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Economic analysis of milch animals in Jaisinghpur tehsil of district Kangra

M.S. Pathania and Amita Sharma
Department of Agricultural Economics, Extension Education and Rural Sociology
CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur-176 062, India.

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Abstract

In Himachal Pradesh the contribution of animal husbandry to total agricultural output has increased steadily over the years. Animal husbandry is an effective instrument of social and economic change for improving the living standard and quality of life across all sections of society. Moreover, the livestock enterprise provides stability and economic viability to the farming system on sustainable basis. The study was carried out in Jaisinghpur tehsil of Kangra district. A sample of 60 households was drawn from six villages using proportional allocation method. In the study area the size of holding was 0.61ha.The total number of livestock in terms of standard animal units was 2.51.The cropping intensity was higher on marginal farms.The sample farmers met the fodder requirement from owned and common lands. The marketed surplus and home consumption were higher on marginal farms as compared to small farms.Net returns from cow over total cost were found to be negative (INR. -391) in case of marginal farms, while it was positive (Rs. 223) in variable cost.The net returns over variable and total cost were found to be positive in case of buffalo. The break-even quantity (BEQ) for buffalo was 1245.30 litre.

Key words: Economic analysis, cropping intensity, net returns from milk, break-even quantity.

Livestock plays a vital role in the Indian economy by contributing 27 % towards the agricultural GDP. The importance of livestock sector has increased in the recent times as demand for animal products in the food has increased due to rise in per capita income and growing urbanization. This sector provides draught power for agriculture and rural transport raw materials in the form of wool, hair, hides, skins, bones and milk etc. for the manufacturing sector and a source of high value protein in the form of milk, milk products, meat and eggs to human population. Himachal Pradesh is the leading hill state that has given a new concept of development of the economy through scientific transformation of agriculture and animal husbandry. The contribution of animal husbandry to total agricultural output has increased steadily over the years. Livestock based farming system followed by crop based farming system is dominating and 63.9 and 59.7% of the farmers are dependent on livestock based farming system in Zone-I and Zone-II of Himachal Pradesh (Rana *et al.* 2015). Nature has bestowed Himachal Pradesh ideal agro-climatic conditions for rearing the best livestock. In Himachal Pradesh on an average livestock contributes 28.77 % of gross domestic product next only after fruits (36.4%), but higher than cereals (23.28%) and Vegetables (8.11%) (Rana *et al.* 2015). The state poor crop productivity, low availability of land and prevailing climatic conditions has increased the dependence of households on livestock. Animal husbandry is an effective instrument of social and economic change for improving the living standard and quality of life across all sections of society. Moreover, the livestock enterprise provides stability and economic viability to the farming system on sustainable basis. The marginal farmers and pastoralists who are in great number in the hills due to paucity of cultivated area have big opportunity to use livestock to improve their income and socio-economic conditions through full use of their family labour and limited land resources. Further, despite favourable conditions farmers in the state are rearing low milk yielder animals. This may be due to lack of scientific management of the animals and scarcity of fodder. Further, the destruction of common lands has created wide gap between demand and supply particularly of the grass and fodder for livestock and important resources available to rural poor for the survival of their livestock. Keeping in view, the importance of livestock farming in the livelihood of rural population, the present study has been under taken to analyse the use pattern of feed &fodder and profitability of milch animals.

Materials and Methods

The study was carried out in Jaisinghpur tehsil of Kangra district. It was purposively selected for the study because more than 90 % area is rural. Majority of the households were rearing livestock and earning their livelihood from livestock farming. Three-stage random sampling design was used for the selection of respondents. At first stage of sampling three patwar circles were randomly selected. At the second stage two villages from each selected patwar circle was selected by simple random sampling method. Finally, in each of the selected village, a complete list of households was prepared. A sample of 60 households was drawn from selected villages (6) using proportional allocation method. After selection of 60 households from selected villages, they were divided into two groups viz., marginal (<1 ha) and small (1-2 ha) based on the land holdings. Both primary as well as secondary data were collected for the study. Tabular and statistical techniques were employed for analysis and interpretation of the data.

