livelihoods of Ghana's smallholder dairy households.

—Tezira Lore



Sap from the plant *Calotropis procera*, also known as Sodom Apple (above), is used as a coagulant in the *wagashi*-making process. The sap can be extracted from every part of the plant except the roots. To obtain the sap, *Calotropis* leaves and stems are crushed and mixed with milk in a gourd. The mixture is then strained and added to the heated milk.

Dairy Diary: Important dates for you to note!

20 to 23 October 2006: The 27th International Dairy Federation (IDF) World Dairy Congress in Shanghai, China. For more details and online registration, visit the congress website www.idf2006shcn.com.

6 to 8 November 2006: The fourth International School Milk Conference in Stellenbosch, South Africa. More information is available at www.schoolmilk.co.za.