



Study of feeding and management practices followed by buffalo owners in Patur Tehsil

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ABSTRACT : The present investigation was undertaken to know the various management practices adopted at the farmer's level to estimate the maintenance cost, gross and net income and net profit per litre. Total 72 farmers were classified into three categories viz., small, medium and large, based on the land holdings, consisting 18 each in 4 villages in Patur Tehsil. It was observed that buffalo farmers were well aware regarding health-care practices. The buffalo farmers were more aware about clean milk production and adopting recommended (full hand) method of milking. There was a small feeding gap in respect of green fodder and concentrates in buffalo farmers and the rearing of buffaloes was found profitable.

KEY WORDS : Buffalo, Buffalo owners, Roughages, Concentrates, Breeding, Cost of production

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INTRODUCTION

Buffaloes have unique position in Indian dairying as they are considered as bearer cheque of the rural flock. It contributes 57 per cent in total milk production (Misra *et al.*, 1998). The preference of buffaloes may be on account of higher productivity and higher price realization relative to cow milk owing to higher fat content of milk. Moreover buffaloes are known to better converters of poor quality roughage into milk. In spite of this there is regular genetic drain of the buffaloes with superior germplasm. However, the present status of buffalo rearing does not appear encouraging. The buffaloes owned by small, marginal farmers and landless labours are reared under the backyard system where one to three animals are kept for milk. The animals are fed on crop residues available in the form of wheat, paddy or sorghum straws and supplemented with grazing, crop residues, by-products and concentrates. Very little attention is given to balance feeding. It seems therefore essential to form a package of practices for total management

where full potential of buffalo could be exploited for milk (Mudgal, 1988). Apart from the quantitative shortage of feeds and fodders, there is deficiency of nutrient supply to the animals which may be the major cause of low production. The results of the survey conducted in Vidarbha region of Maharashtra did indicate that the bovine population received 28 to 30 per cent less DCP than requirement (Anonymous, 2001).

Hence, the present investigation was planned to compare the feeding and management practices followed by buffalo owners with recommended practices and to estimate cost and economics of milk production for buffalo.

MATERIALS AND METHODS

The present investigation entitled was undertaken during the year 2010-2011. The data regarding various feeding and management practices were collected personally by interviewing the buffalo owners with the help of pre-tested questionnaires.

Selection of villages and buffalo owners :

Four villages were selected randomly on the basis of buffalo population in the Patur Tehsil and they were considered for study. The buffalo owners were classified into three different groups *i.e.* small farmers (upto 2.00 ha land holding), medium farmers (upto 2-8 ha land holding) and large farmers (above 8

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ha land holding). In each village 18 farmers were selected comprising 6 each from small, medium and large farmers. Thus, total 72 buffalo owners were selected for study.

Plan of work :

The data regarding feeding, breeding, housing, health care management practices, cost and economics of milk production were collected during personal by interview with buffalo owners. After collection of data, all questionnaires were compiled and tabulated carefully.

Analysis of data:

The tabulated data were analysed by simple tabular techniques as per procedure given by Amble (1975).

RESULTS AND DISCUSSION

The results of the present investigation as well as relevant discussion have been presented in the following sub heads:

Housing management:

Provision of proper housing to milch buffaloes is essential in order to provide the comfort and thereby exploring the genetic potentials of buffaloes with the view, the information obtained on the housing status of buffaloes is presented in Table 1 and 2.

Provision of housing to buffaloes:

It is revealed from Table 1 that, 93.05 per cent farmers provided housing for the 92.19 per cent buffaloes. Rest of 6.95 per cent farmers had not provided separate housing to buffaloes. It indicated that, buffaloes were better housed.

