

Factors Affecting Marketable Surplus and Income of Dairy Farmers in Southern Sri Lanka

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Abstract: The study was conducted during first quarter of 2010 with the purpose of investigating the factors affecting marketed surplus and income. Data was collected from Gall Matarata and Hambantota districts. Primary data was collected from 119 farmers through personal interview method with the help of a structured interview schedule. MS was varying from 0-55 L with the average of 7.62 L (82.79%) per day. With regard to the income, around 24% of the respondents had personal monthly income in the range between Rs. 10,000 and 15,000 and had Rs. 14,141 as mean income. Majority of farmers have done dairying as an alternative income generating activity. Farm families earned Rs. 7,861 as average income. Majority of farmers (62%) sell their milk as raw while 24% prefer to sale value added product. Unit price of milk, sales amount, production, number of milking cows and subsidy received by the farmers have influenced directly on milk income. Interestingly, knowledge on feeding, maintenance of pasture land, clean milk production, productivity, credit received and farmer's education have exhibited indirect influences on milk income. Extension activities has influenced to obtain high income through getting high price while farmer's education has influenced to get high income by increasing selling amount through increasing productivity. It is therefore, recommended that relevant authorities need to take action to strengthen the present mode of extension. Receiving subsidy and credits the have influenced to obtain high income via increasing production, sales amount and received unit price. Therefore, providing subsidies and credit are major requirement to enhance the livestock sector as an agricultural business.

Key words: Marketable surplus, income, extension, credit and subsidy, Sri Lanka

INTRODUCTION

Livestock production is an important income source for the rural poor and it contributes significantly for the country economy. However, domestic milk production is very low as compared to local country requirement. Local fresh milk production of both cow and buffalo was recorded as 175.75 thousand MT in year 2008. Therefore, country requirement has fulfilled by importing of milk powder. Local production and import of milk powder in 2008 were recorded as 7.53 and 62.51 thousand MT, respectively in year 2008. Milk production contributes 0.9% of country's GDP (Central Bank of Sri Lanka, 2009). Therefore, government of Sri Lanka is at present promoting the local milk production. Rao *et al.* (2004) pointed out that dairy enterprise provides subsidiary occupation in semi-urban, hilly and drought prone areas. However, the rapid growth in livestock production is critical to design policies promote the incorporation of the rural poor into economically and environmentally sustainable growth (Kumar and Singh, 2008). Development of any business or livelihood activity basically depends on the income. Milk producers also hope to get high income from their enterprise. Income of agricultural commodities is mainly depending on

Marketable Surplus (MS) and Marketed surplus (MT) (Liyanage and Sandika, 2009). Therefore, income of cattle farmers may be directly or indirectly correlated with Marketable Surplus (MS) and Marketed Surplus (MT). In any developing country like India, Pakistan, Sri Lanka marketable surplus of agricultural products play a significant role especially in the case of major food items like rice, vegetables and milk, etc. Marketable surplus is the quantity of the product which can be made available to the non-farm population of the country. It is also a surplus which is available for sale after meeting family needs, seed requirement, wage payments and gifts to relatives and friends, etc. For food grains, surpluses generally vary from 0 to 45-50% for small and marginal farmers and 70-80% for large scale farmers. In general marketable surpluses in food grains are in the range of 45-80%. In cash crops which are raw materials of industry, surpluses are 80-100%. In fruits and vegetables which are grown on commercial scale, surpluses are above 90% (Acharya and Agarwal, 2004). Three to four decades back, dairy activity was just carried out as subsidiary to crop production to meet the family requirement of milk. Therefore, there was no surplus. But after the development of new high yielding cow and buffalo breeds, improvement in feeding and management

practices of milk animals, certain of marketing facilities through government, private and NGOs involvement and producer's co-operatives, the milk production has increased very rapidly in almost all countries. It has spread in the rural area and it has now become an important commercial activity. At present marketable surpluses of raw milk is varied from 77-92%.

Marketed surplus can be defined as the quantity actually marketed by the farmer. There is a strong relationship between marketed surplus and marketable surplus. The marketed surplus may be more, less or equal to the marketable surplus (Acharya and Agarwal, 2004). Srikanth and Vasudev (2006) an attempt has been made to quantify the level of consumption, production and marketed surplus of milk in Karimnagar district of Andhra Pradesh. Better feeding followed by congenial weather conditions during the winter has positive effect on milk production. They have further noticed that in relative terms marketed surplus was more in summer (ranging from 58.5-60%) as compared to that in rainy season (50-56%). On an average marketed surplus during the year ranged between 55% in the case of small famers to 57.2% in the case of medium farmers. But in all the categories of farmers the consumption of milk was above recommended. From the marketing point of view, marketable surplus is more important than the total production to increase farmers' income. The arrangements for popularizing domestic milk production, marketing and trade policies related with livestock sector especially for major potential areas have to be made only for the surplus quantity available with the farmer and not for the total production. The concept of marketable surplus is very important for improving the farmers, income, prices and markets efficiency.

