ANALYSING THE LABOUR USE PATTERN AND EFFICIENCY IN URBAN DAIRY FARMS OF TAMIL NADU

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ABSTRACT

A study was under taken in three urban areas namely Chennai (Tambaram), Erode and Vellore of Tamil Nadu with the objectives of analysing the pattern of labour use and assessing the factors influencing labour use efficiency in the dairy farms. A total of 90 dairy farms were selected for the study by simple random sampling technique. From the selected farms information relating to various aspects of dairy farming was collected by survey method with a well-designed and pre-tested interview schedule. To determine factors contributing to the observed labour-use efficiency, the multiple linear regression model was formulated. The result of the multiple linear regression analysis revealed that the co-efficient of multiple determination (adjusted R^2) was 0.941 which indicated that 94.1 per cent variation in labour use efficiency is explained by the independent variables chosen for the study. The results also revealed that the determinants like source of labour, system of rearing, net profit, quantum of milk produced, herd size and income from dairying positively influenced the labour use efficiency (dependent variable) whereas age of the farmers negatively influenced the labour use efficiency which indicates that farmers become less efficient as they get older. These results suggest that labour use efficiency is better with the farms having large herd size, more family labours, young, averagely educated and rearing cross bred cattle to rise the quantum of milk production which indirectly rise the net profit from dairy farming in Tamil Nadu.

KEY WORDS: Urban Dairy Farming -Labour Use Efficiency – Multiple Linear Regression.

INTRODUCTION

India is home for the largest milch animal population and milk production in the World. Tamilnadu state's share in total milk production at the all India level was 5.38 per cent .In order to maximize the production and thereby profit, the farmer depends on his limited resources available viz., inputs, genetic potential of the animal and feed quality apart from the labour use pattern of dairy farms. Man power is one of the most critical resources (Rai et al. 1997). Organization of work on dairy farm is a major managerial factor in determining the efficiency level of overall management and profitability. Success in dairy farming requires able management of resources available in carrying out day to day operation (Sreedhar et al. 2003). Labour requirement of a dairy farm depends on the system of rearing, working efficiency of the labour type, number of animals maintained and degree of mechanization etc. The present study was carried out to analyse the factors associated with labour use pattern and efficiency in dairy farms in Vellore, Erode and Chennai of Tamil Nadu.

MATERIALS AND METHODS

In Tamil Nadu three urban areas namely Chennai (Tambaram), Erode and Vellore were selected for the present study. From each of these areas, 30 dairy farmers were selected by simple random technique. In all, a total sample size of 90 dairy farmers was selected for the present study. Information relating to various aspects of dairy farming was collected from selected farmers by survey method with a well-designed and pre-tested interview schedule. The data obtained from

farmers analysed by using the appropriate statistical tools. The labour use efficiency was calculated as follows:

$$\text{Labour use efficiency} = \frac{\text{Milk production per day per farm}}{\text{Total labour in man hours per day per farm}}$$

To analyse the factors influencing the observed labour use efficiency in dairy farms the following multiple linear regression model was fitted (Tyagi and Sohal, 1984).

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \mu$$

Where,

Y = Labour use efficiency

α = Constant term

β_i's = Regression coefficients

x_i = independent variables; X_1 Herd Size; X_2 Age of the farmer; X_3 Educational Status of the farmer; X_4 Extension Agency contact; X_5 Family Size; X_6 Quantity of milk produced; X_7 Net profit; X_8 System of rearing (1=Intensive, 0= Otherwise); X_9 Income from dairying; X_{10} Income from other sources; X_{11} Source of labour (1=Family labour, 0= hired labour); μ = Random disturbance term; ($m_i \sim 0$, s_i^2)

RESULTS AND DISCUSSION

Factors influencing the labour use efficiency in dairy farms:

The factors associated with the labour use efficiency in dairy farms were analysed by fitting a multiple linear regression model. The results revealed that the co-efficient of multiple determinations (adjusted R^2) was 0.941 indicating that 94.1 per cent variation in labour use efficiency is explained by the independent variables chosen for the study. Among the independent variables, source of labour, system of rearing, net profit, quantum of milk produced, education level of the farmer, farmer's age, herd size and income from dairying significantly influenced the dependant variables i.e. Labour use efficiency.

$$Y = -1.198 + 0.093^{*}x_1 - 0.010^{*}x_2 + 0.082^{**}x_3 + 0.058\, x_4 + 0.044\, x_5 + 0.212^{**}x_6 + 0.480^{**}x_7 + 0.099^{**}x_8 + 0.283^{**}x_9 - 0.045\, x_{10} + 0.090^{**}x_{11} + \mu$$

Dependent variable = Labour use efficiency Index

$F=129.601$ ** $R^2=0.948$ Adjusted $R^2 = 0.941$

** = Significant at one per cent level ($p < 0.01$)

* = Significant at five per cent level ($P < 0.05$)

The positive coefficient of herd size (0.093) was significant at 5.0 per cent probability level and implies that increase in farm size led to increase in labour use efficiency. This confirms the smallness of their farm sizes as farmers are more resource conscious when they reshuffle the labour in their small plots. Similar findings were reported by Fallon et al. (2006) and Anyiro et al. (2012). Source of labour gave a positive coefficient (0.090) and was significant at 5.0 per cent level. The result revealed that with increase in one unit of family labour, increased 9 per cent of labour use efficiency. This suggests that households may utilize family labour and reduce cost incurred in hiring labour. They also try to finish the dairy farm work efficiently and in shorter time. Income from dairying gave a positive coefficient (0.283) and was significant at 1.0 per cent level. The result showed

that when one unit of income from dairying increases, labours use efficiency will increase by 28.3 per cent which indicates that farms with higher income source from dairying will have better labour use efficiency when compared to other source of income. Similarly the independent variables, quantity of milk produced and net profit had significant ($p<0.01$) positive relationship with the labour use efficiency. The values of regression co-efficients for these variables were 0.212 and 0.480 respectively, which indicated that one unit increase in milk production and net profit would increase the labour use efficiency by 21.2 per cent and 48 per cent respectively.

The regression coefficient for the variable, educational status (0.082) was positive and had significant (1.0% alpha level) relationship with labour use efficiency. This implies that increase in level of education leads to increase in labour use efficiency. This is contrary to Anyiro et al. (2012) that increase in level of education leads to decrease in labour use efficiency. As farmers acquire more education, improves their ability to adopt new technology and also increases their ability to use their resources efficiently (Sofoluwe et al, 2011). Dairy farmers in the study area make more use of skilled labour. Increase in education level implies increase in acquisition of skill in dairy production.

Farmers age showed a negative relationship (-0.010) with labour use efficiency. This result was significant ($P < 0.05$) and agrees with Akanni and Dada (2012) and Anyiro et al. (2012).

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