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The Impact of Agricultural Credit and Farmer Trainings on Small Holder Dairy Production in Southern Region in Sri Lanka

Research Article

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ABSTRACT

Potential growth of dairy sector is highest and more reliable compared to crop sector, indicating that dairy sector can play vital role to increase income among farmers in rural areas than crop sector in Sri Lanka. Credit and farmer training in management ability have been major concerns of dairy development efforts. Therefore, this study was conducted to assess the impact of credit and farmer training on small holder dairy sector and to estimate its contribution to farmer's income. The study was carried out in southern region of Sri Lanka. Purposive sampling approach was adopted and data were collected from 119 farmers through pre-tested structured questionnaire by personnel interview. Twenty one percents of respondents had taken credit and 72% of farmers had received subsidies to develop their dairy production capacity. Almost 97% of farmers had received knowledge for different activities in dairy production and 45% of them had participated for trainings which related to dairy. The milk yield of studied sample had correlation with credit amount (r=0.500, p=0.018), value of subsidy (r=0.350, p=0.003) and extension and training (r=.453, p=.000) which received by farmers. The farmers with higher level knowledge on management practices were acquiring and demanding of credit and farmer training compared to farmers with low knowledge. Further herd size had strong positive correlation with the amount of credit obtained. The results clearly illustrated credit and farmer training in dairy sector could considerably facilitate to increase income of dairy farmers and assists to develop dairy sector in small holder context.

KEY WORDS dairy, extension, finance support, income, milk yield.

INTRODUCTION

Despite the speedy growth in the other sectors, agriculture is still the single largest sector contributing nearly 22% to the national income of Sri Lanka. Livestock contributes about 7% of the total Gross Domestic Product (GDP) which is over ¼ of the GDP from Agriculture sector in Sri Lanka (Perera and Jayasuriya, 2008). Dairy sector play a significant role in supplementing the family income of thousands of rural households and acts as an insurance against the notions for the poor ones. The unique characteristic of Sri Lankan dairy industry is that the bulk of milk production in our country is handled by small milk producers who are ignorant of economic aspects of milk production. Southern region of Sri-Lanka comprises 5305 livestock keepers with an estimated 38000 heads of dairy cattle. Annual milk production in the region is approximately 4.7 million liters while daily milk production in the region is less than 20000 liters (Central Bank of Sri Lanka, 2009). Therefore, there is need and potential for increased income to be strengthened through dairying as enterprise especially in southern region part of Sri Lanka.

Rao *et al.* (2004) highlighted that dairy enterprise provides subsidiary occupation for semi urban, hilly areas and

drought prone areas. According to the latest survey of Ministry of Livestock Development (2010), the estimate of employment in dairy sector was 250000, which is 63.9% of the total working population of the animal husbandry sector. From the above statistics, it is clear that the livelihood of many poor people is dependent on dairy farming. Given its importance to national economy, almost all governments gave high priority to raise dairy productivity and hence farmer's income.

Credit is one of the tools of production and proper use can build earning capacity. Dairy industry is dominated by smallholders. Smallholders are known to be resource poor and operate below their potentials (Nyikal, 2007). Therefore, these resource poor people need agricultural credit for purchase of quality animals, feed, fodder, medicines and other required materials (Das, 2009). Credit may provide them opportunity to earn more money and improve their standard of living (Vogt, 1978). The use of credit was envisaged as a means of promoting technology transfer the adoption of recommended farm inputs and key to agricultural development (Go, 2002).

However, the importance of dairy cattle development for increase income is much less understood. In fact that major problem is the scarcity of farmer knowledge, especially in management ability. This implies to improve farmer knowledge, particularly in management by getting access to information effectively through advice, training, demonstration and workshops provided by an agricultural extension service. Hence, the role of extension in creating conducive environment for growth and economic development in dairy cattle is largely acknowledgeable. In Sri Lanka, extension service for dairy sector mainly governed by Department of Animal and Production Health aimed to increase dairy production. Rathore et al. (2009) pointed out impotency of extension to overcome the constraints of various management practices in dairy sector. The role of dairy sector in enhancing productivity is well recognized and its contribution to increase income in rural areas is enormous. It significantly contributes in the total supply of nutrients in food intake and increases the productivity of human labor.

The potential growth of dairy sector is highest and more reliable compared to crop sector, indicating that dairy sector can play vital role to increase income in rural areas than crop sector. Further dairying is a secure path and future of our rural development and became a commercial enterprise. It can contribute substantially to farmer's income. The dairy farmer of the southern region maintains dairying as a complimentary business to agriculture. Considering to the successful future of the dairy industry, the economic status of the dairy farmers of this region will be enhanced if they could achieve at the dairying as a commercial enterprise receiving support of credit, subsidy and training. Therefore,

this study conducted with the aim to assess the impact of credit and farmer training on small holder dairy sector and to estimate its contribution to farmer's income.

