Economic performance of rural and periurban dairy farmers

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Abstract

This study focuses on the cost, returns and benefits of rural and periurban livestock farmers in Surat district of south Gujarat. Data was collected with the help of a well structured pretested interview schedule from 200 livestock farmers. Feed cost per standard animal unit per day was 70.65 Rs. in rural and 85.20 Rs. in periurban areas. Total expenditure of dairy animal per Standard Animal Units (S.A.U) per day was estimated to be 81.93 Rs. in rural and 105.25 Rs. in periurban areas. Net return of rural farmers was higher than periurban farmers. Total return per SAU per day was 120.95 Rs. in rural and 138.22 Rs. in periurban area. Net return per litre of milk production was 8.34 Rs. and 6.52 Rs. in rural and periurban areas respectively. Benefit cost ratio of rural and periurban livestock production system was 1.476 and 1.31 respectively. Majority of the respondents in both rural (65%) and periurban (75%) areas belonged to medium economic performance category.

Key words: Economic performance; Livestock farmer; Periurban; Rural

Introduction

In India, animal husbandry is an integral part of rural and periurban families and it plays an important socio-economic role. Livestock rearing provides supplementary income to most of the families dependent on agriculture. India is the largest milk producing country in the world. Gujarat is a leading state in milk production which supplies around 8.84 million tonnes (7.85%) of milk to the total milk pool of the country and the state's per capita milk availability was 436 g/day during 2011-2012. Surat district has the highest number of cattle (227000) and breedable buffaloes (247000) in south Gujarat. The present study was conducted to know the cost, returns and benefits of rural and periurban livestock farmers.

Materials and methods

This study was conducted in Surat district of Gujarat to know the economic performance of livestock farmers. Surat district was selected for the study since it is having the highest livestock population in south Gujarat region as per 2007 livestock census of Gujarat government. The district has 9 talukas and 567 gram panchayats. It lies between 21.0º to 21.21º N latitude and 72.38º to 74.23º E longitudes and is situated 25-30 m above sea level. It is surrounded by the districts <u>Bharuch</u> and <u>Narmada</u> (North), <u>Navsari</u> (South), <u>Tapi (East)</u> and <u>Gulf of Cambay</u> in the west. Average rainfall of the area was 1,200 millimetres in a year. Average high and low temperature of Surat district was 33.37 °C and 22.22 °C respectively. Main crop of the area was rice, sugarcane, wheat, sorghum.

This study was intended to cover both rural and periurban livestock farmers. Considering the nature of this study Mahuva taluka of Surat district which is having both rural and periurban livestock owners was selected. Four villages each from rural and periurban areas of Mahuva taluka were selected at random. The villages that are located less than 10 kms from the district headquarter were selected as periurban area. The selected villages were karcheliya, vachhavad, kharvan and vanskui. The villages which are located beyond 10 kms from the district headquarter were selected as rural area. The selected villages were anaval, kos, angaldhara and lasanpor. From each selected village 25 livestock farmers were randomly selected to form a total of 200 respondents. Dairy farmer had indigenous cow, crossbred cow and buffalo. Each selected respondent was personally contacted and interviewed with the help of a well structured pretested interview schedule incorporating all the items pertaining to the specific objective of the study. Economics of milk production was estimated as per the standard procedures.

Independent variables

Inputs were divided into two groups. The variable cost included green fodder, dry fodder, concentrate, labour, miscellaneous charges (veterinary, breeding service and other charges) and fixed cost included interest on fixed capital, depreciation on shed, chaff cutters and other equipments. Variable and fixed costs were estimated using following procedure.

A) Variable cost

Feed cost comprised cost of green fodder, dry fodder and concentrate.

(i) Cost of green fodder

The quantities of green fodder fed to each of the animal were determined on the basis of information given by the livestock farmers of rural and periurban areas of Surat district regarding composition of fodder and availability of fodder. It was also converted into monetary terms. Mainly green fodders of the area was rice, sugarcane leaves, wheat, sorghum and hybrid napier grass.

(ii) Cost of dry fodder

The quantities of dry fodder fed to each of the animal were determined on the basis of information given by the farmers regarding composition of fodder and availability of straw. It was also converted into monetary terms. Main dry fodder of the area was paddy straw and wheat straw.

(iii) Cost of concentrate

The quantities of different combinations of concentrate fed per day per dairy animal in various seasons were recorded and transformed into monetary values by multiplying with the market rate. Main concentrate feed of the area was sumul dan and cotton seed cake.

(iv) Labour cost

The labour charges per day per animal were worked out on the basis of prevailing wage rate (male and female separately) in the area and the hours of labour utilization in the farm.

(v) Miscellaneous cost

The veterinary, health care and breeding charges were recorded for complete year and worked out for herd.

(B) Fixed Costs

It consists of three components,

(i) Depreciation on cattle shed

Annual depreciation on cattle shed was calculated by straight-line method. Depreciation on cattle shed was worked out at the rate of 2% per annum for '*pucca*' shed and 5% for '*semi pucca*' (with tiles) assuming the useful life of buildings at 50 and 20 years respectively Grover *et al.* (1992).

(ii) Depreciation on machinery and equipments

Depreciation cost for chaff cutter and other equipments was calculated using straight-line method. It was taken as the rate for machinery and chaff cutter as 10% per annum Baruah *et al*. (1996). Estimation was done per annum per animal.

Livestock of different species and age groups was maintained by farmers. These livestock were converted into Standard Animal Units (S.A.U.) as per the methodology suggested by Kumbhare *et al.* (1983).

(iii) Gross and net costs:

Gross Cost/Total Expenditure = Total Variable Cost + Total Fixed Cost

Net Cost = Gross Cost -Value of Dung

Dependent variables

1. Return from milk

The average milk yield per day per animal was recorded, at present production and lactation stage. It was multiplied by the prevailing market price in order to get its monetary value.

