IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Indigenous Dairy economy of the Nepalese of Lohit District of Arunachal Pradesh: A study in Cultural Ecology

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Abstract

The Eastern Himalayan foothill region of Lohit district in Arunachal Pradesh is spotted with dairy farming units. The dairy units in the region are culturally dominated by the immigrants' Nepali community. Most of these Nepalese dairy units are located in the Tezu and the Sunpura circle of the district and there are also little and more dairy units are also entertained in the rest of the circles like, the Wakro, the Chongkham, the Lathao, Namsai, etc. The present study was conducted to assess the nature and functioning of this traditional form of dairy farming and to understand the socio-economic condition of the dairy owners of the study area. And cost-benefit analysis has been assessing according to the size of the dairy cow of different breeds (Jersey, Cross-breed, and Indigenous) to identify the total cost and profit of the farmers per year. Income from cattle herds, especially dairy cows was much higher than the dairy buffaloes. Moreover, buffalo' farming is not that much preferred by Nepali farmers in this region due to the unsuitability of climate. The Nepalese people mostly Practice agricultural activities in a complementary relationship with bovine economics where draught animals one used for ploughing the field.

Keywords: Large Dairy Farmstead (Khuti), Cultural Ecology, Cost-benefit analysis:

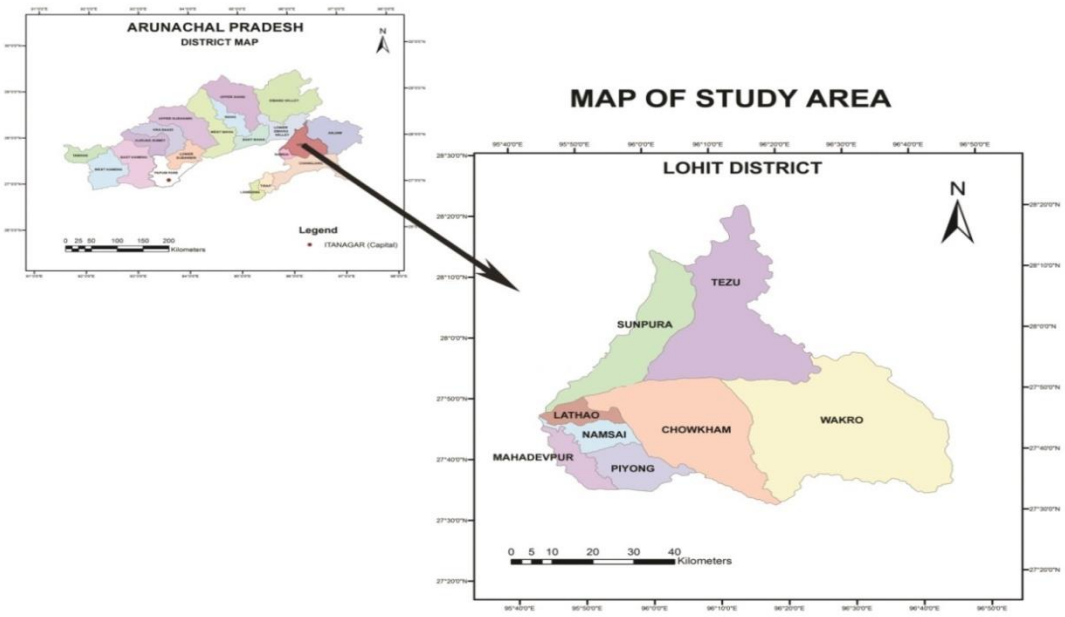
1. Introduction:

Dairy farming has emerged as an important source of livelihood, particularly for smallholder households in the region. It plays a significant role in generating gainful employment in the rural sector, particularly among the landless immigrant people marginal farmers and women who fully depend on this activity for livelihood. It is the most important livelihood activity for almost all the dairy farmers who are mostly of Nepali community.

The Nepalese in this region are mostly immigrants settled temporary and engaged in crop cultivation mostly paddy cultivation. Without any land holding they leased in the cultivable lands from the neighbouring local tribes for their required cereal crops. Animal husbandry supply income, offering employment opportunities, and acting as an enterprise in a large part of the country. An attempt is made to analyze the dairy activity through cost-benefit analysis of milk production in Lohit District of Arunachal Pradesh.

