



COST AND RETURN FROM MILK PRODUCTION AMONG TRIBALS (GUJJARS) IN DIFFERENT DISTRICTS OF JAMMU REGION OF J&K STATE IN INDIA

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ABSTRACT : The present investigation is an attempt to study the cost and return structure of milk production by one of the well known pastoral communities- the Gujjars of the Jammu and Kashmir state. The study was undertaken in the Jammu region (Subtropics). About 200 household was studied in different districts of Jammu region and it was found that the daily net maintenance cost per milking buffalo in different farm size groups on overall Jammu regions was Rs. 138.44 for small farms, Rs. 134.94 for medium farms, Rs. 138.23 for large farms and Rs. 137.49 for overall respectively. The corresponding net returns per milking buffalo were Rs. 37.03, Rs. 39.55, Rs. 41.50 and Rs. 36.34 for small farms, medium farms, large farms and overall respectively. The net returns were much higher for milch buffaloes in medium farms.

Key words: Cost and returns, milk production, fixed cost, variable cost

INTRODUCTION

Agriculture and animal husbandry are the foremost occupations that man has adopted as a source of his livelihood right from beginning of civilization. Importance of these occupations can be realized with the fact that very existence of human beings is dependent on food, which is being provided by the agriculture and animal husbandry. Even today, the development of agriculture and animal husbandry holds the key to the development of Indian economy in general and rural economy in particular. Milk production is an important activity of Indian agriculture playing important role in the Indian economy and socio-economic development of the country. The fact that dairying could play a more constructive role in promoting rural welfare and reducing poverty is increasingly being recognized. Milk and milk products are most widely acceptable form of animal protein in India due to dominance of vegetarian population as milk is a wholesome food and capable of being produced in any part of India under varying agro-climatic conditions. The milk production in India is growing at the rate of 4 per cent whereas in the world it is increasing at the rate of 1 per cent only, therefore, India is the world's largest milk producer touching the heights of 108.8 million tones milk production during 2008-09 (Economic survey, 2008-09). Consequently, per capita per day availability of milk in India has increased from 120 grams (g) in 1960 to 258 g in 2008-09, meeting the minimum nutritional requirement of 250 g as recommended by the Indian Council of Medical Research. Milk besides being a source of income and employment, also provides nutrition to the rural poor as it has nearly all essential nutrients needed in human diet. Almost 80% of the 479 million livestock are held by small and marginal farming households, there by making the livestock rearing as integral component of their livelihood system (Sharma *et al.*,2006) At present India contributes 15 per cent of the total global milk production. Out of this, 55 per cent is contributed by buffalo milk (Economic survey, 2008-09).

As per the estimates of Integrated Sample Survey (ISS) of major livestock products, the production of milk in Jammu and Kashmir state for the year 2007-08 was estimated at 1515.29 thousand metric tonnes. Presently the per capita availability of milk is about 341 grams per day (Anonymous, 2009). In Jammu region the major milk producer were Gujjars. The present investigation is an attempt to study the economic aspects of dairying of one of the well known pastoral communities- the Gujjars of the Jammu and Kashmir state. The Gujjars deals in milk production, residing mostly in Subtropical zone (Jammu region). Their main source of income is dairying.

METHODOLOGY

Four districts of Jammu region namely Jammu, Udhampur, Rajouri and Poonch were selected purposively and from each district two blocks were also selected purposively. One village was selected purposively from each block, where the population of the Gujjars involved in dairy was highest. From each block 25 Gujjar dairy farmers were selected randomly to constitute a total sample size of 200 farmers, based on the classification into three groups on the basis of number of milch animals (cube root frequency method) namely small farms (up to 5), medium farms (6-10) and large farms (10 & above). Data on cost and return was collected by personal interview method with the help of specially structured and pre-tested schedule. The data collected was subjected to analysis for examining the cost and return from the milk production. Various cost concept like fixed cost, variable cost (feed and fodder cost, labour cost, Veterinary cost and miscellaneous cost), interest on fixed cost @7.5%, Depreciation (Straight line method by Rao, 1991) were used. The fixed cost was apportioned on the basis of standard Animal Units (Patel *et al.*, 1981).

