



A Review of Milk Production in Bangladesh with Particular Emphasis on Small-scale Producers

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EXECUTIVE SUMMARY

Introduction

Milk production is a livestock enterprise in which small-scale farmers can successfully engage in order to improve their livelihoods. Regular milk sales also allow them to move from subsistence to a market based income. The main purpose of this study was to gain insight into the household and farm economics of small-scale dairy farmers in Bangladesh and to obtain estimates of their costs of milk production so as to gauge their vulnerability to international competition. A case study approach is used, the aim being qualitative insight rather than quantitative extrapolation.

Methodology

The district of Sirajganj, one of the major milk producing districts in Bangladesh, was chosen for this study. The methodology applied for the economic analysis was developed by the International Farm Comparison Network (IFCN) and utilises the concept of 'typical' farms. Farm types are determined on the basis of the knowledge of regional dairy experts. The first (small) farm type in this study has been defined in a way to represent the size that is close to the statistical average in the study area. The other 'typical' farms represent larger farm types and illustrate economies of scale or exemplify a different dairy production system. Management levels on the typical farms are average to slightly above average compared to other farms of their type.

In the case of Sirajganj, typical farms were defined by the criteria (a) location, (b) size and (c) production system so as to cover the farm types that make important contributions to milk production in the region. Data was collected using a standard questionnaire, and a computer simulation model, TIPI-CAL (Technology Impact and Policy Impact Calculations), was used for biological and economic simulations. The farm input data and the related output figures were discussed and validated with local experts and farmers.

Results

Milk production in Bangladesh and Sirajganj district

At 2.11 million tons, milk production in Bangladesh in 2002 was relatively low, and Bangladesh has to import around 250,000 tons of milk equivalent annually to satisfy national milk demand. While 36 and 1 percent of the milk in Bangladesh are produced by local cattle and buffaloes, it is goat milk that contributes the largest share of 62 percent to total milk production. Milk yields per 'dairy' bovine (mainly cattle) are less than half of those achieved in Pakistan and India. The vast majority (over 70 percent) of 'dairy' cattle are kept in herds with an average of 3.5 animals.

Analysis of 'typical farms' in Sirajganj

Based on the IFCN methodology described, three farm types have been identified as 'typical' and were subjected to detailed analysis:

BD-2: This farm represents a rural household with 2 local cows and 0.4 ha of land. The farm sells about 62 percent of its milk to the local milkman. This farm represents the vast majority of farms and is close to the average farm size in the area.

BD-10: This farm is also located in a rural area but has 1.6 ha of land used for growing small grain crops. Ten dairy animals (2 local and 8 crossbred cows) are kept. 90 percent of the milk is sold to a nearby milk collection point. The household depends on the farm as the only source of income.

BD-25: This rural farm has 1.8 ha of land and keeps 25 crossbred cows. Milk (98 percent) is sold to a milk processing company with a collection centre nearby.

Although BD-10 and BD-25 might be considered as untypical dairy farms in Bangladesh due to their larger herd sizes, a closer look at the dairy sector in Sirajganj shows that these farms represent the fastest growing farm types in the district. Their selection thus provides an outlook into the future of the dairy sector in Bangladesh and allows the analysis of economies of scale.

Dairy production systems

On the two larger farms, the dairy animals are kept in tied stalls at all times while the animals on the smallest farm graze several hours per day on communal land. Milking is done by hand on all three farms. Feed rations are based mainly on home-grown fodder and straw and have a small component of energy-rich agricultural by-products such as cereal bran, broken rice, molasses, and oilseed cakes. Urea is also commonly utilised by the two larger farms. On the latter, crossbred cows are the main type of dairy animal whereas the smaller farm uses only indigenous breeds. The family is in charge of the management of the farms and provides 100, 88, and 57 percent of farm labour on BD-2, BD-10 and BD-25 respectively. Production per dairy animal ranges from 1,024 to 1,936 kg energy corrected milk per year.

Household comparison

All farms have a diverse income structure, income sources being the sale of milk, cash crops, vegetable, eggs, poultry and / or fish, and off-farm employment. Annual household incomes lie between 1,160 US\$ (BD-2) and 3,680 US\$ (BD-25).