Computation of cost of milk production

i. Fixed cost:

a. Depreciation on animals: Depreciation on milch animals was worked out by straight line method. The active life of animals was taken as 13 years. Its value was taken to appreciate in the ratio of 1:3:5 for the first three years, constant upto 5 years and depreciate thereafter at the rate of 12.5 % per annum. No depreciation was allowed after 13 years (Grover *et al.*, 1992).

b. Depreciation on fixed capital: Depreciation on fixed capital was calculated by using diminishing value method. The depreciation was calculated @ 10% per annum for tools and equipments and 2% for cattle shed. Fixed cost was further apportioned among animals on farm.

c. Interest on fixed capital: Interest on fixed capital was charged @ 10% per annum (prevailing bank rate). Interest on working cost was not computed as there was regular income flow from milk (Grover *et al*., 1992).

d. Appreciation on animals: All cattle in the livestock farm were appreciated up to the age of 3 years (Grover *et al*., 1992).

ii. Variable cost:

a. Fodder cost: The animals in the study area were stall fed and grazed. The fodder fed to animals was divided in 3 categories viz. green, dry fodder and tree fodder. The actual amount of fodder fed was recorded and cost was worked out at the prevailing market prices.

b. Feed/concentrate cost: The actual amount of feed fed was recorded and cost was worked out at the prevailing market prices.

c. Animal health care: Animal health care charges were computed on basis of expenditure incurred on animal health care.

d. Labour charges: This includes the expenses incurred on family and hired labour.

Variable Cost =

Where P_i = per unit price of i^{th} input

X_i = quantity of i^{th} input used

Total cost: Total fixed cost + Total variable cost

Computation of returns: Gross and net returns were calculated using the following formulae:

$$\text{Gross Returns} = Y_m P_m + Y_b P_b$$

Where Y_m = output of main product

P_m = price per unit of main product

Y_b = output of by product and P_b = Price per unit of by product

P_b = Price per unit of by product

Net returns over variable cost = Gross returns – Total variable cost

Net returns over total cost = Gross returns – Total cost

Break-even Quantity analysis): BEQ was arrived as: $Ka_1 . a_2$

$$\text{BEQ} =$$

Where,

K = Total fixed cost

a_1 = Sale price of milk/ l milk

a_2 = variable cost/ l milk

Results and Discussion

Socio –Economic indicators

Socio–economic indicators of sampled households have been presented in Table 1.The average family size on overall farm situation was estimated at 5.28. It was slightly higher on marginal farms (5.41) as compared to small farms (4.73). The sex ratio of the population was estimated at 828, 733, and 811 on marginal, small and overall farm categories, respectively. Such a widening gap in male to female ratio in the study area is quite dishearting and such a gap was also found in Kangra district (Rana *et al*. 2015). The overall literacy rate of the total sampled population was 91.21 %. which was found to

Table 1. Socio-economic indicators of sample farms

Particular	Farm size		
	Marginal(<1 ha)	**Small**(1-2 ha)	**Overall**
Average family size	5.41	4.73	5.28
Sex-Ratio(Female/ 1000 males)	828	733	811
Literacy (%) Male	100	92.86	98.80
Female	82.64	80.00	82.27
Landholding size (ha)	0.44	1.34	0.61
Household income (INR)	2,02,622	2,05,798	2,03,204
Income from Agriculture	2.02	3.97	2.38
Livestock	24.45	25.35	24.62
Investment on livestock	36,286	41,555	37,252

be higher among males (98.80 %) as compared to females (82.27 %). The gender wise comparison across the farm categories also indicated low educational status of females as compared to their male counter parts. The size of holding was 0.61ha. Household income from different sources has been noticed INR. 2,03,204 at the overall farm situation, which was found to increase with the size of holding. The contribution of livestock in total household income was 25 per cent and there was not much difference in contribution of livestock income on marginal and small farmers. The total value of livestock inventory was estimated at INR 36,286, 41,555 and 37,252 on marginal, small and overall farms, respectively.