Therefore, it is important to study the factors affecting the marketable and marketed surplus. On this background, this study attempts to examine the factor affecting marketable surplus of milk in southern province of Sri Lanka. The specific objectives of the study were to study the socio economic conditions of the farmers in the study area, to analyze the marketable surplus, marketed surplus and income of milk farming, to study the factors affecting marketed surplus and farm income at present scenario.

MATERIALS AND METHODS

The study was conducted during first quarter of 2010 with the purpose of investigating the factors affecting marketable surplus and income. Rearing milk is cultivated in almost all parts of the country (Central Bank of Sri Lanka, 2009). The selected research site was Southern province (Gall Matara and Hambantota districts) which has been recorded as one of high milk production

province in the country. Contribution of Southern province was 9.1% to local production (Central Bank of Sri Lanka, 2009). Milk farmers were selected as the target population. Primary data were collected from farmers through personal interview method with the help of a structured interview schedule. Sample size was 119. In addition, magazines, articles and past survey reports, etc. were used to obtain secondary information. Age, sex, education, number of family members, family wealth, information sources, number of animals, number of milking cows, production, productivity, selling amount, price, value addition, price of value added products, income, income from livestock, extension participation, received credit and subsidy were considered as variables of the study.

The Marketable Surplus (MS) and Marketed surplus (MT) of the milk was calculated by applying following Eq. 1 and 2:

$$MS = P - C \quad (1)$$

Where:

P = Total production

C = Total requirement (family consumption and other requirements)

Likewise:

$$MT = MS + PS - L \quad (2)$$

Where:

PS = Past Stock sold out if any

L = Losses due to various reasons (Acharya and Agarwal, 2004)

For analysis of data, Pearson product-moment correlation test was applied to identify the factors affecting the marketed surplus. In addition, path analysis was also done to identify the direct and indirect factors which positively or negatively influence the income of the dairy farmers. Tables, percnages, bar charts and line charts were also used to summarize the data.

RESULTS AND DISCUSSION

Socio-economic situation of the farmers: In the present study an attempt has been made to identify the socio economic conditions of the farmers in the study area, to analyze the marketable surplus, marketed surplus and income of milk farming, to study the factors affecting marketed surplus and farm income at present scenario. Income of the dairy farmers is illustrated by the socio economic condition of them. Farmers characteristics are described.

The frequency distribution of age and education level among farmers is shown in Table 1. The sample comprised of farmers having mean age around

Table 1: Social background of respondents

Criteria	Frequency (%)
Age level	
Young<35	23 (19.0)
Middle 36-54	56 (47.0)
Old 55<	40 (34.0)
Total	119 (100.0)
Education level	
Primary<grade 5	06 (05.0)
Secondary 6-10	41 (35.0)
O/L	03 (2.5)
A/L	67 (56.0)
Diploma/degree	02 (1.5)
Total	119 (100.0)

46.25 year and majority belonged to middle to old age category. Results clearly depicted that young generation is moving away from dairy farming to other non farm activities. Table 1 further shows that a large fraction of respondents (60%) were having more than secondary education. These findings are in line with the findings of Liyanage and Sandika (2009), Sandika (2009) and Sandika and Withana (2010).

Education is an important criterion which helps to increase income through selling value added product rather than raw milk. Around 48% reported that ownership of herd was <4 while and 83.5% farmers reported they maintained <4 milking cows out of the total herd (Table 2). Studied sample reported 8.13 L average milk yield per day and 3.25 L average milk productivity per cow per day (Table 3). It is significantly higher than the country productivity (1.8 L/cow/day). It is interesting to discuss here that significant relationship was recognized for milk productivity of the dairy herd with farmers education ($r = 0.211, p = 0.032$), milk yield ($r = 0.379, p = 0.000$), gross income ($r = 0.431, p = 0.000$) and number of milking cows ($r = 0.312, p = 0.001$).

The 21% of respondents had taken credit from formal institutes to develop their dairy production capacity. As average studied sample had received Rs. 124, 875.00 amount mean credit for their dairy activities. Abedullah *et al.* (2009) and Iqbal *et al.* (2003) found that the impact of institutional credit on agricultural production in Pakistan has been found to be positive and significant. In studied sample 72% of farmers had received subsidies and average monetary value of received subsidy was Rs. 35, 765.00 for to improve their dairy farming operation. In this surveyed sample 97% of farmers who had linked with extension facility and 45% of them had participated for several trainings which was conducted by different institutions.