Table 1: Distribution of dairy farmers according to attitude towards provision of housing

Sr. No.	Items	Number of farmers	Number of buffaloes
1.	Housing structure	67 (93.05)	130 (92.19)
2.	Without housing structure	5 (6.95)	11 (7.81)
	Total	72 (100.00)	141 (100.00)

Figures in parenthesis indicate percentage to the total

Housing structure for buffaloes:

It is observed from Table 2 that, 70.49 per cent farmers provided kaccha housing to 67.78 per cent buffaloes. Whereas, 29.51 per cent farmers made a provision of pucca housing to 32.22 per cent buffaloes. Rode (2002) also observed near about same trend of providing kaccha and pucca housing to local and improved buffaloes by the farmers in Amravati district. Similar trend was also observed in case of flooring *i.e.* 27.94 per cent farmers had made a provision of pucca flooring in shed for 25.19 per cent buffaloes. Kaccha flooring in the shed was observed by 72.06 per cent farmers covering 74.81

Table 2: Housing structure for buffaloes

Sr. No.	Particulars	Number of farmers	Number of buffaloes
Type of housing			
1.	Kaccha	47 (70.49)	88(67.78)
2.	Pucca	20(29.51)	42(32.22)
	Total	67(100.00)	130(100.00)
Type of flooring			
1.	Kaccha	48(72.06)	97(74.81)
2.	Pucca	19(27.94)	33(25.19)
	Total	67(100.00)	130(100.00)
Type of roofing material			
1.	Galvanized iron sheet	27(40.05)	59(45.29)
2.	Kawelu	36(53.84)	63(48.56)
3.	Grass thatching	4(6.11)	8(6.15)
4.	Asbestos sheet	0(0.00)	0(0.00)
	Total	67(100.00)	130(100.00)
Provision of manger			
1.	Yes	58(86.6)	113(87.00)
2.	No	9(13.4)	17(13.06)
	Total	67(100.00)	130(100.00)
Type of manger			
1.	Cement concrete	20 (29.38)	32 (24.53)
2.	Wooden plank	47 (70.62)	98 (75.47)
	Total	67(100.00)	130(100.00)

Figures in parenthesis indicate percentage to the total

buffaloes, resulting in insanitary condition in the shed. The present trend of the results is in agreement with the results reported by Dhiman *et al.* (1990); Jagtap (1997) and Malik and Nagpaul (1998). It was revealed that, the majority of the farmers (53.84 per cent) used Kawelu, followed by galvanized iron sheet (40.05 per cent) and grass thatching (6.11 per cent) as a roofing material in the buffalo shed to the 48.56, 45.29 and 6.15 per cent buffaloes respectively. None of the dairy farmers had used asbestos sheets as a roofing material in the buffalo sheds (Table 2).

The majority of farmers (86.6 per cent) used mangers (87.00 per cent) for buffalo. Majority of the farmers (70.62 per cent) used wooden plank mangers followed by cement concrete mangers (29.38 per cent) for 75.47 and 24.53 per cent buffaloes, respectively. Bidwe (2004) has used wooden partitions for manger. Thus, the results on the infrastructural facilities of housing indicated that, majority of the farmers provided better housing conditions to the buffaloes.

Breeding management:

It is observed from Table 3 that, majority of farmers (51.38 per cent) observed mucus discharge through vulva followed

Table 3: Distribution of dairy farmers according to attitude towards breeding practices

Sr. No.	Items	Number of farmers	Number of buffaloes
Signs of heat			
1.	Mucus discharge	37 (51.38)	83 (58.87)
2.	Swelling of vulva	11 (15.27)	16 (11.13)
3.	Slightly off feed	14 (19.45)	23 (16.34)
4.	Raised tail	5 (6.95)	23 (9.2)
5.	Bellowing	5 (6.95)	13 (4.26)
6.	Mount on other animals	0 (0.00)	0 (0.00)
Total		72 (100.00)	141 (100.00)
Mating time in heat			
1.	Within 12 hrs	48 (66.67)	100 (70.92)
2.	During 12 to 18 hrs	24 (33.33)	21 (29.8)
Total		72 (100.00)	141 (100.00)
Method of mating			
1.	Natural	58 (80.56)	123 (87.50)
2.	Artificial insemination	14 (19.44)	18 (12.50)
Total		72 (100.00)	141 (100.00)
Type of bull			
1.	Descript	34 (47.22)	67 (47.28)
2.	Non-descript	38 (52.78)	74 (19.72)
Total		72 (100.00)	147 (100.00)

