An Economic Analysis of Cow Milk Production in Different Seasons in Faizabad District of Eastern Uttar Pradesh

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ABSTRACT

The livestock enterprise is positioned to be a major growth area in agriculture sector. It is increasingly recognized that dairying could play a more constructive role in promoting rural welfare and reducing poverty. Besides, milk cow dung is an important input as organic manure for crop production. It is also widely used as fuel in rural areas. Keeping in view the importance of livestock among farming community this study was carried out in five villages of Faizabad district of Eastern Uttar Pradesh. For this study hundred milk producing households were selected randomly. The highest feeding cost was worked out in summer followed by winter and rainy seasons. In winter, summer and rainy seasons, it was Rs. 54.74, 57.76 and 51.29 on marginal; Rs. 49.86, 52.10 and 45.67 on small and Rs.45.09, 47.36 and 39.98 respectively on medium herd size groups. The net maintenance cost of per milch cattle per day was estimated by deducting the income from dung from the total maintenance cost. In winter, summer and rainy seasons, it was Rs. 76.47, 74.85 & 73.50 on marginal, Rs. 69.78, 68.94 & 66.51 on small and Rs. 64.12, 63.23 & 60.21, respectively on medium herd size groups. The cost benefit ratio per milch cow per day was 1.36, 1.41 & 1.46 in winter, summer and rainy seasons, respectively on marginal herd size groups. The same trend was found in small and medium herd size groups. The women participation in milk production was higher in feeding, milking, compost making and drinking compared to other practices. The major constraints in dairy are inadequate knowledge about balanced feeding, lack of vaccination at appropriate time, unavailability of artificial insemination (AI) facility on time and low price of milk.

Key words: *Milk production; Cost, Returns; Employment; Constraints;*

Livestock are integral part of farming system in India. This sector is socially and economically vibrant in the country due to the multi-functionality of livestock performing output, input, asset and socio-cultural function. Implementation of dairy development programmes and adopting improved dairy farming technologies have increased milk production in India from 17 million tonnes in 1950-51 to 155.50 million tonnes in 2015-16 (Department of Animal Husbandry, Dairying & Fisheries, Govt. of India). India ranks first in milk production, accounting for 18.5 per cent of world production (*GOI, 2016*). The per capita per day availability of milk has reached 337 g in 2015-16, which is higher than the minimum nutritional requirement of 282 grams as recommended by the World Health Organisation. The high income elasticity of demand for milk and milk products make the dairy sector vibrant and dynamic in nature. Consequently, the demand for milk is expected to increase to 191 million tonnes by 2020. The poor resource condition under small and landless dairy production system and poor nutrition management under these conditions often results in deficiency of nutrition in high yielding dairy cow and buffaloes. Thereby, the milk producers unable to obtain potential milk yield. The livestock play important role in the economy of Indian agriculture. Under the mixed farming system, the Indian farmers maintain a large number of milch cattle. In the rural areas, cow is mostly maintained for producing good quality draft animals as well as for milk production. Livestock rearing is important

for increasing the productivity of agriculture. It provides food, fuel, fertilizer and draft a power to sustain our rural economy. It is increasingly recognized that dairying could play a more constructive role in promoting rural welfare and reducing poverty. The contribution of livestock sector to country's Growth Domestic Product was 3.90 in 2013-14 at current price. The livestock sector plays a major role in the growth of agriculture industry. Cow dung is an important input as organic manure for crop production and also widely used as fuel in rural areas. Cattle also serves as an insurance cover to the poor households being sold during hardship. Diversification the crop based rural economy into an animal husbandry mixed farming system must be encouraged for rapid economic development and for generating equitable income and employment in the economy. The present study was undertaken with the following specific objectives: (i) to work out the maintenance cost of milch cattle in different seasons. (ii) to analyse the economics of cow milk production in different seasons. (iii) to carry out the women participation in dairy farming and to undertake the constraints in dairying farming.

METHODOLOGY:

The present study was conducted in Faizabad district of eastern Uttar Pradesh. For collection of data the selection of ultimate unit of the sample was selected purposively because of convenience of investigator. Faizabad district comprises eleven blocks, out of these the Bikapur block was selected for this study. A list of all villages was prepared and arranged in ascending order on the basis of availability of number of milch animals. The five villages were randomly selected for this purpose from the set of villages. The total households of the selected village were post- stratified according to the number of animals into marginal (one milch animals), small (two milch animals) and medium (three & above milch animals) with the view to study various economic aspects of dairy farming in different socio economic strata. From the villages, hundred dairy households were selected through simple random sampling without replacement each category. The information on various aspects of dairy farming was collected such as green fodder, dry fodder, concentrates and their prices, labour charges, veterinary and breeding expenses and miscellaneous. The primary data on various aspects of dairy farming was collected from the dairy households through detailed questionnaire.