2. Study Area

Lohit District lies in the easternmost part of the country in between $27^0$33' North to $29^0$22' North Latitudes and $95^0$15' East to $97^0$24' East Longitude. The district shares borders with the district of Anjaw to the east, the district of Changlang to the South, the district of Lower Dibang Valley to the West. The district also shares borders in the west with the state of Assam, Lohit District occupies an area of approximately 2402 square kilometers. The region has an average altitudinal range of 131meters (msl). The district of Lohit also happens to be the easternmost regions along with the district of Dibang valley hence, strategically important for the country of India. The district is named after the Lohit River, from the Sanskrit word *Louhitya,* reddish- or rust-colours, and consists of areas belonging to the river valleys and hills, mountains to the north and south. Earlier it was known as Mishmi Hills.



Source: Census of India 2011

Animal husbandry along with agriculture is an integral part of village dwellers. These activities have contributed not only to maintain the nutritional level of the family but also to tie the man's environmental relation very strongly. Dairy farming has been played a prominent role in socio-economic development in an agricultural district like Lohit of Arunachal Pradesh. Dairy farming is described as a small industry which provides gainful employment opportunities to the rural folk. The dairy industry provides not only full time but also regular income to the farmer, in this case the Nepalese community. The contribution of livestock to income generation in rural

areas is quite substantial. Livestock contributes about 4.22 percent to the GDP and agriculture contributes about 17.4 percent in 2014-15 in the context of poverty and malnutrition to the country.[1]

3. Objectives

a. To study the investment components for dairy activities.

b. To find the profitability of the farmer from the dairy units.

4. Methodology

The study is based on both primary and secondary data sources. Primary data have been collected through a structural questionnaire from the selected micro-region, Lohit district of Arunachal Pradesh. Relevant secondary data have been collected from different offices of Lohit district, like the census of India 2011, the Directorate of Agriculture, Directorate of economics and statistics, directorate of animal husbandry and veterinary, and Livestock census 2013 which was published by the ministry of agriculture, the government of India also has been taken into account for the study. Out of eight revenue circles of the district six circles has been purposefully selected for the study. Two circles (Piyong and Lekang) have been left out because Nepali dairy farmers are not found in these circles. Incidentally other communities who inhabit these two circles do not practice dairy. From these six circles, twenty seven marginal dairy villages and four big Khuti farm villages were selected for the study of the problem and purposive random sampling is used to collect primary data from the households. Out of thirty one villages, the maximum numbers (13) villages are selected from the Sunpura circle and the eleven villages from Tezu circle keeping in mind that the highest number of Nepalese dairy farmers are settled in these two circles. Three villages from Wakro Circle, two villages from Chongkham, and one village each from Lathao and Namsai circle are considered for the study. Fifty percent of the households are considered for collection of data though random sampling, from each village to generate information regarding dairy activity in the district. All the four khuties (large farm steads) are considered and studied exhaustively to captures the profitability aspects of the large farm steads which are unique in some sense for the Nepali communities of this region to examine the Nepali's livelihood in the context of the unique agro environmental condition prevailing in the region. The study was conducted during 2017-2019. Responses from 350 milk-producing Nepali households and the khuti farms are considered as data and analyzed by using SPSS and Microsoft Excel software. The table below reflects the data base for sample selection.

[1] Bhowmick, B.C., and Sharma, A.K. (2002)

Name of circle	Total village	Households no.
Sunpura	13	144
Tezu	11	128
Wakro	3	28
Chongkham	2	20
Lathao	1	18
Namsai	1	12
Total	**31**	**350**

5. Results and Discussions:

The results as derived on the basis of the primary data collection and subsequent analysis of the same are discussed under the different sub- headings are given below:

5.1. Price of the Milk in Study Area:

For calculating the income of the farmers from the milk, the entire quantity of milk, whether consumed at home or sold, is evaluated at the selling price prevailing in the villages and khuti farm. Milk price varies from village to village and between rural and urban settlement. It was found that the price of the milk in the region ranges from Rs.40 - Rs.25 per liter reflecting the problem of perishability of milk and fluctuating demand of the same. The highest average price of milk is found from the township areas Rs.37.5 per liter where market facilities are near to the farm and the accessible road network is also convenient. The lowest average price of the milk is seen Rs.27.5 per liter in the village level where market facilities are not available and also because of poor road connectivity. This variation is understandable to the higher demand of milk in townships of Tezu town, Namsai, Chongkham, and its adjoining fringe villages. The price of milk is evaluated by the range and average classification due to the uneven rate of milk in every single village.

Table No. 1.1. Variable Prices between the sub-regions

	Price/Litre of Milk (Rupees)	
Circle	Range	Average
Sunpura	25-30	27.5
Tezu	35-40	37.5
Wakro	30-35	32.5
Chongkham	35-40	37.5
Lathao	25-30	27.5
Namsai	35-40	37.5
Overall	**31-36**	**33.3**

Source: compiled from field survey 2017-2019

5.2 Classification of Dairy farm according to Size of the cattle.

It is essential to categorise the cattle holding size of different farm steads to understand the problem of the dairy economy. In this case all the households are classified into three categories according to the size of cattle holding by the farmer in their farm. The Table no. 1.2 reflects the numbers and size class of farm steads for the different households of the entire Nepali community of the region.