Livestock inventory

The detailed description of the livestock kept by sample households has been shown in Table 2. It can be seen from the Table that the average number of animals kept by farmers on an average farm was about 3.33. It was estimated at 3.08 and 4.35 animals for marginal and small farms, respectively. Among the different categories of livestock, the average number of buffaloes was found to be highest constituting about 0.85 of total farm animals. It was indicated by the farmers that among milch animals buffalo was most preferred on account of taste and colour of milk. On an average, wet to dry ratio was higher for buffalo than cow. The number of young stock was 0.49 and 0.91 on marginal and small farms, respectively. The number of bullocks maintained in both the categories of farms was quite low. This can be attributed to the fact that it is difficult to rear the bullocks in the study area mainly due to shortage of fodder, availability of mechanical power specially tractor as an alternatives and reduction in farm size. Similar trend had also been noted by Gauraha *et al.* (2001). There had been a positive relationship between number of livestock and the size of holding. Further, it has been noted that the total number of livestock in terms of standard animal units (SAUs) was 2.51 on overall farms, while it was 2.39 and 2.95 on marginal and small farms, respectively (Kumbhare *et al*.1983).

Cropping pattern

Cropping pattern of a particular area broadly indicates the allocation of cultivated land under different crops at a particular period of time which shows the relative importance of different crops. The cropping pattern of sampled farms has been presented in Table 3. On average farm, wheat was the most important crop accounting for 48.35 % of the total cropped area. The second most dominant fodder crop was *chari/bajra* with a proportion of 25.11% to the total cropped area followed by maize (21.93) and *berseem* (3.78 %). The area under vegetables was quite low (0.54 %) and it was relatively higher on marginal farms than small farms. The total cropped area on marginal, small and overall farm was noted 0.33, 0.80 and 0.42 ha, respectively. The cropping intensity which tells us the extent of crop intensification on farms was 191.11 % on marginal farms and about 187.97 %on small farms thus giving an average of about190.69%. The cropping intensity being higher on marginal farms was due to small area per household who made an attempt to derive maximum out of the available land and other resources like manpower at their disposal. Similar results were also found by Kumar (1994).

Table 2. Livestock inventory on sample farms (Number/farm)

Particulars	Marginal	Small	Overall
Cow improved			
In milk	0.28	0.27	0.28
Dry	0.12	0.18	0.14
Total	0.40	0.45	0.42
Wet to dry ratio	2.33	1.50	2.00
Buffaloes			
In milk	0.76	0.63	0.73
Dry	0.12	0.09	0.12
Total	0.88	0.72	0.85
Wet to dry ratio	6.33	7.00	6.08
Bullocks	0.04	0.36	0.10
Young stocks (cow/buffalo)	0.49	0.91	0.57
Goats	0.49	1.00	0.59
Sheep	0.78	0.91	0.80
Total livestock	3.08	4.35	3.33
Total SAUs	2.39	2.95	2.51

Note: SAUs= Standard animal unit (Kumbhare *et al*.1983).

Table 3. Cropping pattern on sample farms (Per cent)

Season/Crop	Marginal	Small	Overall
Kharif			
Maize	21.75	22.75	21.93
Vegetables	0.60	0.25	0.54
Fodder crops	25.38	23.88	25.11
Sub-Total	47.73	46.88	47.58
Rabi			
Wheat	48.34	48.38	48.35
Vegetables	0.30	0.24	0.29
Fodder crops	3.63	4.50	3.78
Sub-Total	52.27	53.12	52.42
Total cropped area (ha)	0.331	0.800	0.418
Cropping intensity	191.11	187.97	190.69

