

Research
Paper

Comparative economics of milk production of crossbred cow and buffalo in Parbhani district of Maharashtra

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ABSTRACT

The average size of land holding in case of crossbred cow owners was 5.40 ha. Similarly in case of buffalo owners average size of land holding was 4.16 ha. Maintenance cost of crossbred cow was more than buffalo. Feed and labor were major items of expenditure. Net profit per year per animal was Rs.17742.4 in case of crossbred cow, Rs.13219.32 in case of Buffalo. Crossbred cow were more profitable than the buffalo, average milk yield per animal per day was 13.5lit and 12.4lit in crossbred cow and buffalo, respectively. Milk yield is positively associated with green fodder and concentrates. Dairy owners were mostly facing constraints regarding low productivity of animals, low price milk and lack of availability of credit.

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Key words : Milk production, Economics, Cow, Buffalo

INTRODUCTION

The dairy industry in India is going through major changes with liberalization policies of Government. India ranks first in livestock population and in milk production able to produce and provide the common man with enough milk for consumption. The per capita minimum availability of milk for consumption in India is about 245 g per day, which is nearly as recommended by Indian Council of Medical Research *i.e.* 280 g/day.

Milk forms an important constituent of human diet, so the importance of milk in human diet cannot be over emphasized in India. Milk is only source of animal protein, calcium and riboflavin. As getting an adequate quantity of animal protein, calcium and riboflavin is difficult solely from plant foods. Hence, it is necessary to include milk in any balanced diet particularly in vegetarian diet.

Large population of livestock is in India as compared to the other countries of the world. Livestock resource figures show that, next to agriculture, it is the major source of income and employment for the rural population. The overall average income generated in rural areas in 1992-93 was 72.6 per cent from agriculture and 26.4 per cent

from livestock. Among various agricultural products, milk was the single largest contributor to the output from agriculture in 1993-94 and it had an estimated gross value Rs. 437 million.

Scope for developing dairy enterprise in India is increasing day by day. Milk production can be made profitable through the maintenance of quality cattle, adoption of improved feeding and management practices and establishment of organized markets for milk to bring a remunerative price to the milk producers. The purchase of quality cattle required substantial initial investment which many small income families cannot meet from their own resources.

Few scattered attempts were carried out in Parbhani district of Maharashtra, which has large bovine population. The present study was undertaken to ascertain the economics of milk production (crossbred cattle and buffalo) selecting 30-house hold under each category of milk producer in Parbhani district.

The specific objectives of the study are to study input-output relationship in milk production, to study the costs and returns in milk production and to identify the constraints associated with milk production.

MATERIALS AND METHODS

Multistage stratified sampling technique was employed for selection of the sample households for the study. At first stage one Tahasil was selected from Parbhani district of Maharashtra. From this tahasil, 6 villages were selected in turn from each village 5 each crossbred and buffalo milk producers were selected at random. In all total 30 crossbred and 30 buffalo milk producers were selected. The data were collected from these types of milk producers regarding the quantity and price of the green fodder, dry fodder and concentrates feed per animal per day; labor used in the process of milk production and prevailing wage rates of hired labor, milk yield and sell price during year 2007-2008 with the help of pre-tested and well structured questionnaires. To ascertain the input-output relationship in milk production, multiple regression analysis was employed.

The non-linear model *i.e.* Cobb-Douglas production function was found to be the best fit.

$$Y = a x_1^{b_1} x_2^{b_2} x_3^{b_3} + \dots + x_n^{b_n}$$

$$Y = \log b_1 x_1 + \log b_2 x_2 + \log b_3 x_3 + \dots + \log x_n b_n$$

where,

Y = gross returns from milk yield per dairy herd per annum in rupees

a = intercept of production function.

b_i = regression coefficient of the respective resource

variable (i=1,2,3,...8)

x₁ = size of dairy herd

x₂ = cost of human labour per dairy herd per annum in rupees

x₃ = cost of green fodder per dairy herd per annum in rupees

x₄ = cost of dry fodder per dairy herd per annum in rupees

x₅ = cost of concentrates per dairy herd per annum in rupees

x₆ = cost of miscellaneous expenses per dairy herd per annum in rupees.

b₁, b₂, b₃ and b₄ are regression coefficients of respective variables.

To identify the major constraints associated with milk production sample producers were asked to assign ranking to 13 constraints (10 production and financial and 3 marketing constraints) identified during the preliminary survey of project. To arrive at final ranking of constraints cumulative average of each constraint was observed.

