

Economics of dairy farms in village dairy Co-operatives

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Abstract

Study on the economics of dairy farms was undertaken randomly in selected village dairy cooperatives (VDCs) in the Tarai area of Uttaranchal Himalayas. Highest cost in a dairy farm was incurred on labour (43% of the total variable costs). Feed costs accounted for 42%. Costs on medicine, AI, services, etc accounted for only seven per cent. Miscellaneous costs were merely one per cent of the total variable costs. Annual gross returns at a dairy farm were valued at Rs. 44517.00. Net returns on total (fixed +variable) costs were Rs. 11708.26. Net returns derived from variable costs were equal to Rs. 18945.07. Investment of Rupee one in dairy farming in the Terai area, based on the variable costs, for example, will earn Rs. 1.74. This, by all standards, appears to be a profitable enterprise rather than just a subsidiary source of economy. The study suggests that if prices of milk produced were fixed on the basis of the costs of inputs, dairying would emerge far more remunerative than at present is. Analysis of a dairy farm from the perspective of ecological economics would be instrumental in our understanding of dairy farm-farming system linkages and in the process of enhancing sustainability of agro-ecosystems.

Key words: - Dairy farm, Economics, Marketing, Inputs cost, Outputs cost, Village Dairy Co-operatives

Introduction

Dairy farming is one of the most important land-based economic activities in the tarai area of the Himalayas. Apart from being an integral part of agriculture, dairy farming also provides gainful employment to a large number of people and fetches cash income to families. In recent years, dairy production has been regarded as an effective medium for poverty alleviation in rural areas. Keeping this in view, Operation Flood Programmes are being implemented and strengthened throughout India.

Marketing of milk and milk products in India, however, faces a problem. India lags far behind in the export of milk and milk products, which is thanks to the conditions and policies imposed on the Third world countries by the World Trade Organization (WTO).

Our internal situation of milk marketing too is not very satisfactory. Most of the farms are not linked to market. Although Operation Flood Programmes

have been launched virtually in all the regions of the country, large percentage of dairy farms are yet to be covered by the market systems. The smallholder dairy farms are the worst sufferers. If all the dairy farms in country side are linked with marketing systems governed by better price policy and quality standards are maintained, milk production will undoubtedly become one of the most viable economic enterprises in rural India (Singh 2000, Singh et al. 2001).

Dairying is especially a predominant economic activity in village dairy cooperatives (VDCs), the villages that are the members of a District Milk Producers' Union. The Tarai area has been a harbinger of the Green Revolution in India. Its contribution to the White Revolution, nevertheless, has not been appreciated to the extent it deserves.

Most of the villages in the Tarai region are the VDCs. The situation of dairy production in the Tarai Region is different from that in the poorly accessible and less developed mountain areas. A market-linked dairy farm tends to be maintained by organized sets of management than would otherwise be the case. Criterion of selection of VDCs for special study is to make an understanding of the different sets of management making these dairy farms distinguishable

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from the ones not covered by VDC system. This is with this objective that the study to analyze the economic situation of dairy farms linked with the cooperative system in the Terai area of the Uttaranchal Himalayas was undertaken.

Materials and Methods

The study area falls in the Tarai of the Indian Central Himalayas the Indian State of Uttaranchal. Udham Singh Nagar district in the Tarai of Uttaranchal in which the study villages are located is one of the 13 districts of Uttaranchal. This district is situated towards the south of Uttaranchal bordering the State of Uttar Pradesh.

This Tarai district of Uttaranchal is spread over a geographic area of 3055 km². Of the total population of the district, 68 percent comprises the rural population. There are 687 inhabited villages in the district. Agriculture (including animal husbandry) is the main occupation in rural areas Six villages, which were the members of the District Milk Producers' Union Ltd.- the Village Dairy Cooperatives (VDCs) in the Community Development Block (CDB) of Rudrapur in the Udham Singh Nagar district, were selected purposely. Situated on the outskirts of the GB Pant University of Agriculture and Technology, the selected villages were: Anandpur, Raghav Nagar, Pratappur, Kanakpur, Shantipuri (No.I), and Jawahar Nagar.

The primary information was collected on the pre-structured proforma during May- August 2001. From each VDC, 20 percent dairy farms- or, in all, 135 - out of a total of 675 in the six selected VDCs, were selected randomly for the collection of desired information.