Figures in parenthesis indicate percentage to the total

by slightly off-feed (19.45 per cent), swelling of vulva (15.27 per cent) and raised tail (6.95 per cent) and bellowing (6.95 per cent) while detecting the signs of heat in buffaloes. It indicates that, cent per cent buffalo farmers observed the signs of heat. None of the buffalo owners observed mounting on other animal sign during heat period in buffaloes. It is further observed that, majority of farmers (66.67 per cent) mated their buffaloes (70.92 per cent) within 12 hours while, few farmers (33.33 per cent) served 29.08 per cent buffaloes after 12 hours from the induction of heat. It is further observed that, majority of farmers (80.56 per cent) adopted natural services of mating (87.50 per cent) in buffalo. Rests of these (19.44 per cent) farmers adopted artificial insemination in (12.5 per cent) buffaloes. Majority of farmers (52.78 per cent) used non-descript buffalo bull to breed of buffalo, while few farmers (47.22 per cent) used descript buffalo bull to breed buffaloes (47.28 per cent). Dube *et al.* (1989) observed that only 16.66 per cent farmers adopted practices of artificial insemination. While maximum (56.66 per cent) farmers used breeding bull for breeding purpose. Same trend was also observed by Rajendran and Prabhakaran (1992), Belli and Manjula (1997) and Chawla (1998).

Table 4: Distribution of dairy farmers according to attitude towards out-break of common diseases in buffaloes

Sr. No	Particulars	Number of farmers (N=72)	Number of buffaloes (N=141)
1.	Foot and mouth disease	38 (52.80)	75 (53.18)
2.	Haemorrhagic septicaemia	32 (44.44)	60 (42.57)
3.	Black quarter	30 (41.66)	7 (49.59)
4.	Diarrhoea	49 (68.05)	89 (63.09)
5.	Fever	13 (18.05)	25 (17.68)
6.	Indigestion	9 (12.49)	17 (12.08)
7.	Not suffered by any disease	15 (20.83)	24 (17.06)

Figures in parentheses indicates to 'N' number of farmers and buffaloes

Health –care management:

Outbreak of common diseases in buffaloes:

It is revealed from Table 4 that, buffaloes suffered from diarrhoea ailment (63.09 per cent) followed by foot and mouth (53.18 per cent), black quarter (49.59 per cent) and haemorrhagic septicaemia (42.57 per cent). Buffaloes also suffered from fever (17.68 per cent) and indigestion (12.08 per cent), whereas 17.06 per cent buffaloes did not suffer from any disease.

Veterinary facilities and disease control practices:

It is revealed from Table 5 that, 77.77 per cent farmers had veterinary facilities for the treatment of 78.73 per cent of buffaloes, while rest of the farmers depended upon the available veterinary doctor's private visit because of non-availability of veterinary facilities. It was further observed that, about 63.89

Table 5: Distribution of dairy farmers according to veterinary facilities and disease control practices

Sr. No.	Particulars	Number of farmers	Number of buffaloes
Availability of veterinary facilities			
1.	Yes	56 (77.77)	111 (78.73)
2.	No	16 (22.23)	30 (21.27)
Total		72 (100.00)	141 (100.00)
Erradication of ecto-parasites			
1.	Done	46 (63.89)	90 (63.76)
2.	Not-done	26 (36.11)	51 (36.24)
Total		72 (100.00)	141 (100.00)
Regular vaccination against diseases			
1.	Done	50 (69.44)	105 (74.43)
2.	Not-done	22 (30.56)	36 (25.57)
Total		72 (100.00)	141 (100.00)
Regular deworming of buffaloes			
1.	Done	8 (22.22)	12 (16.90)
2.	Not-done	64 (77.77)	129 (83.10)
Total		72 (100.00)	141 (100.00)