Table no. 1.2. Classification of Dairy farm according to the size of cattle heads

Big Farm	Medium Farm	Small Farm
More than 100 Cattle	More than 50 Cattle	Less than 50 Cattle
3	11	336
338	853	2274
9.75	24.62	65.63

Source: compiled from filed survey 2017-2019

It is found that there are three numbers big farm steads (khuti) in the study area which are very unique in nature. These are owned by farmers belonging to the neighbouring state of Assam explaining the geo-economics of grazing cattle which need enough grazing lands available in the foothills of Lohit district. The location of these three big farms are, (a.) Gohain Gaon farm steads (120) cattle heads, (b.) Two farm steads are located in Haju village with (152) and (145) cattle heads respectively. While the Gohain Gaon farm stead belongs to Tezu circle the Haju farm steads belong to Sunpura circle. All these farm steads are by nature sustain through commercial out letting of liquid milk. As many as 9.75 percent of the total dairy cattle belong to these farm steads. As depicted earlier the medium farm steads are categorized according to the size of cattle heads owned by households. There are 11 medium farm steads covered in the study from the region which also cater to the limited commercial demand in the region. As many as 24.62 percent of the total dairy cattle heads belongs to these households having to maintain between 50-99 cattle in each households. The relatively small farm steads are large in numbers with individual households maintaining as many as 65.63 percent of the total dairy cattle in the region. Though considered as smaller the households also need to compete in the market for selling their surplus milk which is very essential to generate income as liquid milk cannot be considered as staple food. However, it must be noted that vital protein nutrition is available to all the households of different categories in the region. In a sense the dairy economy remains in balance for the above cited reason.

5.1.1 Cost-Benefit Analysis:

The cost-benefit analysis has been used to study the economic efficiency of the household dairy enterprises of the different size groups. The cost-benefit analysis has also been categorized into two types based on the commercial and non-commercial purposive type of farm.

Cost variable includes:

1. Capital investment in rupees (production cost)
   a. Feeding cost
   b. Breeding cost (time involve)
   c. Health care cost
   d. Labour cost
   e. Cowshed cost
   f. Any other cost
2. Benefit from the farm stock in the terms of value includes in Rupees:
   a. Milk and milk products value
   b. Value of cow-dung
   c. Any other benefit

The model used for the analysis of profitability is as follows:

NTB= TB - TC (in one period)

Where: NTB= net total benefit

TB= Total benefit

TC= Total cost

Profit = Total income – Total cost.

Table no. 1.3. Cost-benefit analysis in households for dairy enterprises of different size groups

Cost-benefit Analysis	(In Rupees)			
	Size groups			
	Group A(3)	Group B(11)	Group C(336)	T/HH (350)
Total cost	120900	443300	946550	1510750
Total benefit	192150	669550	3337750	42,02,950
Profit	71250	226250	2391200	2692200
Average Annual income of households	23,750.00	20,560.00	7,116.67	7692.00
The income per unit of investment	**1.58933**	**1.510377**	**3.526227**	**2.782029**
Cost per unit of production	**0.629196**	**0.662086**	**0.283589**	**0.35945**