Note: Per cent of total cropped area

Grazing pattern of livestock

Grazing of animals was a tradition among the farmers of the study area. The category wise distribution of animals has been shown in Table 4. On overall farm situation, among lactating animals, more than 80 % of the cows were stall fed whereas 100 % of buffaloes were found to be stall fed. The pattern of grazing for dry cow was estimated at 50 %. The sample farmers also grazed their milking cows. Further, it has been observed that 21 and 60 % of young stock and bullock population respectively, were grazed. More than 80 % of sheep and goats were found to be grazed among both the categories of farms. It was noticed that the households having single sheep/goat, generally do stall feeding. The buffalo was not allowed for grazing on sample farms due to their massive body structure finding difficulty in moving in narrow hilly paths. The goats were left for grazing in the nearby areas only and not allowed to go far due to the danger of wild animals. The results were inconformity with Pandey and Mishra (2011).The incidence of grazing was more on the small farms under different livestock categories. Sheep and goats were the main livestock units which were grazed throughout the year followed by cows and bullocks. The extent of grazing was found to show a positive trend with farm size.

Sources of fodder

The people of area have certain customary rights in the state owned forests, village river banks, panchayat lands for grazing animals, fodder and grass. Overall 14.43, 53.22, 11.35 and 20.88 % of the green grass was met from ghasni, field bunds, weeds from crop fields and fodder crops, respectively (Table 5). Dry grass constituted about 98.32 %

Table 4. Extent of grazing and stall feeding on sample farms (Per cent)

Particulars	**Marginal**		**Small**		**Overall**	
Cows	**SF**	**G**	**SF**	**G**	**SF**	**G**
In milk	81.25	18.75	100.00	-	82.35	17.65
Dry	42.86	57.14	66.67	33.33	50.00	50.00
Total	86.41	13.59	85.71	14.29	71.15	28.85
	(0.89)	(0.14)	(0.54)	(0.09)	(0.37)	(0.15)
Buffaloes						
In milk	100.00	-	100.00	-	100.00	-
Dry	100.00	-	100.00	-	100.00	-
Total	100.00	-	100.00	-	100.00	-
	(0.88)	-	(0.72)	-	(0.85)	-
Young stock	87.76	12.24	60.44	39.56	78.95	21.05
	(0.43)	(0.06)	(0.55)	(0.36)	(0.45)	(0.12)
Bullock	50.00	50.00	55.56	44.44	40.00	60.00
	(0.02)	(0.02)	(0.20)	(0.16)	(0.04)	(0.06)
Sub Total	90.98	9.02	76.72	23.28	83.82	16.18
	(2.22)	(0.22)	(2.01)	(0.61)	(1.71)	(0.33)
Sheep & goats	10.24	89.76	11.52	88.48	12.23	87.77
	(0.13)	(1.14)	(0.22)	(1.69)	(0.17)	(1.22)
Total	63.64	36.36	49.23	50.77	54.81	45.19
	(2.35)	(1.36)	(2.23)	(2.30)	(1.88)	(1.55)

Note: Figures in parentheses indicate percentages to the total in each category

Table 5. Source wise availability of fodder on sample farms (Per cent)

