RESEARCH NOTE

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Resource use efficiency in milk production in Shimoga district of Karnataka

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ABSTRACT : Karnataka state possesses a very high milk production potential in the country due to its many favourable resource endowments. The present paper is an attempt to examine the influence of different factors on milk yield of various categories of milch animals in Shimoga district, Karnataka state. The Cobb-Douglas type of production function was found to be good fit to the milk production data as indicated by the very high value of R_2. In the present context, dairying has got its own importance as a subsidiary occupation. Whereas components of feed and fodder play a very significant role in productivity. Keeping in view these factors, the present study was conducted to estimate the resource use efficiency in milk production.

KEY WORDS : Milch animals, Cobb-Douglas, Resource use efficiency

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Multistage sample design was used for the selection of ultimate sample unit. Shimoga, Bhadravathi and Hosnagar Talukas of Shimoga district were considered for the study. Three villages from each Taluka were selected randomly. Required information was collected from each village by interviewing 90 farmers each from the category of small (1.01-2 ha), medium (2.01-4 ha) and large (above 4 ha) farmers. Thus, the study was based on the primary data collected from 90 farmers in 9 villages of 3 Talukas in one district.

Variables included in the function were herd size, green fodder, paddy straw, concentrates, lactation days, number of lactation, veterinary expenses and human labour.

Cobb-Douglas type of production function of the following form was fitted to the data.

$$Y=AX_i^{bi}e$$

where,

Y= Milk yield/animal/day

X_1= Herd size (No.), X_2= Quantity of green fodder in kg, X_3= Quantity of paddy straw in kg, X_4= Quantity of concentrates in kg, X_5= Lactation days, X_6= No. of lactation (years), X_7= Veterinary expenses, X_8= Human labour (days)

Resource use efficiency in milk production:

Local cows:

It is also seen from Table 1 that number of milch animals (X_1), green fodder (X_2), Paddy straw (X_3), and concentrates (X_4) were positive and statistically significant on milk production. The independent variables like lactation days (X_5) and veterinary expenses (X_7) though positive (veterinary expenses) were statistically non-significant. The regression coefficients of no. of lactations (X_6) and human labour (X_8) were positive and statistically significant at 10 per cent level of probability. The variation in milk production explained by all the independent variables included in the function was 93.6 per cent. The sum of production elasticties more than one (3.152) indicated increasing returns to scale of milk production of local cows.

Crossbred cows:

It is also seen from Table 1 that, the regression coefficients for number of milch animal (X_1) was positive and statistically significant at one per cent level of probability. The regression coefficients for green fodder (X_2), paddy straw (X_3), and concentrates (X_4) were statistically significant on milk production. The human labour (X_8) was positive and significant at 10 per cent level of probability. The variation in

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Table 1 : Regression co-efficients of log linear function

Variables	Parameters	Local cow	Crossbred cow	Buffaloes
Intercept	-----	-0.411*	1.731	1.861
Herd size (No.)	X_1	0.427* (0.211)	0.591* (0.039)	0.427* (0.211)
Green fodder (kg)	X_2	0.499** (0.131)	0.857* (0.176)	0.137** (0.073)
Paddy straw (kg)	X_3	0.0340* (0.161)	-0.0250** (0.0106)	0.302*** (0.140)
Concentrates (kg)	X_4	-0.377** (0.150)	0.338* (0.032)	0.0271*** (0.0067)
Lactation days	X_5	-0.4097^{NS} (0.4167)	0.1545^{NS} (0.1461)	-0.3480^{NS} (0.3477)
No. of location	X_6	0.5340*** (0.1272)	0.7628 (0.3219)	1.5089*** (0.3293)
Veterinary expenses (Rs.)	X_7	0.0389 (0.0507)	0.3580 (0.0274)	-0.0163 (0.0209)
Human labour (days)	X_8	0.1684*** (0.0446)	0.4588*** (0.1125)	0.0962 (0.0493)
R_2		0.936	0.947	0.894
Returns to scale		3.152	3.6851	2.8625

Figures in parentheses are standard errors
*, ** and *** indicate significance of values at P=0.01, 0.05 and 0.10, respectively NS-Non-significant

milk production by all the independent variables included in the function was 94.7 per cent. The sum of production elasticities indicated increasing returns (3.6851) to scale in milk production of crossbred cows.

Buffaloes:

It is seen from Table 1 that the regression coefficients for number of milch animal (X_1) was also positive (0.427) and significant at five per cent level of probability. The regression coefficients for green fodder (X_2), paddy straw (X_3) and concentrates (X_4) were statistically significant at 5 per cent and 10 per cent level of probability. Number of lactation (X_6) was positive and significant at 10 per cent level of probability. The variation in milk production by all the independent variables included in the function was 89.4 per cent. The sum of production elasticties indicated increasing return (2.8625) to scale in milk production of buffaloes. Mattigatti *et al.* (1993) also made investigation on resource productivity in cow milk production and Kumar and Agarwal (1994) on resource use efficiency of milk production and Ganesh Kumar *et al.* (2002) on resource productivity in dairy farming.

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