Figures in parenthesis indicate percentage to the total

per cent farmers followed eradication of ecto-parasites and 69.44 per cent farmer followed regular vaccination. Gupta and Arneja (1981) reported that all the farmers vaccinated their animals to prevent from diseases like H.S., B.Q. and F.M.D. and only about 24 per cent farmers adopted control measures for ectoparasites. Dhiman *et al.* (1990) reported that 63.75 per cent farmers followed disease control measures. Belli and Manjula (1997) observed in Dharwad Taluka of Dharwad district that about 81.67 per cent triable Gavalis followed the traditional method using Ayurvedic medicines for disease control. Whereas 63.89, 69.44 and 22.22 per cent farmers followed eradication of ecto-parasites, regular vaccination against diseases and regular deworming in 63.76, 74.43 and 16.90 per cent of buffaloes, respectively. The results confirm the observations reported by Dube *et al.* (1989) and Dhiman *et al.* (1990).

Milking management:

It is observed from Table 6 that, 40.28 per cent farmers undertook washing of the buffaloes once a day while, 41.67 per cent farmers adopted washing twice a day. About 18.05 per cent buffalo farmers did not follow regular washing of their buffaloes.

It is further observed that majority of farmers (72.22 per cent) followed regular shaving practice for buffaloes. The majority of the farmers (94.44 per cent) adopted washing of

Table 6: Distribution of dairy farmers according to attitude towards milking management

Sr. No.	Particulars	Number of farmers	Number of buffaloes
Frequency of washing buffalo			
1.	Once a day	29 (40.28)	52(36.96)
2.	Twice a day	30 (41.67)	69(48.84)
3.	Not done	13 (18.05)	20 (14.19)
	Total	72 (100.00)	141 (100.00)
Regular shaving of buffalo			
1.	Done	52 (72.22)	105 (74.41)
2.	Not-done	20 (27.78)	36 (25.59)
	Total	72 (100.00)	141 (100.00)
Washing of udder before milking			
1.	Done	68 (94.44)	131 (92.86)
2.	Not-done	4 (5.56)	10 (7.14)
	Total	72 (100.00)	141 (100.00)
Method of milking			
1.	Full hand method	22 (30.56)	43 (30.45)
2.	Knuckling method	40 (55.55)	77 (54.64)
3.	Stripping method	10 (13.88)	21 (14.91)
	Total	72 (100.00)	141 (100.00)

Figures in parenthesis indicate percentage to the total

udder before starting of milking of buffaloes (Table 6).

As regards the adoption of method of milking, it was observed that buffalo farmers used knuckling method of milking followed by full hand and stripping method of milking in 55.55, 30.56 and 13.88 per cent of buffaloes, respectively. Majority of buffalo farmers used a method of milking (knuckling), than the recommended method of milking (full hand) indicating a burning need of conducting an orientation training to educate the farmers regarding safe and hygienic method of milking for clean milk production. Malik and Nagpaul (1998) reported the gap between the prevalent practices or existing practices and recommended practices in Haryana a home tract of Murrah buffaloes.

Feeding practices:

Gap of feeding management practices over recommended practices:

The present study ventures to analyze the recommended feeding practices for maintenance and production of buffaloes on a dairy farm. Keeping this view in mind, an attempt has been made to study the existing feeding practices at the farmer's level for maintenance and production of buffaloes. The difference between recommended practices suggested by animal husbandry scientists and actual existing practices adopted by farmers shows the feeding gap.

The overall gap of feeding practices of three categories over recommended practices has been worked out and presented in Table 7. The dry fodder, green fodder and concentrates were fed to the extent of 8.91, 8.96 and 1.57 kg per day, respectively. The dry fodder was fed more to the extent of 37.39 per cent over recommended practices. A wide gap was also noticed in feeding of green fodder (28.61 per cent) and concentrates (49.51 per cent), respectively at the farmers level at an overall level. These figures of DCP and TDN requirements are nearer to the figures recommended by Prasad (1997) and Patil and Kamble (2002).