Sr. No	Particular	Green grass	Dry grass	Crop by-product	Tree fodder
Marginal					
A.	Own land				
i.	Ghasni	13.11	97.09	-	52.08
ii.	Field bunds	54.20	-	-	46.56
iii.	Weeds from crop fields	12.11	-	-	-
iv.	Fodder crops	20.42	-	-	-
v.	Field crops	-	-	100.00	-
B.	CPRs land	0.16	-	-	1.36
C.	Purchased	-	2.91	-	-
	Total	100 (46.97)	100 (8.24)	100 (8.62)	100 (54.92)
Small					
A.	Own land				
i.	Ghasni	14.20	100.00	-	49.59
ii.	Field bunds	52.91	-	-	50.41
iii.	Weeds from crop fields	9.66	-	-	-
iv.	Fodder crops	23.23	-	-	-
v.	Field crops	-	-	100.00	-
B.	CPRs land	-	-	-	-
C.	Purchased	-	-	-	-
	Total	100 (70.72)	100 (13.00)	100 (18.54)	100 (76.23)
Overall					
A.	Own land				
1.	Ghasni	14.43	98.32	-	51.46
2.	Field bunds	53.22	-	-	47.48
3.	Weeds from crop fields	11.35	-	-	-
4.	Fodder crops	20.88	-	-	-
5.	Field crops	-	-	100.00	-
B.	CPRs land	0.12	-	-	1.06
C.	Purchased	-	1.68	-	-
	Total	100(51.97)	100(11.29)	100(10.44)	100(58.82)

Note: Figures in parentheses indicate total quantity of fodder (quintals) per farm

from ghasni. The crop by-products were met from crops grown by the farmers. Tree fodder availability was found to be 51.46 and 47.48 % from ghasni and field bunds, respectively. The results were in conformity with Vashist and Pathania (2001). On the other hand, green and tree fodder availability from CPR land was very less contributing about 0.12 and 1.06 %,

respectively. The households do not visit CPRs land to collect fodder due to poor productivity in CPR land as also reported by Pandey and Mishra (2011). About 1.68 %of the dry fodder was purchased from the market. On marginal farms 13.11, 54.20, 12.11 and 20.42 per cent of the green grass was met from ghasni, field bunds, weeds from crop fields and fodder crops, respectively. The corresponding figures were estimated at 14.20, 52.91, 9.66 and 23.23 % respectively in case of small farms. Small farmers were found to meet their 100% dry fodder availability from ghasni whereas marginal farms, it was 97.09 %. Marginal farmers purchased about 2.91 % of dry fodder whereas small farmers did not purchase due to the sufficient quantity of fodder available from the own lands. The contribution of CPRs in the supply of green and tree fodder was found 0.16 and 1.36 %, respectively on marginal farms. The tree fodder brought from the forests was mainly for the small ruminants which included bushes and shrubs.

Gaps of fodder supply

The gaps of fodder supply compared to demand have been presented in Table 6.It can be seen from the table that gap of green and dry fodder was to the extent of 19 to 28 per cent. The gap of green fodder was noticed higher than dry fodder in both the categories of sample households.The gap of green and dry fodder also indicate that gap decreased with increase in the farm size. It was higher on marginal farmers compared to small size farms.

Production and disposal of milk

Before framing any policy decision, particularly for the livestock development with respect to its marketing it is very important to have an idea about the production potential and disposal of the milk in the study area. The pattern of milk production and disposal/utilization among sample farmers has been given in Table 7. The total milk production, marketed surplus and home consumption were higher on marginal farms as compared to small farms. Overall, out of total milk production 65.47 % was sold and the remaining was kept for home consumption (34.53 per cent). The average selling price of cow milk in the villages was INR. 26 per litre whereas in case of buffalo milk, it was relatively higher as compared to cow's milk i.e. INR. 33 per litre. Higher selling price of buffalo's milk was on account of its taste, high fat percentage and white colour. Overall farm, milk yield in case of improved cows was 6.55 litres per day followed by buffaloes (7.12 litres). Similar trend was noticed for marginal and small sample farms.

Table 6. Gaps of fodder supply on sample farms (Per cent)

Sr. No	Farm size	Green fodder	Dry fodder	Total
1	Marginal	28.45	22.80	25.72
2	Small	24.10	19.25	21.60
3	Overall	26.42	21.09	23.55

Table 7. Production and disposal of milk on sample farms (Litres/farm/day)

Item	Marginal	Small	Overall
Total milk production	7.59(100)	7.27(100)	7.53(100)
Marketed surplus	4.98(65.61)	4.73(65.00)	4.93(65.47)
Home consumption	2.61(34.39)	2.54(35.00)	2.60(34.53)
Average price (Rs./litre)			
Average price of cow milk			26
Average price of buffalo milk			33
Average yield of milk (Litres/animal/day)			
Cow	6.31	7.50	6.55
Buffalo	7.11	7.14	7.12

Note: Figures in parentheses indicate percentages to the total in each category

Economics of milk production

The economics of milk production of different milch animals(cow and buffalo)was worked out to have an idea about profitability of animals in a particular area, so that farmers can plan for their livestock inventory accordingly and enhance their income level.