Source: Compiled from field survey 2017-2019

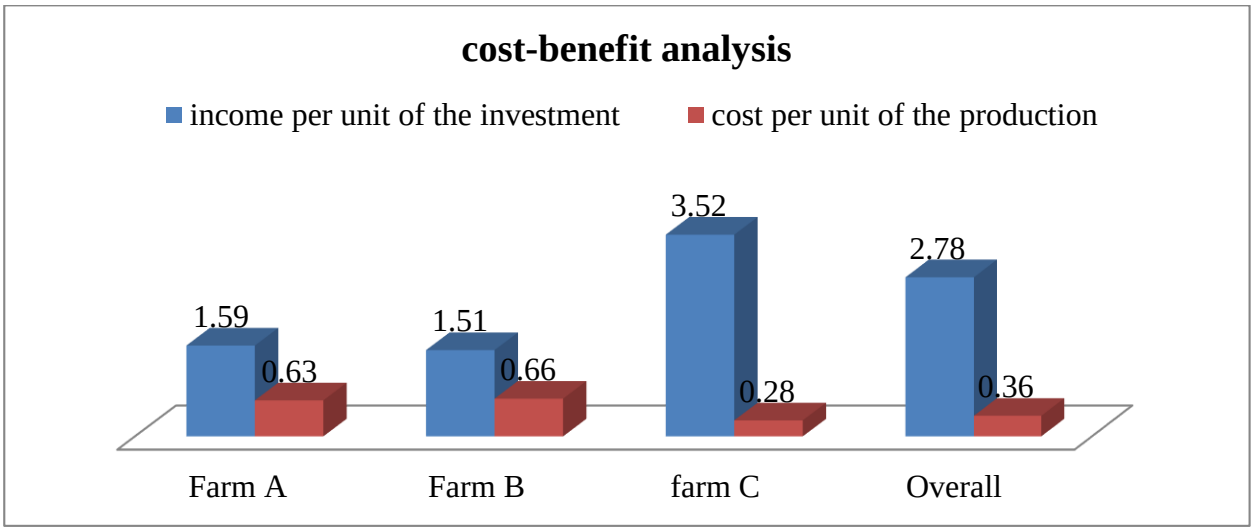


Fig. no.1.2

According to table no. 1.3 the cost-benefit analysis of the household of dairy enterprise, the cost has been calculated by using the formula which has been mentioned in the above paragraph, the feed and fodder cost of the different size group has been formulated according to the responses from the farmers. The feeding cost of the cattle of different size groups has different criteria. The size group A, B farm steads had cost Rs.500 per month for feeding the milch cows. And the group C type of cattle farmers hardly feed their cattle, however, there are only 20 households who have positively responded for feeding the cattle but in rare cases, and again they stated that they could spend Rs.200 per month for the feeding cost. Moreover, farm A, B (Khuti farms) had also paid a tax of Rs.300 per year to the government for establishment of khuti farm.

Dairy cattle breeding are the process of selecting and mating individuals per breeding goals, intending to change the genetic merit of the future. Dairy Breeding cost is calculated for the period of offspring of the cattle for the next 6 months. Health care cost is calculated as per the record data from the field survey, the bigger farm mostly spent Rs.1000 per month for cattle health care, but in group C type of farm, farmers spent Rs.300 per year in the same cases. Significant Labour cost is applied only in the big farm like group A, B type of dairy farm, and in the small farms the labour cost input is considered to be negligible. This is found to be average 25 minutes per day labour hour per households calculated to Rs.6.25 per day. For cow shed cost mostly followed the price what farmers had responded at the time of field investigation. In farm A, B farmers spent Rs.1000 per year for renovating or construction of a new cowshed. The households of group C farm type farmers spent Rs.500 per year for cowshed. Lastly, under the category of miscellaneous cost, there are small types of cost inputs like transportation cost, salt cost, etc.

Income generated from the milk revenue is calculated for 5 months from the insemination (milking period) of the cow. The offspring period of the cow is not evaluated. Overall profit seems to be of some significance for the all households of the district. But if the overall profit is considered for all the 350 households it is found to be Rs.7692.00.

The income per unit investment of group A has been recorded as Rs.1.59 and the cost per unit of production is Rs.0.63. The medium farm steads with an income per unit of investment is Rs.1.51 per year and the cost per unit of the income is Rs.0.66 per year also makes significant profit. Group A and B types of farms are the commercial types of farms. The non-commercial or the small farm steads in cure an income of Rs.3.52 per units per year and investment cost per unit of income Rs.0.28. Hence, small farm seems to be very profitable economically. It is because the small farmers do not invests money for non-commercial dairy cattle, nutrition for cattle only comings from the grazing field which is essentially free of cost for the households.

The overall average profit per year from the district is above Rs.2.78 per unit and the cost per year is Rs.0.35 per unit. The overall total outputs from the dairy sector per year are Rs.26, 92,200. However, it is significant to note that small dairy farmers gain a lot from non-significant investment compare to large and medium farmers holding large numbers of cattle heads.

6. Conclusion

The dairy sector is the subsidiary source of income of the immigrant Nepali farmers in the district while crop cultivation still remains the main activity performed through tenant farming. The Nepalese of the district depends on their income source from agriculture as well as from the dairy sector. The dairy sector provides a good source of subsidiary income for the survival of rural farmers. But there is a huge gap between the dairy cattle versus the level of milk production of milk, due to lack of grazing grass of high content of nutrition, and the economic weakness of the farmers. Profit has also hindered due to inaccessible road conditions, lack of transportation, lack of market facility, and the most importantly lack of modern technology for the upgrading of local farms (Khuti farms). This sector has a great opportunity for the prospect of dairy farming, if modern facilities would provide to the farmers perhaps may have more income in comparison to the present state.

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