Feed and fodder consumption by all the animals and milk and dung production at a dairy farm were recorded in sample families. Weighing of some samples on daily basis at some sample families gave average values for these inputs and outputs.

Costs incurred on a dairy shed, dairy animals, and equipment were considered. Depreciation cost per dairy shed on the basis of 15-year lifespan was calculated. Depreciation cost of equipment was also calculated.

Total cost of animals at a dairy farm was known through individual farm families. Animals at the dairy farms were of all age groups. Hence, it was considered that appreciation and depreciation costs were equal. Interest @ 18 percent on depreciation of dairy shed and equipment and total cost of animals

was considered. Depreciation costs of dairy shed and equipment and interest on dairy shed, equipment, and dairy animals were counted for total fixed costs of a dairy farm.

Variable costs incurred on consumable items, like feed, medicines, AI, natural service, and labour, etc were counted. Costs of all these items were based on the current local market rates (Table 1). The rates of the invested items were multiplied by their amounts to know the total costs over a period of one year. Cost of the feed was on fresh weight basis. Interest @ 14 percent on the variable costs (except for labour that was a family's own) was added to the total variable costs.

Milk and manure are the two main value-based products/ outputs of a dairy farm that were considered for cash returns. The amount of manure produced at a dairy farm was considered equivalent to the dung voided by dairy animals throughout the year.

Table 1: Prices of Different Items/ Variables at Dairy Farms in Local Market

| Items | Rate, Rs. |
|------------------|--------------------|
| Cow | 1000.00 per litre |
| Buffalo | 1500.00 per litre |
| Wheat Straw | 150.00 per quintal |
| Rice Straw | 35.00 per quintal |
| Green Fodder | 50.00 per quintal |
| Concentrate feed | 500.00 per quintal |
| Milk | 10.00 per litre |
| Manure | 20.00 per quintal |
| Labour | 60.00 per man day |

Results and Discussion

Important Dairy Farm Indicators

Livestock holding size (No. of livestock per dairy farm) was rather small (2.87). About 78 percent of the total livestock were cattle. There was no adult male in the area herd that indicated the performance of milch animals in the herd. The Himalayan Tarai area depends, almost exclusively, on tractors and other machinery for agricultural operations. Absence of the draught animals from the herd, therefore, could be expected. There were, however, male calves in the young stock. They were sold to the outsiders before they grew into adult work animals. Size of the animals in milk per dairy farm was still smaller (1.04). Figures of milk production per dairy farm per day, nevertheless,

Table 2: Some Important Dairy Farm Indicators in the Selected VDCs

| Village Dairy Cooperative | Total No. of dairy farms | Dairy farms selected for study | Livestock/dairy farm | | | Animals in milk/dairy farm | | | Milk production (litres)/farm/day |
|---------------------------|--------------------------|--------------------------------|----------------------|-----------|-------|----------------------------|-----------|-------|-----------------------------------|
| | | | Cattle | Buffaloes | Total | Cows | Buffaloes | Total | |
| Anandpur | 45 | 9 | 2.76 | 0.45 | 3.21 | 0.66 | 0.06 | 0.72 | 12.67 |
| Raghav Nagar | 110 | 22 | 2.25 | 0.38 | 2.63 | 0.90 | 0.13 | 1.03 | 9.21 |
| Pratappur | 100 | 20 | 3.00 | 0.23 | 3.23 | 1.00 | 0.08 | 1.08 | 12.80 |
| Kanakpur | 100 | 20 | 0.75 | 0.67 | 1.42 | 0.25 | 0.25 | 0.50 | 16.46 |
| Shantipuri | 170 | 34 | 1.98 | 0.83 | 2.81 | 0.88 | 0.29 | 1.17 | 10.94 |
| Jawahar Nagar | 150 | 30 | 2.86 | 1.12 | 3.98 | 1.33 | 0.46 | 1.79 | 8.93 |
| Overall | 675 | 135 | 2.26 | 0.61 | 2.87 | 0.83 | 0.21 | 1.04 | 11.84 |

Note- All figures except for number of dairy farms, total as well as selected for study, are averages per dairy farm.

were impressive (11.84 litres) (Table 2).

