



Present status and future prospects of buffalo curd production in Thihagoda DS in Matara - Sri Lanka: a case study

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Abstract

Even though Sri Lanka has significant buffalo population of about 0.9 mln. distributed throughout the country. It was revealed that, low production and the quality of curd are limiting factors for the industry. Therefore, this study attempts to examine the present status of buffalo curd industry focusing on future prospects. As specific objectives, check the quality of milk used for curd production, to search the economic gains of the marketing chain and to find out possible product differentiation in marketing with respect to price of the pots with sizes and price of the pots with material. Fifty farmers were selected from the Thihagoda DS division in Matara District by using cluster-sampling. Among them 15 farmers were selected randomly to check the adulterants used in curd production. The study reveals that, all of the curd producing farmers add adulterants to the buffalo curd such as starch, sugar, salt as well as cow milk which leads to make low quality curd. Moreover, there exists greater variation in fat percentage, which varies from 5.8 to 11.2 indicating the quality reduction. These levels are greatly deviated from the standard fat percentage of buffalo, which is around 7.58%. Majority (60%) of farmers has indigenous breeds which produce only 0.5-1 l/ buffalo cow /day. The average herd size is 4-6, and average production in this area is 6-10 l/day. More than 60 % of farmers produced 6-10 curd pots/day. There is no product differentiation exist, and all are producing 800 ml clay pots that cost around Rs 60/pot. The profit gain of curd production is Rs 35-40/pot indicates that there exists high potential to increase the industry. Among the present problems of buffalo curd production and rearing, absent of pasturelands, lack of improved breeds, absence of collection centers are significant. Therefore, the study recommends supplying improved breeds to the farmers at reasonable prices and providing more opportunities to feed the animals. Further, proper steps should be taken to establish a collecting center. Moreover, strict rules and regulations should be implemented to avoid malpractices in curd production in order to produce better quality curd.

Keywords: malnutrition, economic gain, adulterants

Introduction

Buffalo is an important animal in rural Agriculture. About 75 percent of Sri Lankan population lives in rural areas (Nandana,1998). People in rural areas have cattle and buffaloes, and the cows of these rural herds produce the milk consumed by the rural people. Availability of milk in rural areas is far in excess of what the rural people require (Dassanayake, *et.al*, 1995). The rest of the population lives in urban areas where there are no cows, and they depend almost entirely on milk imports. The country spends about five billion rupees per year on import of milk and this amount seems gradually increasing (Central Bank, 2007). One of the best solutions to overcome this problem is to increase the buffalo milk production, as buffaloes are comparatively adoptable to adverse climatic conditions

than cattles (Pathirana and Serasinghe, 1999). Moreover, Sri Lanka has significant buffalo population of about 0.9 mln and distributed throughout the country (Ministry of Agriculture and Livestock, 2006). Buffalo milk is very popular and high demanding for curd production. In fact, buffalo curd made in Southern Sri Lanka, popularly known as "Ruhuna Curd" is of national significance for its taste and consumer demand. Buffalo curd fetched better price than selling of liquid milk (Ministry of Agriculture and Livestock, 2006). Majority of the people in Sri Lanka prefer curd produced by buffalo milk rather than cow milk. Therefore, through farmer awareness, buffalo curd production can be greatly improved with a great economic significance due to multipurpose role of buffaloes in agriculture. Even though buffalo milk achieves greater demand throughout the country, the

quality of curd is questionable. Therefore, this study is designed to assess the present status of buffalo curd production granting special reference to the quality of curd, under the following objectives.

1. To check the quality of milk in curd production
2. To search the economic gains of the marketing chain in terms of profit margin
3. To find out possible product differentiation in marketing with respect to, price of the pots with sizes and price of the pots with material

Methodology

This study was carried out in Matara district as in Matara district 100% of buffalo milk is used for curd production. Thihagoda D.S division was selected due to the abundance of curd producers in Matara district. Fifty farmers were selected as a cluster from curd producing farmers by using cluster-sampling method. Among these, 15 farmers were randomly selected to check the adulterants used in curd production. Data were analyzed by using chi square test and to identify the adulterants used in curd production and quality, following indicators were used (Table 1).

