

## Economic analysis of milk production of district Fatehpur in Uttar Pradesh

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### ABSTRACT

The present study was conducted in the Fatehpur district of Uttar Pradesh using multistage stratified random sampling design. A sample of 120 households was selected probability proportion to size of holdings. The households were classified into three category such as marginal (>1 hectare), small (1-2 hectare) and large (<2 hectare) the total cost of milk production per lactation was Rs. 22776 and Rs. 16694 for buffalo and cow, respectively. On an average, cost of buffalo 89.6 per cent incurred as variable cost while 10.4 per cent incurred as fixed cost and cow was 90.4 per cent incurred as variable cost and 9.6 per cent incurred as fixed cost of total cost. Out of which concentrate cost alone accounted for 37.4 per cent and 42.6 per cent buffalo and cow, respectively. Labour charges were more (17 percent) in buffalo as compared to cow (16.2 per cent). The interest on animal value was more (6.7 per cent) in case of buffalo as compared to cow (5.1 per cent). The cost of milk production was much higher in case of buffalo than the cow. Similarly, milk production was also higher in buffalo than the cow. The per litre cost of milk production was Rs. 12.62 and Rs. 10.79 for buffalo and cow, respectively. The total return per animal per lactation came to Rs. 3141.14 and Rs. 24928.38 for buffaloes and cow, respectively. The net return in case of buffalo was higher (Rs. 9637.66 per lactation) as compared to cow (Rs. 8234.04 per lactation) while, benefit cost ratio was higher cow (1.49) than the buffalo (1.41). It was observed that on an average two third of the total milk production of households was sold in the market.

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### INTRODUCTION

Livestock besides being the sustainable source of income and employment, provides the nutritious food, valuable drought power, organic manure, hides, skins and fibers. Though performance of livestock sector in India has been impressive, one must not be unmindful of the intricate issues concerning the sector. The average milk production in the country is hardly 500 kg per lactation. This is partly due to poor feeding. These animal if properly fed will definitely produce better. India rank first in milk production 100 million tones, the change of global economy and trade scenario, rising demand for livestock products. India possess 185 million cattle, 98 million buffaloes and 61 million sheep. The census was released in July 2006 points out the India has largest livestock population in world after Brazil. About 56 per cent of world buffalo and 14 per cent of the total cattle population, India ranks first in respect of buffalo, second in respect of cattle population and also second in goat population, India ranks third in respect to sheep population in the world (Anonymous, 2006). The socio economic importance of rearing is evident from sharp increase in their population during the post independent period from 68 million in 1951-52 to 125 million in 2006. It has been estimated

that goat population may reach a figure of 735 million by 2010, presently annual growth rate of goat population is 3.60 per cent. The poultry population in India was 485 million in 2003-04. In poultry sector, about 25 per cent of total egg production in the country, came from desi poultry, which organized rural backyard system a target achieving over 52 billion eggs by 2011-12 at growth rate of 4.3 per cent between 1970 and 2006. The annual per capita availability of eggs has quadruped from 10 to 41, while the corresponding country increase in chicken meat has been faster from 146 gram to 1.6 kg. The state Uttar Pradesh has 10.02 per cent of cattle, 23.4 per cent of buffaloes, 2.34 per cent of sheep, 10.41 per cent of goats and 16.89 per cent of pig population of the country. The state has second place in cattle population, first in buffalo population, and also first in pig population in the country. The state poultry population is 2.4 per cent in total poultry population of the country. Like other parts of the country, district Fatehpur occupies an important role in agriculture economy. There were 3,706,964, buffaloes 3,31,859 cows, 3,12,887 goats, 1,13,074 sheeps and 1,56,387 poultry birds in district Fatehpur during the year 2003, (Anonymous, 2006), which play the important role towards increasing income and

### Key words :

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employment of the farmers and minimizing risk and uncertainty.

## METHODOLOGY

The study is based on survey conducted during March 2009 of Fatehpur district in Central Uttar Pradesh. The multistage stratified random sampling procedure was adopted for the selection of village and milk producers for the study. The two blocks, Malwan and Khajuha were selected in the first stage of satisfaction. Six villages within each block were selected at random. One hundred and twenty households were also selected randomly on the basis of probability proportion of each village falling in the different size groups having below one hectare *i.e.* marginal category, one to two hectares in small and above two hectares in large. The milch animals were selected randomly. Thus, the numbers of households selected in marginal, small and large categories were 64, 34 and 22, respectively. The main objectives of the study was to analyse the cost and returns from milk production per litre cost of different milch animals during lactation period.