RESULTS AND DISCUSSION

Cost of milk production: The data in Table 1 highlighted that the cost of green fodder per milch cattle per day was Rs 25.19, 22.81 and 24.44 in winter, summer and rainy seasons, respectively on marginal. In case of small, it was Rs. 24.06, 21.50 and 22.87 in winter, summer and rainy seasons, respectively. While the cost of green fodder per cattle per day in winter, summer and rainy seasons was Rs. 22.44, 20.81 and 21.38 respectively on medium. It is thus clear that the cost of green fodder per milch cattle per day was higher in winter seasons followed by rainy and summer seasons on all the herd size groups. The cost of dry fodder per milch cattle per day was much lower in rainy seasons as compared to winter and summer seasons on all the herd size groups. It was due to the reasons that the lower quantity of dry fodder was fed to milch cattle in rainy seasons due to the higher availability of green fodder in this seasons on all the herd size groups. The total feeding cost of green fodder, dry fodder and concentrates (including minerals) constituted the most important items of the total maintenance cost accounting for 64.16 to 74.01 per cent of the total cost. The total feeding cost per milch cattle per day was highest in summer seasons followed by winter and rainy seasons on the entire herd size groups. In winter, summer and rainy seasons, it was Rs. 54.74, 57.76 and 51.29 respectively on marginal; Rs. 49.86, 52.10 and 45.67, respectively on small and Rs.45.09, 47.36 and 39.98 respectively on medium herd size groups. The cost of human labour per milch cattle per day was comparatively higher in rainy seasons as compared to winter and summer seasons on all the herd size groups. This may be attributed to the fact that the actual time spent by farmers of all the herd size groups was higher in rainy seasons due to animal grazing in field. The human labour in winter, summer and rainy seasons was Rs. 17.32, 12.68 and 17.80 respectively on marginal; Rs. 16.68, 13.60 and 17.60 respectively on small and Rs. 16.04, 12.88 and 17.24 respectively on medium herd size groups. This shows that the cost of human labour decreased with increased in herd size groups. The interest on animal value per milch cattle per day was higher on marginal and lower on medium herd size groups. It was Rs. 4.28, 3.29 and 2.84 on marginal small and

Table 1. Maintenance cost of milk production per milch cow per day in different seasons (in Rs.)

Items of cost	Marginal (one milch animal)				Small (two milch animals)				Medium (>2 milch animals)			
	Winter	Summer	Rainy	Overall	Winter	Summer	Rainy	Overall	Winter	Summer	Rainy	Overall
Green fodder	25.19	22.81	24.44	24.15	24.06	21.5	22.87	22.81	22.44	20.81	21.38	21.54
	(31.62)	(29.23)	(31.86)	(30.91)	(33.20)	(30.01)	(30.05)	(32.08)	(33.89)	(31.85)	(34.31)	(33.33)
Dry fodder	17.55	18.45	15.6	17.20	15.30	17.10	13.80	15.40	14.40	15.30	12.60	14.10
	(22.03)	(23.64)	(20.34)	(22.01)	(21.11)	(23.87)	(19.94)	(21.65)	(21.74)	(23.42)	(20.22)	(21.82)
Concentrate	12.00	16.5	11.25	13.25	10.50	13.50	9.00	11.00	8.25	11.25	6.00	8.50
	(15.06)	(21.14)	(14.67)	(16.95)	(14.49)	(18.84)	(13.00)	(15.47)	(12.46)	(17.22)	(9.63)	(13.16)
Total feeding cost	54.74	57.76	51.29	54.60	49.86	52.10	45.67	49.21	45.09	47.36	39.98	44.14
	(68.71)	(74.01)	(66.87)	(69.87)	(68.80)	(72.72)	(65.99)	(68.09)	(68.09)	(72.49)	(64.16)	(68.31)
Human labour	17.32	12.68	17.8	15.93	16.68	13.6	17.6	15.96	16.04	12.88	17.24	15.39
	(21.74)	(16.25)	(23.21)	(20.39)	(23.01)	(18.98)	(25.43)	(22.44)	(24.22)	(19.71)	(27.67)	(23.82)
Interest on animal value	4.28	4.28	4.28	4.28	3.29	3.29	3.29	3.29	2.84	2.84	2.84	2.84
	(5.37)	(5.48)	(5.58)	(5.48)	(4.54)	(4.59)	(4.75)	(4.63)	(4.29)	(4.35)	(4.56)	(4.39)
Housing expenditure	2.18	2.18	2.18	2.18	1.75	1.75	1.75	1.75	1.50	1.50	1.50	1.50
	(2.74)	(2.79)	(2.84)	(2.79)	(2.41)	(2.45)	(2.53)	(2.46)	(2.27)	(2.30)	(2.41)	(2.32)
Miscellaneous	1.15	1.15	1.15	1.15	0.90	0.90	0.90	0.90	0.75	0.75	0.75	0.75
	(1.44)	(1.47)	(1.50)	(1.47)	(1.24)	(1.26)	(1.30)	(1.27)	(1.13)	(1.15)	(1.20)	(1.16)
Total cost	79.67	78.05	76.70	78.14	72.48	71.64	69.21	71.11	66.22	65.33	62.31	64.62
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Income (dung)	3.20	3.20	3.20	3.20	2.70	2.70	2.70	2.70	2.10	2.10	2.10	2.10
Net cost	76.47	74.85	73.5	74.94	69.78	68.94	66.51	68.41	64.12	63.23	60.21	62.52