2. Return from dung

Total dung production was estimated annually based on information given by the farmers. It was multiplied by the prevailing market price of dung in the area in order to get its monetary value.

Gross Return = Quantity of milk production X Market milk price

Net Return = Gross Return - Net Cost

Total return = Gross Return + Value of Dung

Cost per litre of milk production

$$\text{Cost Per litre (Rs)} = \frac{\text{Net maintenance cost per animal per day}}{\text{Total milk produced per animal per day}}$$

$$\text{Net returns per litre} = \frac{\text{Net Return per animal per day}}{\text{Total milk produced per animal per day}}$$

B:C ratio It is the ratio of cash inflow to cash outflow which must be unity or more for an enterprise to be considered worthwhile. The minimum ratio required is 1:1, which indicates the coverage of costs without any surplus benefits. But usually the ratio should be more than unity in order to provide some additional returns over the costs. The benefit cost ratio can be stated both verbally and mathematically as

$$\text{B:C ratio} = \frac{\text{Total return}}{\text{Total expenditure}}$$

B:C ratio was calculated for each of the respondent separately. Then mean and S.D. were ascertained for the values of the B:C ratio in order to categorize the respondents as high, medium and low.

Results and discussion

Cost and return components of rural and periurban livestock farmers presented in table 1 revealed that total feed cost per standard animal unit per day was 70.65 Rs. in rural and 85.20 Rs. in periurban areas. Total feed cost was less in rural areas as compared to periurban areas, because fodder was cultivated and was also available at a lower price in rural areas. The cost of green fodder, dry fodder and concentrate feed was respectively 22.81, 17.34 and 30.50 Rs./SAU/day in rural areas while it was 26.14, 22.25 and 36.81 Rs. in periurban areas.

Cost of concentrate was the major component in total expenditure of milk production in both rural and periurban areas. Similar finding was observed by Mahajan *et al.* (2013) who reported that the concentrate was a major component in the total cost of milk production. Labour charge per SAU per day was 10 Rs. in rural and 18.27 Rs. in periurban area. Labour cost was higher for periurban livestock farms as compared to rural farms which were due to higher labour charges for hired labour in periurban areas as compared to rural areas. Gross cost/Total expenditure of dairy animals per SAU per day was estimated to be 81.93 Rs. in rural and 105.25 Rs. in periurban areas. The average daily net cost per SAU was 79.34 Rs. and 103.09 Rs. in rural and periurban areas respectively.

Table 1: Cost and return components of rural and periurban livestock farmers (Rs./SAU/day)

S. No.	Cost and return components	Rural	Periurban
1	Green fodder	22.81	26.14
2	Dry fodder	17.34	22.25
3	Concentrate feed	30.50	36.81
4	Total feed cost	70.65	85.20
5	Labour cost	10.00	18.27
6	Miscellaneous cost	0.96	1.08
7	Total variable cost	81.61	104.55
8	Depreciation on cattle shed	0.29	0.38
9	Depreciation on equipments	0.034	0.32
10	Total fixed cost	0.324	0.70
11	Gross cost/Total expenditure	81.93	105.25
12	Value of dung	2.595	2.16
13	Net cost	79.34	103.09
14	Average milk price (Rs./litre)	25.29	26.89
15	Milk production	4.68	5.06
16	Gross return	118.36	136.06
17	Net return	39.02	32.97
18	Total return	120.95	138.22
19	Cost per litre	16.95	20.37
20	Net return per litre	8.34	6.52
21	B:C ratio	1.476	1.31

The average milk production per animal per day was found to be 4.68 liters in rural and 5.06 liters in periurban areas. Average milk price was 25.29 Rs./litre in rural and 26.89 Rs./litre in periurban areas. Gross return was higher in periurban (136.06 Rs.) areas when compared to rural (118.36 Rs.) areas. The average daily net return per SAU was 39.02 Rs. in rural and 32.97 Rs. in periurban areas. Average total return per SAU per day was 120.95 and 138.22 Rs. in rural and periurban areas respectively. Cost per litre of milk was found to be 16.95 Rs. in rural and 20.37 Rs. in periurban areas. Net return per litre was 8.34 Rs. and 6.52 Rs. in rural and periurban areas respectively. Benefit cost ratio of rural and periurban livestock production system was 1.476 and 1.31 respectively. This observation is in contradiction with that of Mahajan *et al.* (2013) who reported that the net return from milk production was much higher in periurban dairy farms than rural dairy farms.

Data in table 2 reveals that majority of the respondents in both rural (65%) and periurban (75%) areas belonged to medium economic performance category, while 16% respondents from rural and 10% from periurban areas belonged to low economic performance category. In total, majority of the livestock farmers (70%) belonged to medium economic performance category followed by 17 and 13% who belonged to high and low economic performance category, respectively. This might be because majority of the respondents in the study area maintained medium sized herd with cross bred cow as a source of supplementary income.

Table 2: Distribution of respondents according to their economic performance (n=200)

S. No.	Economic performance	Rural		Periurban		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	Low: Below (Mean - S.D.)	16	16	10	10	26	13.00
2	Medium: In between (Mean ± S.D.)	65	65	75	75	140	70.00
3	High: Above (Mean + S.D.)	19	19	15	15	34	17.00
	Mean	1.476		1.31			
	S.D.	0.308		0.233			

Conclusion

Cost of concentrate was a major component of total expenditure in both rural and periurban areas. Availability of green & dry fodder and labour was the major problem in periurban areas. The benefit cost ratio of rural livestock farmers was higher than periurban farmers. Majority of the livestock farmers in both rural and periurban areas belonged to medium economic performance category.

Acknowledgements

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