The analysis for various cost components for milk production of cow has been given in Table 8. Feed and fodder were the major components of expenditure in both the farm categories. Fodder and feed accounted for 67.76 % and 12.23 % of total cost, respectively followed by expenditure on labour (14.21%). The finding is in conformity with those of Singh and Rai (1998) and Dutt *et al.* (2009). Total cost was higher on marginal farms (INR. 42,514) as compared to small farms (INR 41,656). Fixed cost included interest and depreciation(animal, building &machinery). The share of fixed cost ranged from 2 to 4 % to total cost in the study area. Households maintaining cow obtained gross returns of INR 44,046 while it was higher on small farms as compared to marginal farms. Net returns over total cost were found to be negative (Rs. -391) in case of marginal farms while it was positive (Rs. 223) in variable cost. Milk production cost per litre on variable cost was INR 27, Rs. 22 and INR 26 on marginal, small and overall farms, respectively. Cost of milk production was noticed higher on total cost basis than on variable cost and it varied from INR. 23 to 28 on sample farms.

Total cost per annum for a buffalo for marginal and small farm stood at INR 55,392 and INR 54,894, respectively. This cost included all the fixed and variable costs incurred on a buffalo rearing. Table shows that feed and fodder together accounted for 76.48 % of the total cost on marginal farms whereas this proportion for small farm was 83.82 %. Sharma and Singh (1994) also reported the feed cost more than 70 %in the study. Next in order was human labour which accounted for 18 and 13 % for marginal and small farms. Further, it can be observed that net returns over variable and total cost were found to be INR 10,086 and INR 8,897, respectively. Per litre cost of milk production on total cost varied between INR 31 to INR 32, respectively. The prices which the milk producers are getting at present are not remunerative in the study area. The expenditure on milk production can be reduced by keeping exotic breeds as these animals have lesser dry period and higher milk productivity.

Break-even analysis

Break-even analysis helps to find out the break-even output, where the total cost incurred is equal to the total revenue earned. A particular volume level and its associated cost level generate a particular profit level. Results of break-even analysis have been given in Table 9. The value of break-even point for buffalo was 83.88 and 16.32 % of the total output on marginal and small farms, respectively. The corresponding figures for cow were estimated at 26.88 on small farms whereas it was negative on marginal farms. It can be observed that on an average, break-even point for buffalo was found to be 71.45 %. The break-even quantity(BEQ) for buffalo on overall situation was 1245.30 litres. Thus, it can be concluded that break-even point was achieved earlier in case of buffaloes than cow. Similar pattern was noted for marginal and small farms.

There had been a positive relationship between number of livestock and the size of holding. The total number of livestock in terms of standard animal units was 2.51 on overall farms.The cropping intensity was higher on marginal farms. They grazed cows in the nearby forest area and buffalo was not allowed for grazing by sample farmers. The marketed surplus and home consumption were higher on marginal farms as compared to small farms. The net returns over variable and total cost were found to be positive in case of buffalo. The break-even quantity (BEQ) for buffalo on overall situation was 1245.30 litres. There was a scarcity of fodder in the study area, so, needs based incentive required to be extended to the farmer for silage preparation. This will also improve the nutritional value of fodder and milk production. Price of milk is not remunerative because of its perishable nature and in most of the cases farmers are forced to sell in ongoing prices. Therefore, in order to increase the bargaining power of farmers, there is a need to increase shelf-life of milk. So, government should promote the establishment of milk pasteurization centre in the potential village on cluster basis in the study area. The average milk yield, net returns and break-even output was noted higher on buffalo than cross-bred cow. This may be due to suitable climatic condition for buffalo. Therefore, it is suggested that farmers can earn more profit by rearing buffaloes.