Figures in parenthesis indicate percentage to total cost.

Table 2. Economics of Cow milk production per milch animals per day in deferent seasons (Rs.)

Particulars	Marginal (one milch animal)				Small (two milch animals)				Medium (>2 milch animals)			
	Winter	Summer	Rainy	Overall	Winter	Summer	Rainy	Overall	Winter	Summer	Rainy	Overall
Net cost (Rs.)	76.47	74.85	73.5	74.94	69.78	68.94	66.51	68.41	64.12	63.23	60.21	62.52
Yield (lit.)	4.97	4.69	5.41	5.02	4.40	4.14	4.68	4.41	4.00	3.85	4.58	4.14
Price (Rs.)	21.88	23.42	20.73	22.01	22.97	24.53	21.86	23.12	23.47	24.85	22.03	23.45
GR (Rs.)	108.74	109.84	112.15	110.24	101.07	101.56	102.31	101.64	93.88	95.67	100.90	96.82
NP (Rs.)	32.27	34.99	38.65	35.30	31.29	32.61	35.79	33.23	29.76	32.44	40.69	34.30
Cost/liter	15.39	15.96	13.59	14.93	15.86	16.65	14.21	15.51	16.03	16.42	13.15	15.10
B:C ratio	1.36	1.41	1.46	1.41	1.39	1.42	1.49	1.43	1.42	1.46	1.62	1.50

medium herd size group respectively. The interest on animal value on different seasons on all the herd size groups accounted for 4.29 to 5.58 per cent of the total maintenance cost. The housing expenditure on per milch animal per day was accounting for 2.27 to 2.79 per cent of the total maintenance cost on all the seasons. The miscellaneous expenses accounted for 1.13 to1.50 per cent of the total maintenance cost on all the seasons. The net maintenance cost of per milch cattle per day was estimated by deducting the income from dung from the total maintenance cost. The net maintenance cost per milch cow per day was higher in winter season and lowest in the rainy season on all the herd size groups. In winter, summer and rainy seasons, it was Rs. 76.47, 74.85 & 73.50 respectively on marginal, Rs. 69.78, 68.94 & 66.51 respectively on small and Rs. 64.12, 63.23 &60.21 respectively on medium herd size groups. The results of this study in line with the findings given by *Jaiswal et. al. 2015), Anbukkani, P. (2016)* and *Lalrinsangpuii et. al. (2016).*

Economics of cow milk production : The Data in Table 2 resulted that the daily milk yield per milch cattle on marginal size was higher in rainy season i.e. 5.41 litre as compared to winter (4.97 litre) and summer (4.69 litre) season. Similarly, the daily milk yield was higher in rainy as compared to other seasons on other herd size

Table 3. Employment generation in Dairy Farming

Particulars	Female (%)	Male (%)
Feeding of animals	94.45	5.55
Grazing of animals	13.25	86.75
Milking of animals	92.16	7.84
Drinking of animals	87.05	12.95
Bathing of animals	19.38	80.62
Arrangement of ration for animals	82.75	17.25
Compost making	88.78	11.22
Maintenance of cattle shed	8.9	91.1
Supervision	12.15	87.85

Table 4. Constraints faced by milk producers.