MATERIALS AND METHODS

The study was carried out in southern region in Sri Lanka during the second and third quarters of year 2010. Purposive sampling approach was adopted to collect data for the study. The sample consisted of the farmers who were engaged in dairy farming for their livelihood. The data was collected from 119 farmers about their social economic information, milk production, number of animals and credit or subsidy or extension received in 2010 using a pre-tested structured questionnaire by personnel interview. In respect to credit, credit amount, interest rate, number of installment need to be paid and credit source were collected. Type of subsidy, source monitory value and farmers' satisfaction were gathered regarding the subsidy obtained by the farmers. Extension institute, type's information received for different dairy activities, frequency of contacts with extension staff per month, farmers' perception and willingness to pay for the extension activities were empirically measured in terms of the impact of extension on dairy farming. Data were analyzed by using parametric statistical tools such as t test for finding out the distribution of respondents by the average income before and after credit, Pearson correlation test and regression model and nonparametric tool (Kendall's tau-b correlation test) to find out the relationship of credit, training, socio economic factors, milk yield and herd size like variables. Regression model was developed to quantify the impact of credit, subsidy and extension on milk yield.

$$\acute{Y} = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \acute{e}$$

$\acute{Y}$ = milk yield.
β_o = constant.
X_1 = credit.
X_2 = subsidy.
X_3 = extension.
$\acute{e}$ = error term.

RESULTS AND DISCUSSION

Sustainable dairy production combines technology, policy and activities aimed at integrating socio economic principles. This requires an excellent condition of the farmers where reflected by the characteristic of farmers themselves. Gender distribution of a community is also an important factor that should be taken into consideration in introducing a dairy development program to a rural community. Of the household heads, 88% are males while 12% are females.

When the other family members were considered females were the majority (62%) in the family. Therefore, activities to promote females' participation in income generation should receive due attention in designing dairy development programs for the study area.

The sample comprised of farmers having mean age around 46.25 years and it indicates that the household heads are economically active. Around 48% reported that ownership of herd was less than four while and 83.5% farmers reported they maintained less than four milking cows out of the total herd (Table 1). Studied sample reported 8.13 L average milk yield per day and 3.25 L average milk productivity per cow per day. This was significantly higher than the country productivity (1.8 L per cow per day) as reported by the Department of Animal Production and Health (2008). About 24% of the respondents had personal monthly income in the range between US $ 87.71 and US $ 131.57 and had US $ 124.04 as mean income (Table 2).

They were doing dairying as part time work. Farm families earned US $ 68.95 as an average income per month from their milk apart other household income. In studied sample, majority of farmers (62%) were found selling their milk as raw, while 24% prefer value added product to sale. Rests of them use their product for home consumption. Farmers were earning more income through value added products rather than selling raw milk.

Large fractions of respondents (60%) were having more than secondary education. It was observed that amount of credit was correlated with the level of education (r=0.62, p=0.000) and herd size (r=0.56, p=0.02) (Table 3). The farmers with higher level of education were demanding large amount of credit compared to farmers with low education. It might be due to the reason that educated farmers have better understanding about the role of credit in getting modern technology and the role of technology to enhance productivity. Generally, it is assumed that educated farmers can efficiently use the amount of credit in dairy sector because of having better capacity to visualize the relationship between input, technology and outputs. The herd size was another important variable which had strong positive correlation with the amount of credit obtained from bank. The possible reason is that large farmers can afford to take bigger amount of credit because they have relatively large number of animals to put in the bank as collateral. The education is an important sector for future investment purpose in rural areas. Hence, education is critical to improve the resource use efficiency of dairy sector in the long run.

The credit facilities for the livestock sector emanated from state owned commercial banks, all private domestic commercial banks or development banks. Twenty one percents of respondents had taken credit from those banks to develop their dairy production capacity. An average farmer

of the studied sample had received US $ 1095.39 mean amount of credit for their dairy activities. Credit supply increased the number of milking animals per family from 13 to 20, indicating that number of milking animals became more than double due to availability of credit. In studied sample, 72 % of farmers had received subsidies and average value of received subsidy was US $ 313.72 to improve their dairy farming operation.