RESULT AND DISCUSSION

In any enterprise, profit is the main motive of the entrepreneur and he tries to optimize his profit using limited resources. Thus, the success of any enterprise is based on the extent of its profitability and milk production is not an exception. In the present study efforts has been made to estimate costs and returns from milk production.

Cost and return of milk production in Jammu district

The perusal of the data depicted in Table 1 revealed that major items of feed cost and fodder were grasses from graze land, green fodder grown in field, cereal by product paddy straw, groundnut oil cake, rice bran, wheat bran, gram husk and readymade cattle feed. Value of these feed and fodders amounted to Rs. 82.81, Rs. 80.78, Rs. 88.25 and Rs. 84.54 per animal for small farms, medium farms, large farms and overall, which was 58.52 per cent, 59.79 per cent, 64.63 per cent and 61.21 per cent of total cost, respectively. The next comes labour which was needed to feed the animal and taking animal for grazing etc. In general Rs. 43.31 (30.68 per cent), Rs. 41.31 (30.58 per cent), Rs. 35.04 (25.06 per cent) and Rs. 39.60 (28.67) per animal were needed to look after the milking animal, respectively. Labour cost was higher for small farms, which was due to the involvement of whole family labour in the production of milk. Here disguised unemployment observed. The third major item of cost was fixed cost which had Rs. 10.93 (7.72 per cent), Rs. 10.43 (7.72 per cent), Rs. 11.23 (8.22 per cent) and Rs 10.94 (7.92 per cent) of total cost for small farms, medium farms, large farms and overall, respectively. The overall percentage of veterinary cost item was only 1.22 per cent the total cost. The rest of the cost items consisted of day to day expenses which were grouped under miscellaneous expenses which had least of 0.98 per cent on overall basis. The total cost of milk production per animal per day was Rs. 141.5, Rs. 135.11, Rs. 136.55 and Rs. 138.12 for small, medium, large and overall farms, respectively. The cost per animal was lower and net returns per animal were higher for large farms, which was due to the economies of large scale.

Table 1 further indicated that the return from the milking buffalo comprises of return from milk and dung. The gross return was Rs. 181.88, 175.20, Rs. 178.29 and Rs. 178.98 per day per animal leaving a profit margin of Rs. 40.37, Rs. 40.09, Rs. 41.74 and Rs. 40.86 for small, medium, large and overall farms, respectively.

Cost and return of milk production in Udhampur district

Value of the feed and fodders amounted to Rs. 79.18, Rs. 89.48, Rs. 90.85 and Rs. 86.74 per animal for small farms, medium farms, large farms and overall, which was 58.81 per cent, 66.01 per cent, 65.27 per cent and 63.93 per cent of total cost, respectively (Table 2). The next comes labour which was needed to feed the animal and taking animal for grazing etc. In general Rs. 41.21 (30.61 per cent), Rs. 33.91 (25.02 per cent), Rs. 36.71 (26.37 per cent) and Rs. 36.23 (26.70 per cent) per animal were needed to look after the milking animal, respectively. The third major item of cost was fixed cost which had Rs. 11.03 (8.19 per cent), Rs. 10.03 (7.40 per cent), Rs. 9.86 (7.08 per cent) and Rs 10.30 (7.59 per cent) of total cost for small farms, medium farms, large farms and overall, respectively. The overall percentage of veterinary cost item was only 1.28 per cent the total cost. The rest of the cost items consist of day to day expenses which was group under miscellaneous expenses which had least of 0.49 per cent on overall basis. The total cost of milk production per animal per day was Rs. 134.64, Rs.135.55, Rs. 139.19 and Rs. 135.67 for small, medium, large and overall farms, respectively.