Constraints	%	Ranks
Inadequate green fodder	54.12	III
Inadequate dry fodder	32.26	IV
High cost of concentrate feed	65.18	II
Lack of knowledge (balanced feed)	75.25	I
Unavailability of AI facility on time	66.27	II
Repeat breeding	36.25	V
Problems of heat detection	45.23	IV
Disease infection is higher	33.63	VI
Lack of vaccination at proper time	70.21	I
Lack of veterinary facility/ doctor	55.71	III
Lack of credit facility	32.11	V
Low price of milk	76.31	I
Unavailability of risk cover	55.12	III
Unavailability of labour	36.12	IV
High cost of labour	65.12	II

groups. The price of milk per litre received by the producer was highest in summer followed by winter and rainy seasons in all the herd size groups. The average milk price per litre in summer, winter and rainy it was Rs. 23.42, 21.88 and 20.73 on marginal; Rs. 24.53, 22.97 and 21.86 on small; Rs. 24.85, 23.47 and 22.03 on medium herd size groups respectively.

The net profit of milk production per milch cow per day in summer, winter and rainy it was Rs. 32.27, 34.99 and 38.65 on marginal; Rs. 31.29, 32.61 and 35.79 on small; Rs. 29.76, 32.44 and 40.69 on medium herd size groups respectively. The net profit of milk production per milch cow per day was highest in rainy season followed by summer and winter seasons on all the herd size groups .The cost of milk production is an indicator of profitability of the enterprise. The per litre cost of milk production was highest in summer seasons followed by winter and rainy seasons on all the herd size groups. In summer, winter and rainy seasons, it was Rs. 15.96, 15.39 and 13.59 respectively on marginal; Rs. 16.65, 15.86 and 14.21, respectively on small and Rs.16.42, 16.03 and 13.15 respectively on medium herd size groups *Employment generation in dairy farming :* The Table 3 highlighted that Dairy farming is a labour intensive enterprise and lobour requirement for different activities are met out by the family members and hired labour. The study showed that the participation of women in milk production was 94.45. 13.25, 92.16, 87.05, 19.38, 82.75, 88.78, 08.90 and 12.15 per cent of the total (100) respondents on feeding, grazing, milking, drinking, bathing, arrangement of ration, compost making, maintenance of cattle shed and supervision, respectively. These findings are in line with the findings given by *Meena et.al (2010)* and *Singh, K .S. et.al (2011). Constraints faced by milk producers* : The Data in Table 4 resulted that there were many constraints recorded in the study and major constraints are inadequate knowledge about balanced feeding, high cost of concentrate feed, lack of vaccination at appropriate time, unavailability of artificial insemination (AI) facility on time, low price of milk and high cost of labour faced by dairy farmers in the study area .

These results are in line with the findings given by *Bhangaroo K.S. (2007), Meena et.al (2010)* and *Singh, K .S. et.al (2011).*

CONCLUSION

The study concluded that the feed cost, human labour, housing expenditure, interest on animal value, miscellaneous, total cost net cost and milk production were highest in summer, winter and rainy season respectively for all the herd size groups. The net maintenance cost per milch cow per day was higher in winter season and lowest in the rainy season on all the herd size groups. In winter, summer and rainy seasons, it was Rs. 76.47, 74.85 & 73.50 respectively on marginal, Rs. 69.78, 68.94 & 66.51 respectively on small and Rs. 64.12, 63.23 &60.21 respectively on medium herd size groups.

The net profit of milk production per milch cow per day in summer, winter and rainy it was Rs. 32.27, 34.99 and 38.65 on marginal; Rs. 31.29, 32.61 and 35.79 on small; Rs. 29.76, 32.44 and 40.69 on medium herd size groups respectively. The net profit of milk production per milch cow per day was highest in rainy season followed by summer and winter seasons on all the herd

size groups. The women participation in millk production was higher in feeding, milking, compost making, drinking, ration and compared to other practices. Provision for opening of more artificial insemination centers, arrangement for better health care and vaccination facility should be provided timely for high milk production. The livestock sector is positioned to be a major growth area in agriculture industry. It is increasingly recognized that daring could play a more constructive role in promoting rural welfare and reducing poverty.

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