Marketable surplus and marketed surplus: In Sri Lankan scenario marketable surplus and marketed surplus are equal because there are no any other expenses such as

Table 2: Farmers distribution regarding total herd and milking cow

Animal number categories	Number of farmers regarding total herd (%)	Number of farmers regarding milking cows (%)
<4	57 (48)	99 (83.5)
5-9	25 (21)	11 (9.0)
10-14	16 (13)	06 (5.0)
15-19	13 (11)	00 (0.0)
20<	08 (7)	03 (2.5)

Table 3: Milk yield distribution among farmers

Daily production (L) categories	Milk yield per day (L) (%)	Milk yield productivity per cow per day in L (%)
0	11 (9)	14 (12)
1-4	41 (34)	81 (68)
5-9	42 (35)	23 (19)
10-14	09 (8)	01 (01)
15-19	04 (03)	00 (00)
20<	12 (10)	00 (00)

Table 4: Total production, selling amount and marketed surplus

Parameters	Total production (L)	Selling amount (L)	MS (%)
Average	8.44	7.62	82.79
Minimum	1.00	0.00	0.00
Maximum	55.00	55.00	100.00

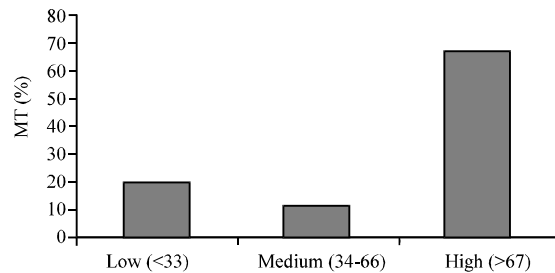


Fig. 1: Farmers categorization

payment to labour, landlord and payment for social and religious work in term of raw milk. On this background, Table 4 shows the total production, selling amount and marketable surplus per day farmers. It was vary from 0-55 L with the average of 7.62 L (82.79%) per day. Srikanth and Vasudev (2006) had found that 58.5-60% marketed surplus in summer and 50-56% in rainy period. They have further found that average marketed surplus during the year ranged between 55% in the case of small fanners to 57.2% in the case of medium farmers in India. Finding of this study was significantly higher than India. This result may be due to raw milk consumption in Sri Lanka is relatively very low as compared to India. Therefore, Indian farmers keep relatively high amount of milk for home consumption than Sri Lankan farmers. Hence, categorization was done base on the range of MT and majority of farmers belonged to high MT group, (Fig. 1).

Marketable surplus was positively and significantly correlated with variables such as selling amount ($r = 0.307$;

p = 0.003) while negatively correlated with age (r = -0.20; p = 0.041) of the farmer. Increasing of selling amount of milk is the most important factor to increase the MT.

Income is the most important variable of any livelihood activity. Dairy farmers also attempt to get high income from dairy farming. About 24% of the respondents had personal monthly income in the range between Rs. 10,000 and 15,000 and had Rs. 14,141 as mean income (Table 5). They have done dairying as part time income generating activity. Farm families earned Rs. 7,861 as average income from their milk apart other household income. In studied sample, majority of farmers (62%) sell their milk as raw while 24% prefer value added product to sale. Selling value added products help to get high income rather than selling raw milk (Rangasamy and Dhaka, 2009). Therefore, educating farmers for selling value added products rather selling raw milk was needed by relevant authorities. Rests keep their product for home consumption. About 44% of studied sample mentioned

that they had faced marketing problem when they were selling their product. Interestingly, income was positively correlated with milking cows in the dairy herd (r = 0.663, p = 0.000), milk yield (production) (r = 0.943, p = 0.000), productivity of the dairy herd (r = 0.338, p = 0.000), selling milk amount (r = 0.918, p = 0.000), price received for 1 L of milk (r = 0.211, p = 0.040) and extension service and training received by farmers (r = 0.311, p = 0.002). Further, it was observed that milk yield had correlation with credit amount which received by farmers (r = 0.500, p = 0.018), value of subsidy received (r = 0.350, p = 0.003) and extension service and training received by farmers (r = 0.453, p = 0.000). On the other hand, amount of credit was correlated with the level of education received by farmers (r = 0.62, p = 0.000) and herd size (r = 0.56, p = 0.02).

Out of above all variables, some are directly influenced the income of the farmers while some are influenced indirectly. Path analysis was done to identify the directly and indirectly influencing factors of farmers the milk income. Figure 2 clearly shows that unit price of milk, sales amount, production, number of milking cows and subsidy received by the farmers have influenced directly on milk income. Interestingly, knowledge on feeding, maintenance of pasture land, clean milk production, productivity, credit received and farmer's educations have exhibited indirect influences on milk income.