Table 2 further indicated that the return from the milking buffalo comprises of return from milk and dung. The gross return was Rs. 168.34, Rs. 174.15, Rs. 174.42 and Rs. 172.55 per day per animal leaving a profit margin of Rs.33.70, Rs. 38.60, Rs. 35.23 and Rs. 36.88 for small, medium, large and overall farms, respectively. The overall net returns per day per milking buffalo in Udhampur district was Rs. 36.88 which was highest in medium farms (Rs. 38.60) due to low labour cost and higher return from the sale of milk.

Cost and return of milk production in Rajouri district

Table 3 indicated that the major items of feed cost and fodder were green fodder grown in field, grasses from graze land, cereal by product paddy straw, groundnut oil cake, rice bran, wheat bran, gram husk and readymade cattle feed. Value of these feed and fodders amounted for Rs.88.34, Rs. 87.38, Rs. 101.80 and Rs. 88.74 per animal for small farms, medium farms, large farms and overall, which was 62.43 per cent, 64.88 per cent, 68.68 per cent and 63.02 per cent of total cost, respectively. The next comes labour which was needed to feed the animal and taking animal for grazing etc. In general Rs. 38.14 (26.95 per cent), Rs. 34.71 (25.77 per cent), Rs. 34.50 (23.27 per cent) and Rs. 37.52 (26.65 per cent) per animal were needed to look after the milking animal, respectively. The third major item of cost was fixed cost which had Rs. 11.81 (8.35 per cent), Rs. 10.19 (7.57 per cent), Rs. 9.78 (6.60 per cent) and Rs 11.50 (8.17 per cent) of total cost for small farms, medium farms, large farms and overall, respectively. The overall percentage of veterinary cost item was only 1.13 per cent the total cost. The rest of the cost items consisted of day to day expenses which was group under miscellaneous expenses which had least of 1.04 per cent on overall basis. The total cost of milk production per animal per day was Rs. 141.50, Rs.134.67, Rs. 148.23 and Rs. 140.81 for small, medium, large and overall farms, respectively.

From Table 3 it was further observed that the return from the milking buffalo comprises of return from milk and dung. The gross return was Rs. 1177.68, Rs. 176.95, Rs. 186.03 and Rs. 177.91 per day per animal leaving a profit margin of Rs.36.18, Rs. 42.28, Rs. 37.80 and Rs. 37.10 for small, medium, large and overall farms, respectively.

Cost and return of milk production in Poonch district

Value of the feed and fodders amounted for Rs.82.62, Rs. 81.70, Rs. 95.58 and Rs. 83.07 per animal for small farms, medium farms, large farms and overall, which was 61.00 per cent, 62.74 per cent, 67.21 per cent and 61.39 cent of total cost, respectively (Table 4). The next comes labour which was needed to feed the animal and taking animal for grazing etc. In general Rs. 37.35(27.57 per cent), Rs. 35.58 (27.32 per cent), Rs. 34.93 (24.53 per cent) and Rs. 37.11 (27.43 per cent) per animal was needed to look after the milking animal, respectively. The third major item of cost was fixed cost which had Rs. 12.24 (9.04 per cent), Rs. 9.99 (7.67 per cent), Rs. 9.66 (6.78 per cent) and Rs 11.95 (8.83 per cent) of total cost for small farms, medium farms, large farms and overall, respectively. The overall percentage of veterinary cost item was only 1.22 per cent the total cost. The rest of the cost items consist of day to day expenses which was group under miscellaneous expenses which had least of 1.13 per cent on overall basis. The total cost of milk production per animal per day was Rs. 135.45, Rs.130.23, Rs. 142.40 and Rs. 135.31 for small, medium, large and overall farms, respectively.

Further Table 4 indicated that the return from the milking buffalo comprises of return from milk and dung. The gross return was Rs. 172.91, Rs. 170.93, Rs. 201.11 and Rs. 173.89 per day per animal leaving a profit margin of Rs. 37.46, Rs. 40.70, Rs. 58.71 and Rs. 38.58 for small, medium, large and overall farms, respectively.

