



Economics of Milk Production of Buffalo in Parbhani district

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ABSTRACT

Buffaloes contribute a chunk to the total milk production in India and have many advantages over cow milk and hence it is also known as black gold. The present study has been based on primary and secondary data i.e. time series data. The primary data was collected by considering multistage design. The multistage sampling design was adopted for selection of city, milk market and dairy entrepreneur. The secondary time series data regarding exports and import of livestock products was collected from different published sources for different period term 1990-2010. For the analysis of the data techniques of tabular analysis and functional analysis were employed to arrive at the meaningful conclusions. The average fixed cost, total variable cost, receipt and profit loss for the Small, Medium and Large were, Rs. 67799.6, Rs.105003.19 and Rs. 36203.44. The average per litre cost of milk production was 23.67 and also the Input and Output ratio was 1:1.5. Moreover, buffalo milk production is a profitable business in the country except in coastal areas, where investment in milk production just covers the cost of production due to comparatively higher feed prices and low milk prices. Econometric analysis of milk production in the country revealed that use of green fodder and concentrates contribute positively and significantly to milk production.

Keywords: Buffalo, Cost-Benefit Ratio, Economic and Milk Production

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INTRODUCTION

Livestock are an integral component of agriculture in India and make multifaceted contributions to the growth and development of the agricultural sector. Livestock help improve food and nutritional security by providing nutrient-rich food products, generate income and employment and act as a cushion against crop failure, provide draught power and manure inputs to the crop subsector, and contribute to foreign exchange through exports. Also, by using crop residues as feed, livestock save land for food production that would otherwise be used for fodder production. Additionally, livestock make substantial contributions to environmental conservation, supplying draught power and manure for fertilizer and domestic fuel that save on the use of petro-products. This paper assesses the contribution of livestock subsector to the growth of agriculture and socioeconomic development. Livestock sector contributes about 26 per cent of the total GDP from agricultural sector in India (1). Livestock sector plays an important role in Maharashtra agriculture as evidenced from its contribution to the total agricultural GDP. During the last five years period, the growth rate of livestock sector is observed to be 5.05 per cent as compared to only 0.46 per cent in crop sector. The cross breeding has helped the country a lot in enhancing the milk production and becoming number one milk producer in the world. In India, the number of cross bred cattle has increased from 20.10 million during 1997 to 39.73 million during 2012 which is 20 per cent of the total cattle population in the country (4). Livestock wealth is more equitably distributed than that of land and the importance of livestock for the poorer households is even more. Besides, contributing food and inputs for crop production, livestock are important as savings or investments for the poor household and provide security or insurance through various ways in different production system. Further, livestock rearing contributes to on-farm diversification and intensification, which could be one of the strategies for poor households to escape poverty and to maintain some stability in their earnings. The importance of livestock is much greater in marginal areas like arid and rainfed regions because of higher concentration of poor, limited benefits of green revolution technologies, climatic uncertainties, etc. Milk has enjoyed an important place in Indian life traditionally the demands of

milk and milk products were used to be met in family or on village level and the demands of urban population were also used to be met at this level only. Thus the activity of milk production was decentralized and unorganized with the rise in population, industrialization and progressive urbanization; the milk production began to acquire commercial overtones. Presently the dairy sector contributes significantly in generating employment opportunities and supplementing the income of small and marginal farmers and landless labors of rural India.

MATERIAL AND METHODS

Collection of data

The present study was based on primary and secondary data *i.e.* time series data. The primary data were collected by considering multistage design. The multistage sampling design was adopted for selection of city, milk market and dairy entrepreneur.

In the first stage Parbhani district was selected purposively in the second stage four milk market were selected from the Parbhani on the basis of higher number of dairy entrepreneur came from villages to Parbhani city in the radius of 15 km to sale the fresh milk regularly in that market yards. The four milk market selected are Gujari bazar, Visava corner on Pathri road, Shivram Nagar Basmath road, Stadium, Station road etc. In third stage sixty dairy entrepreneurs were selected on the basis of their investment in dairy enterprise and categories into three groups small, medium and large.

The list of dairy entrepreneur in each milk market was put in ascending order on the basis of capital investment in dairy enterprise then the stratified into three size group were small, medium and large on the basis of capital investment size upto 1.5 lakh rupees, medium size 1.5 to 3 lakh rupees, and large size above 3 lakh rupees. The sampling data collected by specially structured schedule by personal interview methods.