Table 1 Farmer's distribution regarding to the total herd and milking cows

Categories	Total herd	Milking cows
Less than 4 animals	57 (48%)	99 (83.5%)
5-9 animals	25 (21%)	11 (9%)
10-14 animals	16 (13%)	6 (5%)
15-19 animals	13 (11%)	0
20<animals	8 (7%)	3 (2.5%)

Table 2 Income distribution among farmers

Income level (Monthly US $)*	Household Income	Monthly Income from milk
Less 43.85	31 (26%)	58 (49%)
43.85-87.71	11 (9%)	29 (24%)
87.71-131.57	29 (24%)	15 (13%)
131.57-175.42	21 (18%)	4 (3%)
Higher 175.42	27 (23%)	13 (11%)

* 1 US $= 114.00 SL Rs.

Farmers have commenced their financial transactions with banks, fellow farmers, and money lenders. Of the sample of respondents almost families have done their transactions with banks. Bank is the most popular financial institution among farmers. Farmers of all villages have utilized bank credit at different levels.

Trainings are useful in imparting knowledge, enhancing skill and changing attitudes of the community in a favorable manner. It is evident that the household heads of each village have received certain amount of training. Reproduction and breeding, feeding, housing, animals' health and clean milk production are the training which household heads had exposed. Of the whole study area, 97% of farmers had received knowledge for different activities in dairy production from extension staff (Table 4) and 45% of them had participated for trainings which related to dairy. Forty percents of the dairy farmers had contacted the extension service less than thrice nevertheless; some farmers of the area have contacted the extension staff more than six times. This confirms the fact that the farmers who are aware of the benefits they could receive from the extension staff have maintained contacts with the extension service. When whole study area is considered, the level of contacts held between farmers and the extension staff is not at a satisfactory level. This information revealed that there is a wide gap between farmers of the area and the officials of the extension service which is unhealthy in the long run.

Table 3 Distribution of respondents by amount of credit and education

Amount of credit disbursed	Frequency	Average level of education (years)	Herd size (animal number)
Less 438.59	0 (0 %)	6.7	3
438.59-657.89	0 (0%)	7.8	7
657.89-877.19	5 (8.4 %)	8.4	15
877.19-1096.49	10 (8.4 %)	10.2	25
Higher 1096.49	10 (4.2 %)	11.8	30

Table 4 Areas of extension received by farmers for different activities in dairy farm

Activities	Housing	Forage management	Feeding	Diseases	AI activities	Clean milk production
Regular	43 (36%)	46 (39%)	36 (30%)	93 (78%)	86 (72%)	45 (38%)
Occasion	35 (29%)	28 (23%)	33 (28%)	16 (12%)	23 (19%)	27 (23%)
Never	41 (35%)	45 (38%)	50 (42%)	0 (0%)	10 (8%)	(39%)

Results of the regression analysis proved that credit and subsidy significantly increased milk production while extension was not significant. The following model was fitted for milk yield.

$$\text{Milk yield} = 7.19 + 0.05\ X_1 - 1.17\ X_2 \qquad (R^2 = 0.650)$$

Further positive relationship also existed between productivity of the dairy herd and farmer's 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). Also, income positively correlated with milking cows in the dairy herd (r=0.663, p=0.000), milk yield (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). 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). Contact with extension agencies and level of adoption of animal husbandry practices were significantly contributed to get high income from milk price and deciding the selling type of milk. Hence, extension education is critical to improve the resource use efficiency of livestock sector in the long run. Regression analysis was further used to identify how other variables influence on milk production. Out of the seven variables, number of milking cows (X_3) and productivity (X_4) were significant while age, education, farmers, satisfaction, family education and information seeking behavior were not significant. The model including the effects of milking cows and productivity was shown as follows:

$$\text{Milk yield} = 0.61 + 1.37 X_3 - 1.95\ X_4 \qquad (R^2 = 0.733)$$

Findings of extension source for the purpose of exchanging of information are illustrated in Table 3.

These findings are in accordance with the findings of Rathore *et al*. (2009) and Chaudhary and Intodia (2000). In reality, extension services are continually important to educated farmers, and research and learning that accompanies adoption of new technologies is especially important for the advancement of farmers with low knowledge levels (Rivera *et al*. 1991). Umali *et al*. (1994) emphasized that the ability of the livestock sector to attain its full productive potential is influenced by the availability and quality of livestock support services.

CONCLUSION

The results clearly illustrated credit, subsidy, extension and supply of training in dairy sector could considerably facilitate to increase income of small holder farmers through the increased milk production in their herds. It not only helps to increase income but also aids to increase the productivity of dairy sector from the available resources. Extension transfers the dairy farming knowledge to farmer and contributes substantially to farmer's income. Briefly, it will help to guide the policy agents for the formulation of future credit and extension policy in animal sector.

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