Cost and return of milk production in overall Jammu region

Table 5 shows that value of the feed and fodders amounted to Rs.84.23, Rs. 86.81, Rs. 90.15 and Rs. 85.77 per animal for small farms, medium farms, large farms and overall, which was 60.84 per cent, 64.33 per cent, 65.22 per cent and 62.38 cent of total cost, respectively. The next comes labour which was needed to feed the animal and taking animal for grazing etc. In general Rs. 39.06 (28.21 per cent), Rs. 35.68 (26.44 per cent), Rs. 35.28 (25.52 per cent) and Rs. 37.62 (27.36 per cent) per animal was needed to look after the milking animal, respectively. The third major item of cost was fixed cost which had Rs. 11.74 (8.48 per cent), Rs. 10.13 (7.51 per cent), Rs. 10.79 (7.81 per cent) and Rs 11.18 (8.13 per cent) of total cost for small farms, medium farms, large farms and overall, respectively. The overall percentage of veterinary cost item was only 1.21 per cent the total cost. The rest of the cost Items consist of day to day expenses which was group under miscellaneous expenses which had least of 0.91 per cent on overall basis. The total cost of milk production per animal per day was Rs. 138.44, Rs.134.94, Rs. 138.23 and Rs. 137.49 for small, medium, large and overall farms, respectively. The cost was highest in small farms due to intensive labour used.. Though the only source of income for Gujjars in Jammu and Udhampur district was milk production and involvement of the whole family in the milk production increases the family labour cost of overall Jammu region. The total feed cost was constituted 62.38 per cent of the overall total cost, which was highest in the large farms due to the higher expenditure on concentrates and also due to large number of milking animal kept by the Gujjars belong to this group in Jammu district. The concentrate was major cost component of total feed cost in all herd size. The fixed cost was higher in small farms due to higher fixed investment. Labour cost was higher for small farms, which was due to the involvement of whole family labour in the milk production.

The return from the milking buffalo comprises of return from milk and dung as shown in Table 5. The gross return was Rs. 175.47, Rs. 174.49, Rs. 179.73 and Rs. 173.83 per day per animal leaving a profit margin of Rs. 37.03, Rs. 39.55, Rs. 41.50 and Rs. 36.34 for small, medium, large and overall farms, respectively. The overall net returns per milking buffalo in Jammu region was Rs. 36.24 which was highest in large farms (Rs. 41.50) due to higher expenditure on concentrate which increases cost and also return due to higher productivity per animal.

**Table 1 Cost and return of milk production in Jammu district
(Rs./animal/day)**

Particulars/size of herd	Small	Medium	Large	Overall
Fixed Cost				
Depreciation on fixed assets	4.27(3.02)	3.98(2.95)	3.74(2.74)	3.99(2.89)
Interest on investment	6.66(4.71)	6.45(4.77)	7.49(5.49)	6.95(5.03)
Total fixed cost	10.93(7.72)	10.43(7.72)	11.23(8.22)	10.94(7.92)
Variable cost				
Green fodder/grazing	22.41(15.84)	22.14(16.39)	22.01(16.12)	22.19(16.07)
Dry fodder	25.57(18.07)	25.37(18.78)	25.24(18.48)	25.39(18.38)
Concentrates	34.83(24.61)	33.27(24.62)	41.00(30.03)	36.96(26.76)
Total feed cost	82.81(58.52)	80.78(59.79)	88.25(64.63)	84.54(61.21)
Medicine and veterinary care	2.11(1.49)	1.59(1.18)	1.34(0.98)	1.69(1.22)
Miscellaneous expenses	2.25(1.59)	1.00(0.74)	0.69(0.51)	1.35(0.98)
Total labour cost	43.31(30.68)	41.31(30.58)	35.04(25.66)	39.60(28.67)
Total variable cost	130.58(92.28)	124.68(92.28)	125.32(91.78)	127.18(92.08)
Total cost	141.51(100.00)	135.11(100.00)	136.55(100.00)	138.12(100.00)
Returns				
From milk	179.98	173.73	177.61	177.66
From dung	1.90	1.47	0.68	1.32
Gross return	181.88	175.20	178.29	178.98
Net return (15-12)	40.37	40.09	41.74	40.86