## RESULTS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under following heads:

### Total cost of milk production per lactation per animal:

The various cost components included in the rearing of milch animal per lactation for different categories of animal have been presented in Table 1. On an average, the total maintenance cost of rearing milch animal came

to Rs. 22776 and 16694 for buffalo and cow, respectively. Out of which, concentrate cost accounted for 37.4 per cent and 42.6 per cent for buffalo and cow, respectively. A close examination of the data given in table showed that for buffaloes, the total cost of milk production per lactation was highest for large farmers (Rs. 24716) followed by small and marginal farmers Rs. 23709 and 19905, respectively. The cost of milk production per lactation for cow was Rs. 17520, Rs. 16731 and Rs. 15833 for large, small and marginal categories of farmers, respectively. The percentage contribution of concentrate cost to the total cost was highest (39.9 per cent) in case of marginal farmers for buffalo and lowest (42.5 per cent) in case of marginal farmers for cow. The expenditure on green fodder was highest (15.4 per cent) in case of small farmers for buffalo and lowest (14.3 per cent) in case of marginal farmers for cow. In the same manner, dry fodder contributed less to the total feed cost as compared to the green fodder. Labour charges were more in case of cow than the buffalo. Interest on animal value was maximum (6.7 per cent) in case of buffalo as compared to cow (5.1 per cent). The other minor item of cost per lactation have also been shown in Table 1.

### Cost of milk production per litre:

The cost of production milk is directly related to milk production. An analysis of the cost of production of milk is an indicator of profitability of the enterprise. Per litre of milk production has been estimated of different categories of farmers. The per litre cost of milk production for different class of animals for whole lactation is

**Table 1: Cost of milk production of buffalo and cow per lactation per animal maintain by different size groups of farms (in Rs.)**

Cost items	Size groups of farm (in ha.)							
	Buffalo				Cow			
	Marginal	Small	Large	Average	Marginal	Small	Large	Average
<b>Variable cost</b>	17783 (89.3)	21061 (88.8)	22431 (90.8)	20425 (89.6)	14209 (89.9)	15104 (90.3)	15967 (91.1)	15093 (90.4)
Green fodder	2941 (14.8)	3643 (15.4)	3780 (15.3)	3455 (15.1)	2265 (14.3)	2423 (14.5)	2524 (14.4)	2404 (14.4)
Dry fodder	2188 (11.0)	26.59 (11.2)	3720 (15.1)	2856 (12.4)	2141 (13.5)	2115 (12.6)	2582 (14.7)	2279 (13.6)
Concentrates	7951 (39.9)	8853 (37.3)	8640 (35.0)	8482 (37.40)	6720 (42.5)	7252 (43.4)	7345 (41.9)	7106 (42.6)
Labour charges	3423 (17.2)	3955 (16.7)	4250 (17.2)	3876 (17.0)	2412 (15.2)	2773 (16.6)	2924 (16.7)	2703 (16.2)
Veterinary expenses	2280 (6.4)	1950 (8.2)	2040 (8.3)	1757 (7.6)	671 (4.1)	540 (3.2)	590 (3.4)	600 (3.6)
<b>Fixed cost</b>	2122 (10.7)	2649 (11.2)	2284 (9.2)	2351 (10.4)	1624 (10.3)	1626 (9.7)	1553 (8.9)	1601 (9.6)
Interest on animal value	1256 (6.3)	1826 (7.7)	1498 (6.1)	1527 (6.7)	835 (5.3)	875 (5.2)	813 (4.6)	841 (5.1)
Depreciation on fixed assets	865 (4.4)	823 (3.5)	786 (3.2)	825 (3.7)	789 (5.0)	751 (4.5)	741 (4.2)	760 (4.6)
<b>Total</b>	<b>19905 (100)</b>	<b>23709 (100)</b>	<b>24716 (100)</b>	<b>22776 (100)</b>	<b>15833 (100)</b>	<b>16731 (100)</b>	<b>17520 (100)</b>	<b>16694 (100)</b>

Figure in parentheses are the percentage of their respective total

presented in Table 2 the results revealed that the net cost of per buffalo per lactation came to Rs. 19904.55, Rs. 23709.37 and Rs. 24715.52 for marginal, small and large farmers, respectively. The per lactation per cow cost of milk production on marginal, small and large categories of farmers came to Rs. 15832.72, Rs. 16730.55 and Rs. 17519.75, respectively. The per litre cost of milk production for buffalo on marginal, small and large farmers were estimated to be Rs. 12.73, Rs. 12.60 and Rs. 12.55, respectively. On an average, per litre cost of buffalo milk production came to Rs.12.62. While, the cost of milk production per litre was higher (Rs. 12.73) in the case of marginal farmers and lowest in the case of large farmers (Rs.12.55). The per litre cost of milk production for cow was Rs. 11.76, Rs.10.35 and Rs. 10.27 from marginal, small and large farmers respectively. The average total cost and average milk yield per lactation per animal came to Rs. 22776.48 and Rs. 1803.82 litre for buffalo and Rs.16694.34 litre for cow, respectively. Further, the cost of milk production per litre was maximum in case of buffalo due to higher milk production cost per animal as compared to cow. The per litre cost of milk production was slightly higher in case of buffalo than the cow while,

the cost of milk production was also low. Similar results were explained in an investigation conducted by Chandra and Agarwal (2000) in Farukhabad district of Uttar Pradesh.

