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Khuti – A Traditional Nepali Dairy Farming for Rural Livelihood in Lohit District of Arunachal Pradesh (India)

Krishna Chetry* and Nishamani Kar

Department of Geography, Rajiv Gandhi University, Arunachal Pradesh, India

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ABSTRACT

The present study attempts to analyse the traditional dairy farming practiced by the immigrant Nepali community known as *Khuti*- a distinctive farming system involving two different locations through mutual understanding. In this system, the households of the dairy farmers are located in Naogaon, Naopatiya, and Dhania villages of Sadiya sub-division, Tinsukia district, Assam whereas the *Khutis* (dairy units) are located in Haju, Kalikhola, and Zeroali in Sunpura circle, Lohit district, Arunachal Pradesh. These farmers are skilled-labours who migrate temporarily for cattle rearing and developing dairy economy for their livelihood. The data on socio-economic aspects and traditional dairy farming were collected through questionnaires (2017 – 2018) and analyzed using appropriate statistical techniques. The results show the significance of dairy farms in their livelihood and fulfilling the milk demands of nearby localities. A strong linkage between dairy farming and the socio-economic life has been also observed. There was a strong positive relationship (r = 0.996) between income coming from milk and infrastructure development of dairy farms. Flood is a recurrent problem and the farms lack infrastructure facilities especially veterinary services leading to occurrence of diseases in cattle that hampers the milk yields of the farms. Hence, we suggest for developing a suitable mechanism involving the local stakeholders and both the Arunachal Pradesh and Assam government to ensure the continuity of this unique traditional dairy farming.

Key words : *Dairy farming,* Khuti*, Livelihood, Tradition, Nepali community*

Introduction

The current paradigm of research in economic geography has expanded into several allied fields within the primary sector which is dominated by agriculture geography, including livestock, agro-forestry, and tourism. Livestock products are an important agricultural commodity for global food security because they provide 17% of global kilocalorie consumption and 33% of global protein consumption (Rosegrant *et al*., 2009). The livestock sector contributes to the livelihoods of one billion of the poorest population in the world (Hurst *et al*., 2005). Global demand for livestock products is expected to double by 2050, mainly due to improvement in the worldwide standard of living (Rojas-Downing, 2017).

In rural India, agriculture is a predominant livelihood for 70% of the population (Vijaya Bhaskar *et al*., 2017). The dairy and livestock sector contribute over 25% to the Gross Domestic Product (GDP) of agriculture (Bhasin, 2010). Livestock are often the only livelihood option available to the landless as common property resources are being increasingly captured by individuals for private gain (Ahuja, 2004). Dairying is an important part of the Indian agricultural economy, particularly for the rural sys-

tems. It provides nutrition, draught animal power, organic manure, supplementary employment, and cash income (Patel, 1993). India is the world's largest producer and consumer of milk (Landes *et al.*, 2017).

Nepali communities are traditionally associated with dairy farming. Being the Hindu believers and mostly vegetarian, they rear cattle particularly for dairy products to meet the requirements of protein. These communities (Nepali) are the later immigrants who began to migrate in India during the last part of the 19th century from Nepal. They followed the "beaten path" laid down by the *Gurkha* soldiers of the British to defend the eastern frontiers. This tradition of migration continued in the post-colonial period, these immigrants find the easiest source of survival in the business of dairy farming and livestock rearing, like addition and alternative income source in the northeastern states of India (Nath, 2006). Every cultural / linguistic group is marked by the tendency of retaining the tradition and occupation to maintain their identity. Hence, to sustain their livelihood, the Nepali communities continued to practice the traditional dairy farming known as *Khuti* for meeting the necessities of living. It presents a unique pattern of livelihood of the families with their home in Assam and the *Khuti* farm in Arunachal Pradesh. This source of livelihood by the Nepali community is embedded in their culture and has become a way of their living (Komor and Borah, 2015). 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 their livelihood. Therefore, the present study is an effort to understand the importance of cattle rearing especially the traditional dairy cattle culture of the Nepali community in Lohit district of Arunachal Pradesh, India.

Methodology

Study area

The study was carried out in 3 big *Khuti* (farms) located at Haju, Zeroali, and Kalikhola in Sunpura circle of Lohit district, Arunachal Pradesh (Figure 1). The selected dairy units are located near the riverbanks of Digaru, Balijan, and Kalikhola, which provide sufficient forage for the livestock. The households of the Nepali dairy farmers are located in three villages namely Naogaon, Naopatiya, and Dhania under Sadiya sub-division of Tinsukia district, Assam.