Table 1. qualitative test methods use to measure the adulterants of raw milk

Adulterant/ Ingredient	Indicator	Expected qualitative changes
Starch	Iodine	(+) Blue (-) Yellowish brown
Salt	Colour change	(+) Yellow
Sugar	Color change with precipitation	(+) Brick red precipitation
Cow milk	Colour difference	(Yellow) └ Fat % - Buffalo ▲ Fat % - cow
Fat %	EMT Readings Buterometer test	
Keeping quality	Rezazurin test	Blue – very good Pink - good White- bad

To find out the economic gain, following variables were used

- No of pots produced per day
- Selling price of a pot (Rs /pot)
- Cost (Rs /pot)

Laboratory tests

Fifteen milliteres of raw milk just before adding culture to set curd from 15 farmers were used for laboratory tests to check whether curd producers add any adulterants to their products. Thihagoda chilling center was selected for this purpose.

Table 2. Laboratory tests for checking the adulterants

Tests	Chemicals
Salt	Potassium dichromate, silver nitrate
Sugar	HCL , Rezazurin
Fat %	Buterometer method Electronic stabilizer method
Keeping quality	Rezazurin

Results and Discussion

In the sample, 100% of the farmers were full time livestock farmers engaging in livestock management apart from paddy cultivation. Most farmers (95%) have local breeds. Only 5 % have Murrah and Murrah cross breeds. Herd size is vary from 1-100. Fig: 3.1 shows that, majority (48%) has 4-6 milking buffaloes. The fewer amounts may lead to low production. Lactation length of buffaloes is 5 months due to the scarcity of feeding resources and water.

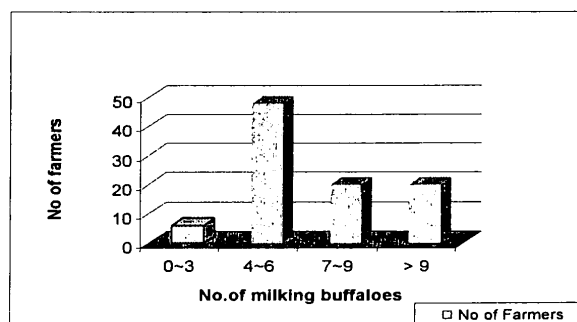


Figure 1. Relationship between herd size and number of farmers in Thihagoda D.S.

Raw milk production

The figure 3.2 shows that, most of the farmers get around 6~10 l /milk /day. That may due to fewer herd size and lack of improved breeds. Only 5% of farmers obtain more than 15 l /milk /day due to improved breeds.

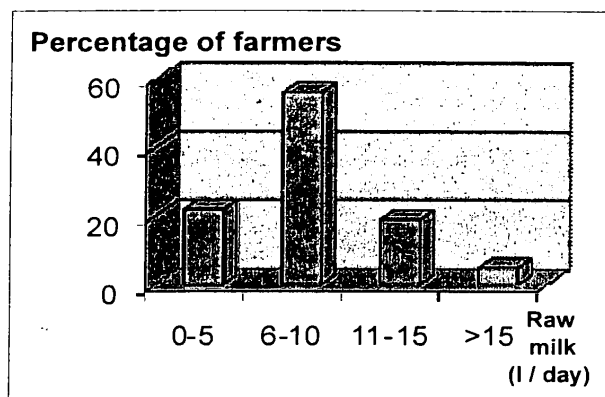


Figure 2. Raw buffalo milk production in selected farmers at Thihagoda D.S.

Buffalo milk Marketing

All interviewed buffalo keepers (100%) have been involving in marketing process. Majority (53%) of the farmers produced 6-10 pots / day only, showing their low production. (Figure 3)

All farmers (100%) in the area produced curd only in clay pots. The reason, as farmers' point of view, curd

can keep steady in clay pots, and it has better quality and long shelf life than plastic pots.

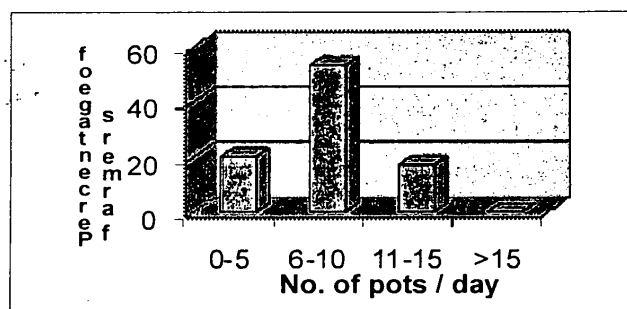


Figure 3. Buffalo curd production in selected farmers at Thihagoda D.S.