Annual maintenance cost of buffaloes:

The maintenance cost has a crucial importance in maintaining the animals. It includes variable cost and fixed cost. The annual maintenance cost of buffaloes is presented in Table 8.

It is observed from Table 8 that, the total maintenance cost was estimated to Rs. 15074.94, 17315.79 and 17447.07 in small, medium and large sized group of farmers, respectively. At an overall level, the total maintenance cost was worked out to Rs. 16612.60. The variable cost shared the major part of cost and it was worked out to 91.05, 90.68 and 89.46 per cent of the total cost in small, medium and large sized group of farmers, respectively. The fixed cost was worked out to 8.94, 9.31 and 10.53 per cent in small, medium and large sized group of farmers, respectively. Out of the total cost of milk

Table 7: Gap of feeding management practices over recommended practices as per category of buffalo owners

(On an average body weight of 425 kg)

Sr. No.	Feed items	Recommended practices		Existing practices at dairy farmers level		Feed management gap	
		Quantity/ animal (kg)	Value (Rs.)	Quantity/ animal (kg)	Value (Rs.)	Quantity/ animal (kg)	Value (Rs.)
Small category							
1.	Dry fodder	6.50 (100.00)	9.10	8.43 (129.57)	11.80	1.93 (29.57)	2.70
2.	Green fodder	12.50 (100.00)	8.75	8.64 (68.08)	6.04	3.86 (31.91)	2.70
3.	Concentrates	3.00 (100.00)	22.80	1.18 (38.71)	9.00	1.81 (61.68)	13.79
Medium category							
1.	Dry fodder	6.5 (100.00)	9.10	9.10 (140.14)	12.73	2.60 (37.14)	3.63
2.	Green fodder	12.50 (100.00)	8.75	9.26 (73.18)	6.48	3.24 (26.85)	2.27
3.	Concentrates	3.00 (100.00)	22.80	1.91 (60.85)	14.51	1.09 (39.14)	8.28
Large category							
1.	Dry fodder	6.50 (100.00)	9.10	9.22 (142.61)	12.90	2.72 (42.61)	3.81
2.	Green fodder	12.50 (100.00)	8.75	8.97 (72.91)	6.28	3.52 (27.08)	2.47
3.	Concentrates	3.00 (100.00)	22.80	1.64 (52.17)	12.42	1.36 (47.82)	10.32
Overall gap							
1.	Dry fodder	6.50 (100.00)	9.10	8.91 (137.89)	12.48	2.41 (37.39)	3.38
2.	Green fodder	12.50 (100.00)	8.75	8.96 (71.38)	6.27	3.54 (28.61)	2.48
3.	Concentrates	3.00 (100.00)	22.80	1.57 (50.48)	11.98	1.42 (49.51)	10.89

Figures in parentheses indicate percentage to the recommended practices

Table 8: Annual maintenance cost buffaloes (Rs./Animal)

Sr. No.	Particulars	Small	Medium	Large	Overall
Variable cost					
1.	Feed				
	Dry fodder	4307.73 (28.57)	4650.10 (26.85)	4711.42 (27.00)	4555.41 (27.42)
	Green fodder	2207.52 (14.64)	2365.93 (13.66)	2291.83 (13.13)	2286.72 (13.76)
	Concentrates	3273.6 (21.71)	5298.34 (30.59)	4549.3 (26.07)	4373.74 (26.32)
	Total feed cost	9788.85 (64.93)	1234.37 (71.16)	11552.55 (66.21)	11818.59 (67.53)
2.	Upkeep charges	2179.90 (14.46)	1377.88 (7.95)	1892.24 (10.94)	1816.67 (10.93)
3.	Miscellaneous charges	179.24 (1.18)	203.87 (1.17)	369.12 (2.11)	250.74 (1.50)
4.	Interest on working capital	1579.23 (10.47)	1806.49 (10.43)	1795.80 (10.29)	1727.17 (10.39)
	Total variable cost	13727.22 (91.05)	15702.61 (90.68)	15609.71 (89.46)	15013.18 (90.37)
Fixed cost					
1.	Depreciation	641.55 (4.25)	754.98 (4.36)	885.89 (5.07)	760.83 (4.57)
2.	Interest on fixed capital	706.17 (4.68)	858.20 (4.95)	951.51 (5.45)	838.62 (5.04)
	Total fixed cost	1347.72 (8.94)	1613.18 (9.31)	1837.37 (10.53)	1599.42 (9.62)
	Total cost	15074.94 (100.00)	17315.79 (100.00)	17447.07 (100.00)	16612.60 (100.00)