One reason of small herd size is the high-yielding breeds of dairy animals. Almost all the cows in the herd were crossbreds with blood of Jersey and/ or Holstein-Friesian. Most of the buffaloes in the VDCs were Murrah. Few seemed to be admixture of Murrah and Bhadawari or other Indian breed. The other reason of the small herd size is Tarai farmers' concentration on cropping rather than on animal husbandry. Shortage of home labour spends much of the time and energy on crop farming. Since, milk is an indispensable item for family consumption, dairy farming too would go hand in hand with crop production. The plus point to a dairy farm in a VDC is that it gets marketing facility at the doorstep.

Economics of a Dairy Farm

An economic analysis of a cooperative dairy farm in the Tarai area of Uttaranchal is presented in Table 3. Costs incurred on a dairy shed, dairy animals, and equipment were considered. Both kutchha and pucca dairy sheds were there in the VDCs. Average cost of a dairy farm was Rs 24237.00 and that of equipment 4318. Depreciation cost per dairy shed on the basis of 15-year lifespan was Rs.1282.47 and that of equipment Rs.382.00. Total cost of animals at a dairy farm was Rs.29293.00. Interest@ 18 per cent on depreciation of dairy shed and equipment and total cost of animals was Rs 230.84, 68.76, and 5272.74, respectively. Depreciation costs of dairy shed and equipment and interest on dairy shed, equipment, and dairy animals were counted for total fixed costs, which were equal to Rs.7236.81.

Variable costs were incurred on consumable items, like feed, medicines, AI, natural service, and labour. Dairy animals at a dairy farm, on an average,

consumed a total of 2169.20 kg wheat straw, which, at the rate of Rs.150 per quintal, valued at Rs 3253.50. Total amount of rice straw consumed at a dairy farm in a year was 1604.9 kg costing Rs.561.75. Total cost incurred on dry green fodder consumed at a dairy farm during the year was 7200 kg that, according to the prevailing market prices, was equal to Rs.3600.00. A total of concentrate feed consumed by the dairy animals at a dairy farm was 662.2 kg the cost of which was Rs 3311.00. The total feed cost incurred on a dairy farm per annum, thus, was Rs 10726.25.

Average cost incurred on medicines, AI, natural service of animals, etc. was Rs. 180 0.00. Cost on labour was Rs.10950.00. Miscellaneous expenses were equal to Rs.300.00. The total variable costs thus were equal to Rs.23776.25. Since labour was a family's own, this figure was not counted for interest on variable costs. Adding interest to the other variable costs at the rate of 14 per cent (i.e., Rs. 1795.68), the total of variable costs became Rs.25571.93 (Table 3).

Highest cost incurred was on labour (Rs. 10950.00), which was 43 per cent of the total variable costs. Very close to this figure were the feed costs (Rs. 10726.25) accounting for 42 per cent. Costs on medicine, AI, natural services, etc. accounted for only seven per cent. Miscellaneous costs were merely one per cent of the total variable costs, At a dairy farm, generally most of the expenses occur on feed. In the aera area prices of feed items appear to be low compared to other areas; for example, hill areas of Uttaranchal. The other apparent reason is low rate of concentrate feeding. Had it been as per the recommended rates, costs on feed would have been much higher and it would have in the costliest input. The total fixed and variable costs were equal to Rs.

32808.74.

Milk and manure are the two main value-based products. A dairy farm produces 4319.78 litres of milk annually, on an average. This much milk, at the current average rate of Rs.10.00 per litre, fetches Rs, 43197.80. The amount of manure produced at a dairy farm was considered equivalent to the dung voided by dairy animals throughout the year. On fresh weight basis, dairy farms on an average produced 6596.28 kg of dung/ manure that at the rate of Rs.20.00 per quintal valued at Rs.1319.20. The total returns, thus, were equal to Rs.44517.00 (Table 3).