Quality of milk and adulterants usage

It is clear from the table 3 that, normally farmers add sugar, starch and salt to milk, as adulterants to increase the total solid content, thereby to increase the density of milk. It is clear from the study that, sample number five (5) was answered to Rezazurin test, because it has given a pale pink color. It indicates that the high microbial content in the sample which leads to make the curd low quality. Moreover, out of 15 observed samples, 33.3% of samples' fat % is below the standard fat % that is around 7.58%, confirming the low quality of curd due to adulterants usage.

Table 3. Presence */ or absence of adulterants in milk from each selected farmers

sample No	Rezazurin test	starch	salt	sugar	cattle milk	fat %
1					*	6.3
2						9.2
3		*	*			5.83
4						7.4
5	*					11.2
6		*				6.5
7						7.9
8				*		8.6
9						9
10						8.5
11						8.6
12						9
13						7.9
14						8.2
15						7.4

Profit Margin of curd

Production cost = Rs.25 / pot

Selling price (800 ml pot) = Rs.60 -65 /800 ml pot

Profit Margin = Rs.35-40 /pot

According to the surveyed sample, the producers, except one for their consumption sold all produced pots to the market. Calculated Chi square test indicates

that, there is a significant association between number of milking buffaloes and number of pots.

$$X^2_{cal} = 46.39$$

$$X^2_{table} = 12.593 \text{ (0.05 significant level)}$$

Moreover, there is a significant association between raw milk production and number of pots produced per day. It indicates that, whole portion of milk used to produce curd without wastage. Following X^2 values further proofs it

$$X^2_{cal} = 54.802$$

$$X^2_{table} = 12.593 \text{ (0.05 significant level)}$$

Problems associated with buffalo curd production
Following problems were identified in the study area.

Absence of pasture land

Most of the farmers use free grazing system to feed their buffaloes. Most of them were not using concentrate feeds. More than 90% of the farmers were having the problem of lack of pasture lands; as during the cultivation season no land available for grazing.

Stealing of animals

Due to lack of pasturelands, most of the farmers send their animals to graze far away areas, especially along the Nilwala riverbank. Some well-organized groups of thieves are generally involving in stealing these animals.

Lack of better breeds

More than 90% of respondent have local breeds, except few have Murrah breeds, giving higher amount of milk

Lack of proper entrance to get into the river to drink water

Due to this problem buffalo become prey for crocodiles.

Lack of collection centre

Normally in Thihagoda, there is no any special collection centre for buffalo milk.

Conclusion

In the study area, most of the farmers have local breeds and average herd size is 4-6, which leads low production level (6~10 l /milk /day). Their average production of curd is 6-10 pots /day. Farmers demand Murrah type breeds to increase production. Average milk production of local buffalo is 0.5 l/day/cow. In Matara District that is around 1-2 l/day/cow. There is no special product differentiation was found in the

study area. Farmers produced only 800ml clay pots and earn Rs 60/pot. Profit gain is Rs. 35-40/pot. It shows the profitability of the business. It was revealed from the present study that, normally farmers are using adulterants, such as starch, sugar, salt and cow milk, with the aim of increasing the density of milk, that makes the curd low in quality. The fat% of buffalo milk in Thihagoda area ranges from 5.8-11.5. That also verifies the quality reduction due to adulterants, as the standard rate of fat% in buffalo milk is 7.58%. Farmers are facing problems in buffalo rearing. Among those, lack of improved breeds, lack of pasture lands, unaware of concentration feeds, lack of proper collecting center, are burning problems.

Emerging issues and future opportunities

Key issues revealed from the study^o are summarized below for policy interventions and future research with the view of promoting the buffalo curd industry.

Government should involve uplifting the buffalo curd production industry by encouraging farmers through incentives, supplying high yielding breeds at reasonable prices, as this is a profitable enterprise with considerable economic gain.

Government, NGOs or any other authorized sector should be involved to solve the burning problems faced by the buffalo rearing farmers as well as to stop illegal practices (use adulterants) in curd production

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