#### Total cost, total return and net profit per animal per lactation:

The various components of return per cow and per buffalo per lactation for different categories of farmers are presented in Table 3. It can be concluded that total return of buffalo was Rs. 27995.98, Rs. 33790.24 and Rs. 35456.21 on marginal, small and large farmers, respectively. In case of cow, it was Rs. 27461.91, Rs. 25870.08 and Rs. 27453.16 on marginal, small and large farmers, respectively. The contribution to return from milk was the major item of total return which accounted for Rs. 26565.39, Rs. 31971.37 and Rs. 33461.78 on marginal, small and large farmers respectively. While, in case of cow, it was Rs. 20184.90, Rs. 24229.05 and Rs.25576.80 on marginal, small and large farmers, respectively. The share of return from manure and calf value was Rs. 843.13 and Rs. 587.46 and Rs. 1054.34 and Rs. 764.53 and Rs. 1100.00 and Rs. 894.43 on

**Table 2: Cost of milk production per litre different milch animal maintained by different size group of farm (in Rs.)**

Size groups of farm (in ha.)	Total cost (in Rs.)	Total milk production (in lit.)	Cost of milk production/liter	
<b>Buffalo</b>				
Marginal	19904.55	1562.67	Total cost/ total milk production	12.73
Small	23709.37	1880.46	Total cost/ total milk production	12.60
Large	24715.52	1968.34	Total cost/ total milk production	12.55
Average	22776.48	1803.82	Total cost/ total milk production	12.62
<b>Cow</b>				
Marginal	15832.72	1345.66	Total cost/ total milk production	11.76
Small	16730.55	1615.27	Total cost/ total milk production	10.35
Large	17519.75	1705.12	Total cost/ total milk production	10.27
Average	16694.34	1555.35	Total cost/ total milk production	10.79

**Table 3: Total cost, total return and net profit per animal per lactation**

Size groups of farm (in ha.)	Total value of milk	Total value of calf	Total value of manure	Total return	Total cost	Net return	B: C Ratio
<b>Buffalo</b>							
Marginal	26565.39	587.46	843.13	27995.98	19904.55	8091.43	1.40
Small	31971.37	764.53	1054.34	33790.24	23709.37	10080.87	1.42
Large	33461.78	894.43	1100.00	35456.21	24715.52	10740.69	1.43
Average	30666.18	748.81	999.16	31414.14	22776.48	9637.66	1.41
<b>Cow</b>							
Marginal	20184.90	496.34	780.67	21461.91	15832.72	5629.19	1.36
Small	24229.05	685.56	955.47	25870.08	16730.55	9139.53	1.55
Large	25576.80	790.68	1085.68	27453.16	17519.75	9933.41	1.57
Average	23330.25	657.53	940.61	24928.38	16694.34	8234.04	1.49

marginal, small and large farmers, respectively for buffalo while in case of cow it was Rs. 780.67 and Rs. 496.34 and Rs. 955.47 and Rs. 685.56 and Rs. 1085.68 and Rs. 790.68, respectively. The contribution of buffalo on an average return was Rs. 30666.18 from milk, Rs. 748.81 from value of calf and Rs. 999.16 from manure to the average total return Rs. 31414.14 and average net return was Rs. 9637.66 per animal per lactation, respectively. While, in case of cow, on an average return was Rs. 23330.25 from milk, Rs. 657.53 from value of calf and Rs. 940.61 from manure to the average total return of Rs. 24928.38 and average net return was Rs. 8234.04 per animal per lactation, respectively. The on an average benefit cost ratio was higher in case of buffalo than the cow. Similar results were explained in an investigation conducted by Chikara and Gangwar (1975). in Hissar district of Haryana.

**Production, consumption and marketed surplus of milk:**

Total milk production, consumption of milk by calf and household and marketed surplus has been presented in Table 4. Total production of milk was found 2987.97 litre per day, which contributed 1809.76 litres (60.57%) and 1178.21 litre (39.43%) by buffalo and cow, respectively. Out of total milk production per day the consumption of milk by calf and household was 36.68 per cent. Out of total milk produced per day by the buffalo 31.83 per cent was consumed by calf and household and 68.17 per cent was market surplus. While, in the case of cow, the consumption of milk by calf and household was 44.13 per cent and marketed surplus was 55.87 per cent. This analysis reveals that the proportion of marketed surplus was maximum for buffalo (68.17 per cent and it was minimum in cow (55.87 per cent) while for household consumption the trend was quit reverse.

It was observed that overall consumption of milk by calf and household was found to be 1096 litre, which accounted 36.68 per cent of total production and total marketed surplus 1891.97 litre, contributing 63.32 per cent

**Table 4: Production consumption and marketed surplus under different categories of milch animal**

Categories of milch animals	Total milk production per day (in litre)	Consumption of milk by calf and household	Marketed surplus (in litre)
Buffalo	1809.76 (60.57)	576.00 (31.83)	1233.76 (68.17)
Cow	1178.21 (39.43)	520.00 (44.13)	658.21 (55.87)
Total	2987.97 (100)	1096.00 (36.68)	1891.97 (63.32)

Figure in parentheses are the percentage of their respective total

to the total production of 2987.97 litre. Similar results were explained in an investigation conducted by Rai and Gangwar (1976) in Haryana.

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