Data analysis

The total annual cost of each farm operation was based on both annual variable costs and overhead costs (home supplied). The components used to calculate annual variable cost includes feed cost, cost of hired/contract/daily labour and imputed family labour, medicine, vaccination and therapeutic and preventive care cost, annual breeding cost etc. Annual overhead or fixed cost calculation comprised of opportunity cost of family supplied labour and permanent arm cowboy/employees, housing costs and miscellaneous expenses (production losses due to animal sickness). Profitability of each farm was examined by adopting the following formulas: Net Profitability, $\pi = TR - TC$ Where, TR= Total milk produced per dairy buffalo per lactation multiplied by per liter buffalo milk price of the study area and TC equals to summing up all needed costs of inputs for buffalo rearing.

Statistical analysis was primarily carried out using Microsoft Excel. Descriptive arithmetic mean, percentages and ratios were attempted.

RESULTS AND DISCUSSION

Economic of livestock product (milk)

Dairy enterprises

The selected variables in this study were socio-economic profiles of buffalo owners, feeding, housing and management system, traits of productive and reproductive values of dairy buffaloes, costs, returns and profitability of dairy buffalo enterprises, benefit cost ratio, farmer's suggestions against crucial farming problems to increase buffalo production. The economics of dairy enterprises by consider different size on the basis of investment by dairy entrepreneur per buffalo per year was studied and presented in Table 1.

Fromtable 1 revealed that, the average total cost of maintenance of buffalo per annum was worked out to be Rs. 67799.6, whereas, in small, medium and large units were Rs. 64436.37, 69625.04 and 69337.85, respectively. The on an average fixed cost accounted was 24.42 per cent and highest total fixed cost observed in medium size unit 24.78 per cent followed by large and small dairy size unit *i.e.* 24.73 and 23.70 per cent, respectively. The on an average the highest cost in fixed cost was interest on fixed capital @12.18 per cent. In small, medium and large unit the highest cost in fixed cost observed in medium 12.39 per cent is followed by large and small dairy size unit *i.e.* 12.39 and 12.20 per cent respectively. The average item on which highest animal expenditure observed in fixed cost was interest on fixed capital items followed by interest on animals depreciation observed was *i.e.* 12.18 and 8.78 per cent respectively. The expenses incurred on interest observed in animal depreciation *i.e.* 9.31,9.3 and 9.0 per cent in small, medium and large unit respectively.

The share of variable cost was triple to fixed cost. The on an average variable cost accounted was Rs. 51239.2 *i.e.* 75.57 per cent. The total variable cost was observed highest in large unit *i.e.* 76.26 per cent followed by medium and small *i.e.* 75.21 and 76.29 per cent, respectively. The item on which highest

expenditure observed in variable cost was labour charges 40.02 per cent followed by concentrated mixture, dry fodder, green fodder and veterinary expenditure were 10.66 9.32, 8.40 and 4.3 per cent, respectively. These findings are similar with an (2).

The highest expenditure observed in variable cost was labour charges 42.77, per cent highest in large unit followed by medium and small unit *i.e.* 39.34 and 37.79 per cent respectively.

The average receipt obtained through dairy enterprise was Rs. 1,05,003.19 in which milk share 95.51 per cent followed by FYM and sale of young stock *i.e.* 2.78, 1.63 per cent respectively. Among the different size unit higher receipts was observed in large unit enterprise Rs. 1, 09,019.22 followed by small and medium Rs. 1,04,065.37 and Rs. 1,01,925 respectively.

In case of average profit received in dairy enterprise was 36203.44, whereas, at different size units were large Rs. 39681.37 followed by small and medium *i.e.* Rs. 36629.1 and 32,299.96, respectively. These findings are similar with Singh and Kaur, 2018. The average profit ratio at variable cost and total cost was 1:2.0 and 1: 1.5 respectively. When the entrepreneur incurred rupees one at variable cost the profit obtained was Rs. 1.0 and total cost profit was 0.50. This findings agreement with an (3).

An increasing trend was observed in the milk yields and net income increase of large producers, better feeding and breeding on large farmers resulted into higher milk yields. The cost of milk production per litre of buffalo, on an average was worked out to Rs. 10.46 which was slightly higher on small farms due to lower milk yields per buffalo. The average benefit – cost ratio was calculated at 1:1.52, which was little higher on larger farms because of relatively higher milk yield per buffalo (5).