Note: Figures in parentheses indicate percentage to gross cost

Table 2 Cost and return of milk production in Udhampur district
(Rs./animal/day)

Particulars/size of herd	Small	Medium	Large	Overall
Fixed cost				
Depreciation on fixed assets	4.24(3.15)	3.79(2.80)	3.48(2.50)	3.89(2.87)
Interest on investment	6.79(5.04)	6.24(4.60)	6.38(4.58)	6.41(4.72)
Total fixed cost	11.03(8.19)	10.03(7.40)	9.86(7.08)	10.30(7.59)
Variable cost				
Green fodder/grazing	22.43(16.66)	28.76(21.22)	29.60(21.27)	27.07(19.95)
Dry fodder	22.61(16.79)	23.95(17.67)	24.25(17.42)	23.61(17.40)
Concentrates	34.14(25.36)	36.77(27.13)	37.00(26.58)	36.06(26.58)
Total feed cost	79.18(58.81)	89.48(66.01)	90.85(65.27)	86.74(63.93)
Medicine and veterinary care	2.21(1.64)	1.58(1.17)	1.30(0.93)	1.73(1.28)
Miscellaneous expenses	1.01(0.75)	0.55(0.41)	0.47(0.34)	0.67(0.49)
Total labour cost	41.21(30.61)	33.91(25.02)	36.71(26.37)	36.23(26.70)
Total variable cost	123.61(91.81)	125.52(92.60)	129.33(92.92)	125.37(92.41)
Total cost	134.64(100.00)	135.55(100.00)	139.19(100.00)	135.67(100.00)
Returns				
From milk	166.30	172.88	173.59	171.11
From dung	2.04	1.27	0.83	1.44
Gross return	168.34	174.15	174.42	172.55
Net return (15-12)	33.70	38.60	35.23	36.88

Note: Figures in parentheses indicate percentage to Gross cost]

Table 3 Cost and return of milk production in Rajouri district
(Rs./animal/day)

Particulars/size of herd	Small	Medium	Large	Overall
Fixed cost				
Depreciation on fixed assets	3.89(2.75)	3.63(2.70)	3.69(2.49)	3.84(2.73)
Interest on investment	7.92(5.60)	6.56(4.87)	6.09(4.11)	7.66(5.44)
Total fixed cost	11.81(8.35)	10.19(7.57)	9.78(6.60)	11.50(8.17)
Variable cost				
Green fodder/grazing	29.87(21.11)	30.56(22.69)	32.30(21.79)	30.06(21.35)
Dry fodder	21.03(14.86)	20.82(15.46)	21.00(14.17)	21.00(14.91)
Concentrates	37.44(26.46)	36.00(26.73)	48.50(32.72)	37.68(26.76)
Total feed cost	88.34(62.43)	87.38(64.88)	101.80(68.68)	88.74(63.02)
Medicine and veterinary care	1.63(1.15)	1.39(1.03)	1.51(1.02)	1.59(1.13)
Miscellaneous expenses	1.58(1.12)	1.00(0.74)	0.64(0.43)	1.46(1.04)
Total labour cost	38.14(26.95)	34.71(25.77)	34.50(23.27)	37.52(26.65)
Total variable cost	129.69(91.65)	124.48(92.43)	138.45(93.40)	129.31(91.83)
Total cost	141.50(100.00)	134.67(100.00)	148.23(100.00)	140.81(100.00)
Returns				
From milk	175.56	175.51	185.00	175.93
From dung	2.12	1.44	1.03	1.98
Gross return	177.68	176.95	186.03	177.91
Net return (15-12)	36.18	42.28	37.80	37.10