Figures in parentheses indicate percentage to the total cost

production, feed cost shared the highest cost which was accounted to 64.93, 71.16 and 66.21 and per cent in small, medium and large sized groups of farmer, respectively. At an overall level, the feed cost was estimated to 67.53 per cent followed by upkeep charges 10.93 per cent, interest on fixed capital (5.04 per cent), depreciation (4.57 per cent) and miscellaneous charges (1.50 per cent).

Economics of milk production:

The per litre cost of milk production was worked out (Table 9) by dividing the net cost by total milk production in litres. It was accounted to Rs. 8.87, 8.37 and 8.78 in small, medium and large sized group of farmers, respectively and at an overall level, it was Rs. 8.67. Chandra and Agrawal (2000) worked out in rural areas of Farukhabad of U.P. and reported Rs. 7.58 per

Table 9: Economics of milk production of buffalo (Rs./Animal)

Sr. No.	Particulars	Small	Medium	Large	Overall
1.	Total maintenance cost	15074.94	17315.79	17447.08	1662.60
2.	Income from manure	1052.87	1091.25	1106.05	1083.39
3.	Total milk production (litres)	1454.41	1767.00	1691.54	1637.65
4.	Value of milk	23270.56	28272	27064.64	26202.40
5.	Value of young stock	1113.85	1433.20	1481.57	1342.87
6.	Gross income (2+4+5)	25437.28	30796.45	29652.26	28628.66
7.	Net income (6-1)	10362.34	13480.66	12205.18	12016.06
8.	Net cost (1-2-5)	12908.22	14791.34	14859.46	14186.34
9.	Cost per litre of milk (8/3)	8.87	8.37	8.78	8.67
10.	Price per litre of milk	16.00	16.00	16.00	16.00
11.	Net profit per litre (10-9)	7.13	7.63	7.22	7.33

lit. net cost in buffaloes. While Tailor *et al.* (1992) calculated Rs. 3.34 per kg average cost of milk production in Surti buffaloes. The net profit per litre was worked out by deducting the cost per litre of milk from price per litre of milk. It was worked out to Rs. 7.13, 7.63 and 7.22 in small, medium and large size group of farmers, respectively and at an overall level, it was 7.33. Thus, from the study of economics of milk production of buffalo, it is clear that, the total milk production was highest in medium sized group of farmers and lowest in small sized group of farmers. The gross income and net income was highest in medium sized group of farmers and lowest in small sized group of farmers. It is also clear that, total maintenance cost and net cost increased as the size of land holding increased.

Conclusion:

It is concluded from the study that, the majority of the buffalo owners were well aware about housing, breeding and health-care management practices. There was a small gap in feeding of green fodder and concentrates in buffaloes. The total maintenance cost, gross and net income and net profit per litre of milk was slightly more. The conclusion emerged from the present study is that, the rearing of buffaloes is profitable. However, the dairy farmers need to be given sufficient training on the buffalo nutrition, cultivation of improved green fodder and management of the milking buffaloes. It will help to fulfil the nutrient requirements of milking buffaloes and reduce or minimize the gap in feeding management practices.

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