The average per buffalo milk yield recorded was 2865.54 liters per annum whereas the highest yield in large unit followed by small and medium, respectively.

Table 1. Economics of milk production per buffalo per year (Rs.)

S.N.	Items	Small	Medium	Large	Average
A1	Fixed capital				
1	Cattle shed of sq.mt	10115.38	14857.1	10692.30	13888.26
2	Value at buffalo at beginning year	61307.69	65000	62461.53	62923.07
3	Equipment and appliances	3707.6	4228.57	2961.53	3632.56
4	Other	1861.53	2192.85	2516.38	2189.92
	Sub total	76992.2	86278.52	84629.74	82633.48
A2	Fixed cost for one year				
1	Interest on fixed capital @10%	7699.2	8627.8	8460.76	8262.68
		(11.94)	(12.39)	(12.20)	(12.18)
2	Depreciation on buffalo @ 10%	6130.76	6500	6246.15	5958.97
		(9.31)	(9.3)	(9.0)	(8.78)
3	Depreciation on cattle shed @ 10%	934.61	1485.71	1669.25	1363.19
		(1.40)	(2.1)	(2.4)	(2.0)
4	Depreciation on equipment appliances and other 10%	510.76	642.14	530	1560.96
		(0.7)	(0.9)	(0.7)	(2.3)
	Total fixed cost	15275.13	17255.65	17150.75	16560.51
		(23.70)	(24.78)	(24.73)	(24.42)
B	Variable cost				
1	Concentrate mixture	797.5	7827.85	5885	7229.5
		(12.37)	(11.24)	(8.48)	(10.66)
2	Green fodder	6932.69	5636.71	4530.97	5700
		(10.75)	(8.0)	(6.5)	(8.40)
3	Dry fodder	6321.53	6327.71	6326.92	6325.3
		(9.81)	(9.0)	(9.1)	(9.32)
4	Veterinary expenditure	2338.46	3021.42	3446.15	2935.34
		(3.6)	(4.3)	(4.9)	(4.3)
5	Labour charges	24355	27392.5	29659.20	27135.56
		(37.79)	(39.34)	(42.77)	(40.02)
6	Tending fee and miscellaneous electric charges	1238.46	2164.28	2324.07	1908.93
		(1.9)	(3.1)	(3.3)	(2.81)
C.	Total variable cost	49161.14	52369.47	52187.1	51239.2

		(76.29)	(75.21)	(75.26)	(75.57)
	Total cost = fixed cost (A2) + variable (B) cost	64436.27 (100.00)	69625.04 (100.00)	69337.85 (100.00)	67799.6 (100.00)
D	Receipts				
1	Milk production/year	99992.30 (96.03)	97425 (95.58)	103465.38 (94.90)	100294.22 (95.51)
2	FYM	2534.61 (2.43)	3000 (2.94)	3253.84 (2.98)	2929.48 (2.78)
3	Value of calf	1539.46 (1.47)	1500 (1.47)	2300 (2.10)	1779.48 (1.63)
	Total of receipts	104065.37 (100.00)	101925 (100.00)	109019.22 (100.00)	105003.19 (100.00)

E	Profit loss				
	Profit of variable cost	54904.23	49555.53	56832.07	53763.94
	Profit of total cost	39629.1	32299.96	39681.87	36203.44
F	Input-Output ratio				
1	At variable cost	1:2.1	1:1.9	1:2.0	1:2.0
2	At total cost	1:1.6	1:1.4	1:1.5	1:1.5
G	Per litre cost of milk production				
1	At variable cost	17.20	18.18	17.65	17.88
2	At total cost	22.35	25.01	23.45	23.67

CONCLUSION

Buffaloes contribute a chunk to the total milk production in the state. Buffalo milk has many advantages compared to cow milk. The buffalo milk adds higher value through processing of milk into various milk products as compared to cow milk. Moreover, there is no problem of disposal of unproductive animals and male calves as slaughtering is allowed. Male buffalo calves can be reared as separate enterprise for earning additional income and generating employment. The various problems being faced by the buffalo rearing farmers need to be addresses properly for promoting this species. The improved breed of the animals and better feeding might be helpful for increasing, income and employment opportunities in the study area.

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