RESULTS AND DISCUSSION

Cost and returns in milk production in terms of Rs. per annum per animal was highest in cross bred cow (Rs.40214) followed by buffalo(39200.58) (Table 1). Higher human labour has lead to increase gross cost in their maintainance. However, with higher milk yield potential of crossbred cow (4050lit.per annum) has resulted in highest net returns (Rs.17442.4), similar to

Table 1: Cost and return involved in milk production of crossbred cow and buffalo in Parbhani district of Maharashtra

Sr. No	Particulars	Crossbred cow	Buffalo
1.	Depreciation (animal, building, equipment)	359.64	301.73
2.	Interest on fixed capital @12%	386.89	380.35
3.	Total fixed cost	746.53 (1.86)	628.08 (1.73)
4.	Green fodder	13537.85	12052.3
5.	Dry fodder	7157.65	7252.55
6.	Concentrate	10541.2	11169
7.	Total feed cost	31236.7	30473.85
8.	Human labour	7446	7296.35
9.	Miscellaneous expenses	459.9	496.4
10.	Medicinal expense	324.85	251.85
11.	Total variable cost (7+8+9+10)	39467.45 (98.14)	38518.45 (98.26)
12.	Gross cost (3+11)	40213.98 (100)	39200.58 (100)
13.	Value of dung	956.3	835.85
14.	Net cost (Gross cost-value of dung)	39257.60	38364.68
15.	Milk yield in lit per annum	4050	3224
16.	Market price of milk per lit	14	16
17.	Gross return	56700	51584
18.	Net return (Gross return- net cost)	17442.4	13219.32

Table 2 : Input-output relationship in bovine enterprises of sample households in Parbhani district of Maharashtra

Species	No.	Intercept	Size of herd	No. of labour	Value of green fodder	Value of dry fodder	Value of concentrates	Miscellaneous expenses	R ²
		(a)	(x ₁)	(x ₂)	(x ₃)	(x ₄)	(x ₅)	(x ₆)	
Crossbred cow	30	1.2102	1.0617	0.0340	0.572	0.0395	0.5039	0.0528	0.972
Buffalo	30	1.1274	1.1292	0.0241	0.2978	0.0068	0.497	0.0422	0.995

gross cost. The milk yield and net returns in buffalo milk production were (3224 lit.per annun and Rs.13219.32 respectively). Unlike in north indian states in Maharashtra buffalo milk was more preferred by the consumers than cow milk. Therefore market price for buffalo milk was more when compared to crossbred cow milk.

Jyothi *et al.* (2003) studied the per liter cost of buffalo milk production among different herd siz,milk producers and reported it was highest (Rs.7.95) in small herd size milk producers followed by medium herd size milk producers (Rs.7.92) and large herd size milk producers (Rs.7.86).

Input output relationship:

Table 2 reveals that the value of coefficient of multiple determination (R²) was more than 90 per cent in all two milk productions. This indicate that more than 90 per cent variation in dependent variable (gross returns) was explained by the six selected independent variables except for independent variable dry fodder (X₄). The regression coefficient was found to be positive for remaining five independent variables. This indicates excessive use of dry fodder and that amount spent on dry fodder has to be curtailed for obtaining increased gross returns.

Dayakar Rao and Jyothi (2005) also obtained possitively significant coefficients for green fodder and concentrates in local cow,crossbred cow and buffalo milk production in Guntur district of Andhra Pradesh.

Constraints analysis:

The rankings given by the selected milk producers among 13 constraints identified (10 production and financial and 3 marketing constraints) are presented in Table 3. Low price of milk, lack of organized market were the major constraints, in case of crossbred cow milk producer and in case of buffalo milk producer inadequate knowledge about balanced feeding, lack of availability of credit were found major constraints.

Conclusion:

For realization of high net returns from crossbred cow and buffalo milk production, the milk productivity levels of animals should be enhanced through sustained breed improvement programmes. The milk production

Table 3 : Ranking of constraints faced by milk producers in bovine enterprise in Parbhani district of Maharashtra

Constraints	Crossbred cow		Buffalo	
	No.	Per cent	No.	Per cent
Low productivity animal	0	0	0	0
Poor quality of bulls	27	90	0	0
Lack of AI and veterinary facilities	22	73.33	21	70
Non-availability of green fodder round the year	21	70	22	73.34
Lack of availability of dry fodder	7	23.33	9	30
Non availability land for fodder cultivation	5	16.66	20	66.66
High cost of feeds and fodder	29	96.66	25	83.33
Inadequate knowledge about balanced feeding	7	23.33	28	93.33
Improper housing facilities	19	63.33	17	56.66
Lack of availability of credits	29	96.66	28	93.33
Lack of organized market	30	100	24	80
Low price for milk	30	100	0	0
Lack of cold storage facility	28	93.33	26	86.66

could be appreciably enhanced by increased use of concentrates and green fodder in the Parbhani district.

Government should provide credit facilities to purchase high yielding milch animals to the dairy owners. Farmers should be aware about dairying as a business in the Parbhani district of Maharashtra.

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