Table 8. Economics of milking cow and buffalo on sample farms (INR./animal/annum)

	Cow			buffalo		
Items	**Marginal**	**Small**	**Overall**	**Marginal**	**Small**	**Overall**
Fixed cost						
Depreciation	1,015	2,328	1,679	2,576	2,706	2,675
	(2.39)	(5.59)	(3.97)	(4.65)	(4.93)	(4.86)
Interest on fixed capital	104	239	172	264	277	274
	(0.24)	(0.57)	(0.41)	(0.48)	(0.50)	(0.50)
Appreciation on animals	505	1,009	757	1,093	2,426	1,760
	(1.19)	(2.42)	(1.79)	(1.97)	(4.42)	(3.20)
Total fixed cost	614	1,558	1,094	1,747	557	1,189
	(1.44)	(3.74)	(2.58)	(3.15)	(1.01)	(2.16)
Variable Cost						
Green fodder	10,093	10,531	10,173	10,673	10,179	10,582
	(23.74)	(25.28)	(24.03)	(19.27)	(18.54)	(19.22)
Dry fodder	18,485	18,625	18,511	22,935	25,075	23,327
	(43.48)	(44.71)	(43.73)	(41.40)	(45.68)	(42.37)
Concentrate	5,220	4,980	5,176	8,756	10,758	9,123
	(12.28)	(11.96)	(12.23)	(15.81)	(19.60)	(16.57)
Minerals	616	549	583	754	746	753
	(1.45)	(1.32)	(1.38)	(1.36)	(1.36)	(1.37)
Animal health care	530	638	584	584	507	571
	(1.25)	(1.53)	(1.38)	(1.05)	(0.92)	(1.04)
Labour	6,763	4,587	6,016	9,943	7,072	9,505
	(15.91)	(11.01)	(14.21)	(17.95)	(12.88)	(17.27)
Misc	193	188	192	179	164	176
	(0.45)	(0.45)	(0.45)	(0.32)	(0.30)	(0.32)
Total variable cost	41,900	40,098	41,235	53,645	54,337	53,861
	(98.56)	(96.26)	(97.42)	(96.85)	(98.99)	(97.84)
Total cost (A+B)	42,514	41,656	42,329	55,392	54,894	55,050
	(100)	(100)	(100)	(100)	(100)	(100)
Returns						
Gross returns	42,123	50,507	44,046	63,779	64,306	63,947
Value of dung	1,912	2,732	2,322	6,310	6,556	6,433
Value of milk	40,211	47,775	41,724	57,469	57,750	57,514
Net returns over						
Variable cost	223	10,409	2,811	10,134	9,969	10,086
Total cost	-391	8,851	1,717	8,387	9,412	8,897
Cost of milk production (Rs./litre)						
On variable cost	27	22	26	31	30	31
On total cost	28	23	27	32	31	32

Note: Figures in parentheses indicate percentages to the total cost in each category

Table 9. Break-even analysis for animals on sample farms(Rs./animal/annum)

Particulars	Marginal		Small		Overall	
	Cow	Buffalo	Cow	Buffalo	Cow	Buffalo
Total fixed cost	614	1,747	1,558	557	1,094	1,189
Total variable cost	41,900	53,645	40,098	54,337	41,235	53,861
Variable cost (INR./litre)	27	31	22	31	26	31
Selling price (Rs./litre)	26	32	25	33	25	32
BEQ (litres)	-	1460.80	490.30	285.60	-	1245.30
Break-even output as per cent of total output	-	83.88	26.68	16.32	-	71.45

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