Economics of Small Scale Dairy Farming in Sri Lanka: A case study from Coconut Cattle Silvo pastoryl system.

Master Thesis

For partial fulfillment of Masters Degree Program of Agricultural Science, Food
Security and Natural Resources Management in the
University of Hohenheim. Stuttgart
Germany

Maduwe A.J.S. Navaratne

7   Abstract

Dairy farming sector in Sri Lanka contributes only marginally to the national economy. It is predominantly in the hand of small-scale farmers. Presently milk production in the country meets 20 percent only of the requirement while the demand for milk and milk products in the country is growing. The poor profit margin in this sector has been often cited in the literature as the factor hindering market expansion. Nevertheless, systematic research to analyse the profitability in the dairy sector has not yet been adequately executed. In view of this, a study was carried out to asses the profitability of small-holder dairy farmers in the coconut triangle of the intermediate zone of Sri Lanka. This area is considered as resourceful area for milk production in Sri Lanka.

A field survey was carried out in Sri Lanka during the period from March 2002 to mid July 2002. A stratified random sample with 105 small-scale dairy farm households was selected. Stratification was done based on the major marketing body operating in the area. A semi structured questionnaire was used to collect data. Out of these 105 households, 96 were taken for the final analysis.

According to the intensity of management, the total number of farms that are virtually comprised of small herd sizes were classified into 3 management systems, namely intensive, semi intensive and extensive. Feeding with concentrate feeds, use of permanent cattle houses equipped with basic needs as well as supplement of water and electricity to the cattle houses was taken to measure the intensity of management in the classification.

Descriptive statistics were used to characterise the small-scale dairy farming sector according to their management systems. The profitability of dairy farming was estimated by a gross margin analysis. Four types of gross margins were calculated to evaluate the profitability of each management system. An economic relationship between financial profitability and the factors affecting financial profitability was also established. The systems of management, time spend for cattle farming, amount of concentrate feeding, level of education of the cattle keeper, number of animals in the herd, number of buffaloes in the herd, number

of cross breeds in the herds, number of indigenous breeds in the herd and the distance to milk collecting centre were taken as independent variables. Further more the factors affecting revenues from dairy operation was assessed taking the same factors listed above.

Findings reveal that dairy farming is still one of the main income source of small-scale farmers in the surveyed area. The size of owned land by the farmers has become a constraint to increase the herd size and the intensification of the management. Intensive systems often consisted of large herds with so called exotic breeds. The average herd size in intensive farms was 15 animals while it was 10 animals in semi-intensive farms and 8 animals in extensive farms. European crosses are more common than Indian crosses in the study area. Coconut poonac, a by product of copra production is widely used as a concentrate feed. The feeding of animals with rice bran and other concentrate preparations is significantly higher in intensive systems than in the others. Accordingly the milk collection in the intensive farms are considerably high. It is about 29.4 liters per day in intensive farms while it is 9.89 liters and 8.25 liters per day in semi-intensive and extensive farms respectively. In general, about 73 percent of the variable costs in a dairy operation is made up of concentrate feeds alone. About 78 percent of total variable costs is incurred for concentrate feeding by intensive farmers, while it is about 48 percent by extensive farmers. But the proportionate income gained from milk in the intensive farms are significantly higher.

Financial profitability measured in terms of gross margin 1, demonstrates that intensively maintained farms are obtaining larger profits. The average farm profitability was 54085 Rs. ($ 563) per year in the intensive farms while it was 26994 Rs. ($ 281) per year in semi-intensive farms, and 30783 Rs. ($ 321) per year in extensive farms. The analysis of gross margin 2 demonstrates that the profits are strongly reduced if family labour is deducted at a shadow wage rate in the calculation. The respective margins are 26482 Rs. ($ 267) in intensive farms, 2612 Rs.($ 27) in semi-intensive farms and 5755 Rs.($ 60) in extensive farms.

Gross margin type 3, which examines the social profitability, shows that farmers who manage their herds intensively, benefited more from government subsidies than others. The gross margin 3 in the intensive , semi intensive and extensive farms were 38449 Rs.($ 401), 5894 Rs.($ 61), and 7263 Rs.($ 78) respectively.

Gross margin 4 was calculated by subtracting the depreciation cost of the fixed factors. It was 15921 Rs.($ 166), - 4593 Rs.($ - 48), and 2806 Rs.($ 29) in intensive, semi-intensive and extensive systems respectively. According to the analysis of gross margin 4, it is found that only intensive farms as well as extensive farms are economically viable while semi-intensive farms, which are largely found in the area are getting negative profits. The cost incurred for buildings and other fixed factors could only be recovered by more intensifying and maintaining large herds.

Multiple regression analysis, using a backward selection process of explanatory variables was applied to develop the econometric relationship. The model explained 85 percentage of the variation of the total revenue per year while 76 percentage of the variation of the net profit per year. The variables such as type of management, total hours spend, total land allocation and total number of animals in the herd were the main variables determining the profitability of dairy farming.

In summary, it could be concluded that milk production could be increased by intensifying the small scale dairy farms in the coconut triangle. Dairy farming could also emerged as a profitable enterprise, if those farms could be intensified. To enhance dairy development in Sri Lanka, it requires to undertake several steps which should be included into the dairy development agenda.