For all the farms, the main cash income source is on-farm (self-)employment (77 to 90 percent). Off-farm employment contributes only 6 percent to the household income of the smallest farm and none on the two other farms. The non-cash benefits obtained from the dairy (in the form of milk and manure for the household) contribute between 10 and 16 percent to the household income on the three farms.

Whole farm comparison

The returns from farming range from 1,362 to 16,576 US\$ per year. Net cash farm income closely follows the level of total farm returns. The highest net cash farm income (3,270 US\$/year) is achieved by farm BD-25. The net cash income of farm BD-2 is at a low of 898 US\$ year. This is due mainly to the low share of milk sold.

Comparison of the dairy enterprises - Costs of milk production

The cost of producing 100 kg of energy corrected milk (ECM) lies around 22 US\$ on all three farms. Interestingly no cost difference was found between the small and the large farms. This can be explained by the differing production systems, particularly the related feed costs. The smallest farm (BD-2) grazes cattle 'for free' on public land. Therefore feed costs are very low while the larger farms have to purchase feed or grow feed on their land. It appears that this feeding strategy of farm BD-2 compensates for the economies of scale of the two larger farms.

In the year 2002 all farms were able to cover their full economic costs. As long as milk prices remain at the current level and the production systems (grazing on public land) will remain unchanged, all farms can be classified as competitive in the short as well as in the long run.

International competitiveness of milk production

The costs of production of 22 US\$ per 100 kg milk (ECM) in Bangladesh can be classified as intermediate within the costs levels estimated by the International Farm Comparison Network (IFCN) for the year 2002. Costs in Bangladesh are about 20 percent below the cost of production in the EU (28 US\$ per 100 kg) but 40 to 50 percent above the levels in other countries in the Southern Hemisphere. The large farms in India and Pakistan can achieve production costs below 15 US\$ per 100 kg. All three farm types will have difficulties to compete with imports of dairy products as long as the world market prices for milk range between 15 and 18 US\$ per 100 kg milk. Moreover, milk producers in Bangladesh will have difficulties in competing with producers from other countries in the region such as India and Pakistan.

Margins of the dairy chain in Sirajganj (preliminary estimates)

The prices paid to the farmer for milk with 4.5 percent fat vary between 53 and 83 percent of the consumer prices for milk at different fat contents. The extracted cream value ranges from 0.03 to 0.10 US\$ per kg. The returns obtained from processing and retailing one kg of 4.5 percent fat milk in the formal sector are about 13 percent higher than in the informal sector.

The margin for milk processing and retailing in Sirajganj amounts to around half of what the dairy chain in Europe covers to deliver the milk to the consumer. The highest margins (0.23 US\$/kg) in the chain are achieved by the co-operatives, while the lowest margins (0.07 US\$/kg) are made by farms that sell milk directly to consumers with a fat content of 4.5 percent (no cream extraction).

Conclusions

Based on the consideration that 130 million people in Bangladesh should consume at least 120 g of milk per day (as fluid or processed in any form), the annual milk demand would be about 5.70 million tons. This estimate of milk demand in Bangladesh demand is over two and half times FAO's recorded national milk production for the country (for 2002). Therefore, meeting Bangladesh's potential milk demand is a huge national task and the question arises how well-positioned Bangladesh is to meet this milk demand.

This study shows that the 2 cow farm (BD-2) does not only cover its full economic costs, but can produce milk at a cost almost as low as the larger farms included in the study. This should be very encouraging for more than 7.2 million Bangladeshi families involved in small scale cattle rearing, of which few make a profit and most consider it a highly risky activity.

The small farm (BD-2) is competitive at the national level but not at the international level. The cost of milk production of all farms in comparison to larger farms in India, Pakistan and Oceania is around 50% higher. Assuming a liberal trade of dairy products in the future all farms analysed will have to improve the production systems significantly to gain from the growing demand of dairy products in the country.

Further studies of small dairy farms in Bangladesh need to include a land-less milk production system, a typical goat milk production system and a more exhaustive evaluation of the non-cash benefits obtained from dairy cattle (like draught power). Moreover the cost reduction potential of the farms by improvements in farm management, should be analysed.