Table 3: Economics of a cooperative Dairy Farm in the Tarai area of Uttaranchal

| Particulars | Value, Rs. |
|---------------------------------|------------|
| A. Fixed Costs | |
| (a) Depreciation on : | |
| I. Dairy shed | 1282.47 |
| II. Equipment | 382.00 |
| (b) Interest on : | |
| I. Dairy Shed | 230.84 |
| II. Equipment | 68.76 |
| III. Animals | 5272.74 |
| Total Fixed Costs | 7236.81 |
| B. Variable costs: | |
| (a) Feed Costs | |
| I. Dry Fodder | 3815.25 |
| II. Green Fodder | 3600.00 |
| III. Concentrate | 3311.00 |
| Total Feed Costs | 10726.25 |
| (b) Medicine, AI, Service, etc. | 1800.00 |
| (c) Labour | 10950.00 |
| (d) Miscellaneous | 300.00 |
| Interest on Variable Costs | 1795.68 |
| Total Variable Costs | 25571.93 |
| Total Costs | 32808.74 |
| C. Returns | |
| I. Milk | 43197.80 |
| II. Mannure | 1319.20 |
| Gross Returns | 44517.00 |
| Net Returns on Total Costs | 11708.26 |
| Net Returns on Variable Costs | 18945.07 |

Average gross returns at a dairy farm were valued at Rs.44517.00. Net returns on total (fixed + variable) costs, thus, come out to be Rs.11708.26. Net returns on variable costs are equal to Rs.18945.07 (Table 3). Figures of economic analysis for the cooperative dairy farms in the Himalayan Terai do not conform to those for Hill areas of the Himalayan States of Uttaranchal and Himachal Pradesh (Singh 1999,

Singh 2000, Singh 2001, Singh et al.2001) and other Green Revolution areas of India (Chahal 1998, Kumar et al. 1999, Singh et al. 2001).

Net returns on variable costs per month per farm come out to be Rs.1579.00, which appears to be merely a paltry amount. Judging from the number of milking animals per farm, this much income, from a dairy farm, nevertheless, reflects significant contribution to a family. These economic returns are attributable to just one dairy animal in milk at a dairy farm. Increased number of dairy animals will fetch proportionately higher incomes. Investment of Rupee one in dairy farming in the tarai area, based on the variable costs, for example, will earn Rs.1.74. This, by all standards, appears to be a profitable enterprise rather than just a subsidiary source of economy. In this regards study conducted in Jaipur (Rajasthan) to estimate the economics of milk production among different categories of members and non-members families of dairy co-operatives based on personal interview method. Overall net profit per liter of milk was Rs. 4.73 for members households, while it was Rs. 2.01 on non-members households. The overall average income per rupee of investment was higher (Rs.1.45) in members families than non-members families (Rs. 1.18). Tanwar P. S. et.al. (2012). Also shown almost same results. And Sarker (2008) in his research article analyzes the cost, return and relative profitability of co-operative and non co-operative milk producers' in West Bengal of India; it is found that cooperative farms have much higher profitability. Indicated the role of Dairy Co-operatives has been playing an important role in dairy development.

Almost all dairy farmers complained of low price of milk paid by the cooperative. Some farmers also complained of poor quality of concentrate feed supplied by the cooperative. Nutritional quality of the concentrate feed could result into higher milk yields and consequently into more economic returns. If prices of milk produced were fixed on the basis of the costs of inputs, dairying would emerge as far more remunerative as it at present is. The cooperative system can take effective measures in this regard.

Results indicated by Mahida D, et. al. (2018) that socio-economic factors i.e. membership in dairy cooperative society, non-farm annual income, access to information, and herd size significantly influenced the technical efficiency of farmers. Dairy cooperatives provide several inputs in the form of dairying resources

as well as technical information to the farmers which significantly influenced their efficiency. The study concludes with policy prescriptions for enhancing milk production and shift towards sustainable dairying.

The somewhat dismal picture of a dairy farm, nevertheless, comes to the fore only when the conventional economic analysis is made as we have done above. There is yet another face of the coin. Analyse the role of a dairy farm from the angle of ecological economics and also take into consideration its socio-cultural contributions and dairy farming would prove to be of great value for the farming system as well as for the farming community. Ecological economics involves non-consumptive use values optional, existence, scientific, recreational, ethical, and aesthetic values, etc. associated with products, species and systems. The socio-cultural role of dairy farming involves the social prestige, security, faiths, festivity, values, notions of sacredness, etc. associated with dairy animals, especially the cattle. Such an altogether neglected role of dairy farming precludes the analysis and appreciation of another vital service that this farming usually renders. Well-synthesised information on the less visible vital contributions of dairy farms to the farming systems would be instrumental in the process of enhancing sustainability of agro-ecosystems.

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