Note: Figures in parentheses indicate percentage to Gross cost

**Table 4 Cost and return of milk production in Poonch district
(Rs./animal/day)**

Particulars/size of herd	Small	Medium	Large	Overall
Fixed cost				
Depreciation on fixed assets	3.98(2.94)	3.70(2.84)	3.50(2.46)	3.94(2.91)
Interest on investment	8.26(6.10)	6.29(4.83)	6.16(4.33)	8.01(5.92)
Total fixed cost	12.24(9.04)	9.99(7.67)	9.66(6.78)	11.95(8.83)
Variable cost				
Green fodder/grazing	28.92(21.35)	28.95(22.23)	32.58(22.88)	29.07(21.48)
Dry fodder	21.54(15.90)	22.25(17.09)	21.00(14.75)	21.58(15.95)
Concentrates	32.16(23.74)	30.50(23.42)	42.00(29.49)	32.42(23.96)
Total feed cost	82.62(61.00)	81.70(62.74)	95.58(67.12)	83.07(61.39)
Medicine and veterinary care	1.66(1.23)	1.69(1.30)	1.36(0.96)	1.65(1.22)
Miscellaneous expenses	1.58(1.17)	1.27(0.98)	0.87(0.61)	1.53(1.13)
Total labour cost	37.35(27.57)	35.58(27.32)	34.93(24.53)	37.11(27.43)
Total variable cost	123.21(90.96)	120.24(92.33)	132.74(93.22)	123.36(91.17)
Total cost	135.45(100.00)	130.23(100.00)	142.40(100.00)	135.31(100.00)
Returns				
From milk	170.85	169.45	200.00	171.91
From dung	2.06	1.48	1.11	1.98
Gross return	172.91	170.93	201.11	173.89
Net return (15-12)	37.46	40.70	58.71	38.58

Note: Figures in parenthesis indicate percentage to Gross cost

**Table 5 Cost and return of milk production in overall Jammu region
(Rs./animal/day)**

Particulars/size of herd	Small	Medium	Large	Overall
Fixed cost				
Depreciation on fixed assets	4.03 (2.91)	3.80 (2.82)	3.68 (2.66)	3.92 (2.85)
Interest on investment	7.71 (5.57)	6.33 (4.69)	7.11 (5.14)	7.26 (5.28)
Total fixed cost	11.74 (8.48)	10.13 (7.51)	10.79 (7.81)	11.18 (8.13)
Variable cost				
Green fodder/grazing	27.43(19.81)	27.64(20.48)	24.76(17.91)	27.10(19.71)
Dry fodder	22.14(15.99)	23.70(17.56)	24.49(17.72)	22.89(16.65)
Concentrates	34.66(25.04)	35.47(26.29)	40.90(29.59)	35.78(26.02)
Total feed cost	84.23(60.84)	86.81(64.33)	90.15(65.22)	85.77(62.38)
Medicine and veterinary care	1.79(1.29)	1.56(1.16)	1.35(0.98)	1.67(1.21)
Miscellaneous expenses	1.62(1.17)	0.76(0.56)	0.66(0.48)	1.25(0.91)
Total labour cost	39.06(28.21)	35.68(26.44)	35.28(25.52)	37.62(27.36)
Total variable cost	126.70(91.52)	124.81(92.49)	127.44(92.19)	126.31(91.87)
Total cost	138.44(100.00)	134.94(100.00)	138.23(100.00)	137.49(100.00)
Returns				
From milk	173.42	173.14	178.97	172.15
From dung	2.05	1.35	0.76	1.68
Gross return	175.47	174.49	179.73	173.83
Net return (15-12)	37.03	39.55	41.50	36.34

Note: Figures in parenthesis indicate percentage to Gross cost

CONCLUSION

It was concluded from the above findings that concentrate and labour cost was major cost component in total cost of milk production followed by green and dry fodder. The cost of concentrate contributed maximum in the total feed cost. The fixed cost was higher in small farms due to higher fixed investment. Labour cost was higher for small farms, which was due to the involvement of whole family labour in the milk production as the Gujjars are Pastoral and nomadic in nature and has no other work. The net return was found highest in large farms of Jammu region. Higher use of green fodder and concentration increases the return from dairy animals.

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