Table 5: Income distribution among farmers

Income level (monthly Rs)	Household income (%)	Monthly income from milk (%)
Less 4,999	31 (26)	58 (49)
5,000-9,999	11 (9)	29 (24)
10,000-14,999	29 (24)	15 (13)
15,000-19,999	21 (18)	04 (03)
Higher 20,000	27 (23)	13 (11)

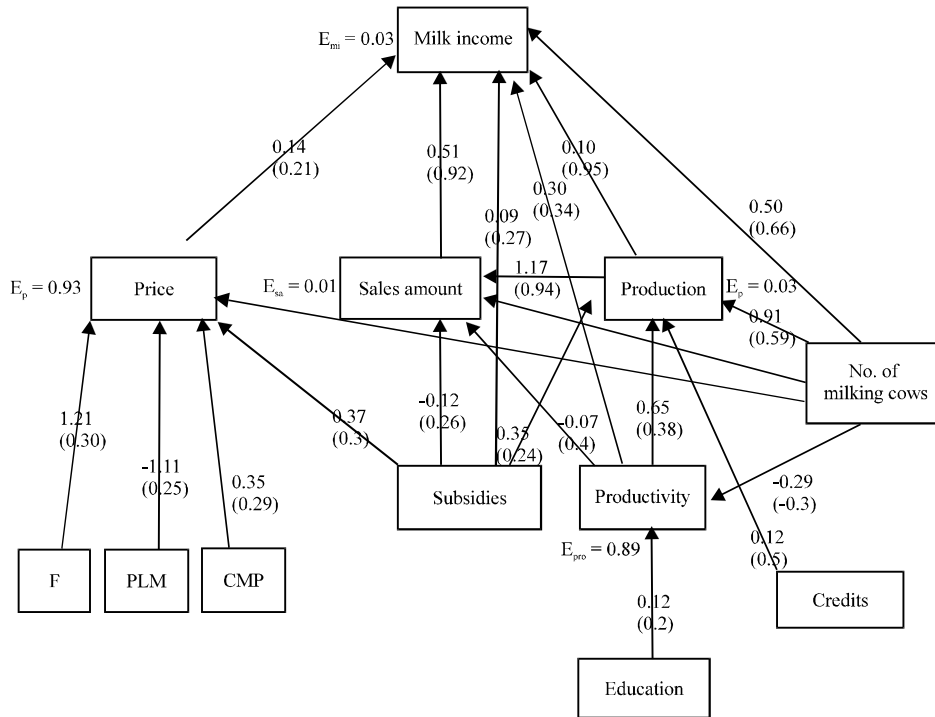


Fig. 2: Path analysis for milk income

Above model clearly shows that extension activities such as accurate feeding of cows, maintenance of pasture land and clean milk production have influenced to obtain high income through getting high price for milk whereas farmer's education has influenced to get high income by increasing selling amount through increasing productivity. It is therefore, recommended that relevant authorities need to take action to strengthen the present mode of extension. Subsidy and credit received by the have influenced to obtain high income via increasing production, sales amount and received unit price. Abedullah *et al.* (2009) indicated that credit is the back bone for nay business and more so for agriculture which has traditionally been a non monetary activity for rural population. Therefore, providing subsidies and credit are compulsory requirement for enhancing the livestock sector as an agricultural business.

CONCLUSION

Rang of MS was in between 0-55 L with the average of 7.62 L (82.79%) per day. Hence, categorization was done base on the range of MT and majority of farmers belonged to high MT group. With regard to the income, around 24% of the respondents had personal monthly income in the range between Rs. 10,000 and 15,000 and had Rs. 14,141 as mean income. Majority of farmers have done dairying as part time income generating activity. Farm families earned Rs. 7,861 as average income from their milk apart other household income. In studied sample, majority of farmers (62%) sell their milk as raw while 24% prefer to sale value added product. Selling value added product helps to get high income rather than selling raw milk.

Unit price of milk, sales amount, production, number of milking cows and subsidy received by the farmers have influenced directly on milk income. Interestingly, knowledge on feeding, maintenance of pasture land, clean milk production, productivity, credit received and farmer's educations have exhibited indirect influences on milk income. Extension activities has influenced to obtain high income through getting high price while farmer's education has influenced to get high income by increasing selling amount through increasing productivity.

RECOMMENDATIONS

It is therefore, recommended that relevant authorities need to take action to strengthen the present mode of extension. Subsidy and credit received by farmers have influenced to obtain high income via increasing production, sales amount and received unit price.

Therefore, providing subsidies and credit are major requirement for enhancing the livestock sector as an agricultural business.

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