Survey and sampling

The study was carried out during 2017 – 2018 to assess the nature and functioning of the traditional dairy farming and to understand the socio-economic condition of the dairy unit owners. The data was randomly collected from the 12 Nepali traditional milk-producing respondents from Sunpura circle of Lohit district, Arunachal Pradesh. The household data of the dairy farm (*Khuti*) owners from Haju, Zeroali, and Kalikhola located at Naogaon, Naopatiya, and Dhania under Sadiya sub-division of Tinsukia district, Assam have been collected and analyzed in Microsoft Excel. The data was collected using both questionnaire and field observation method. The observation method was adopted particularly to understand the nature and function of the *Khutis*. Simple correlation analysis has been attempted to examine the association between the level of income and infrastructure development. Finally, ArcGIS 10.3 software was used to prepare the location map of the study area.

Results and Discussion

The results of the study are based on the primary data collection and subsequently analyzed by comparing with the available literature under different headings as given below:

Location of the Khutis

The *Khutis* are located in Haju, Kalikhola, and Zeroali villages of Sunpura circle under Lohit district of Arunachal Pradesh. The average distance from the *Khutis* to their respective villagesin Sadiya sub-division, Assam is about 42 km and the average distance of the *Khutis* (cowshed) to the nearest town (Tezu) is about 12km. These *Khutis* have no medical and school facilities. Due to the absence of medical facilities, there is prevalence of diseases like gastritis, tuberculosis, appendix, and malaria among the dairy farmers. Similarly, due to the absence of veterinary facilities, the dairy cattle are frequently infected by foot and mouth disease (FMD), stomachaches, and skin diseases. Foot and mouth-disease (FMD) is a highly infectious viral disease of cattle

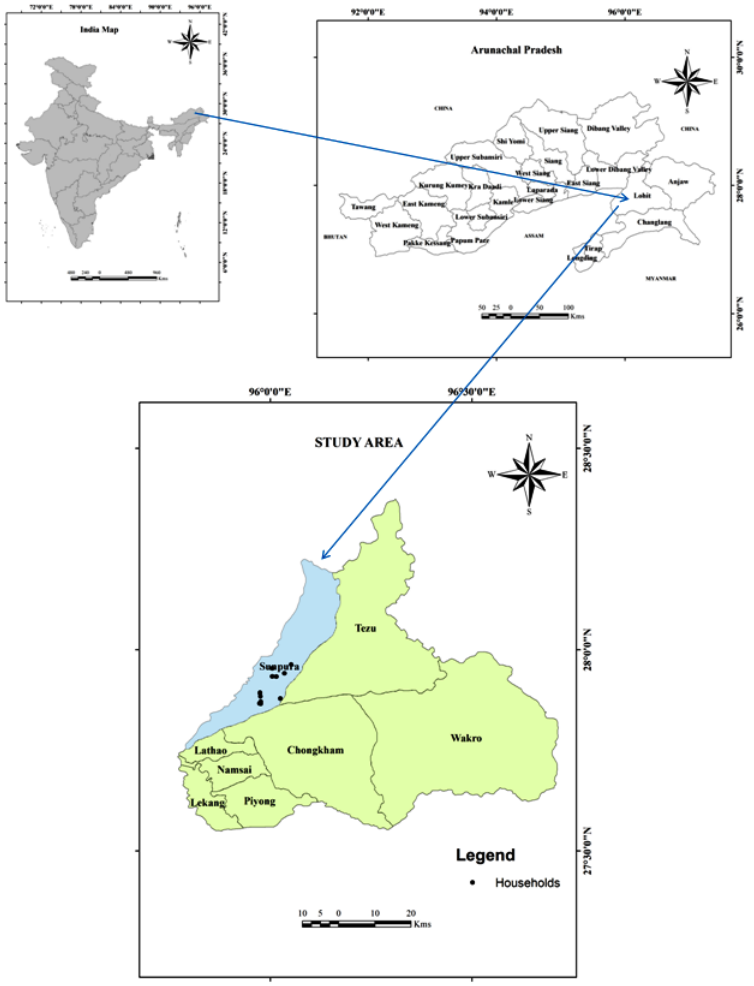


Fig. 1. Location map of the study area
Source: Census of India 2011, Arunachal Pradesh

(Kahn and Line, 2005). The disease in not invariably fatal but its ease of spread and rapid mutation make it a major concern of all countries where cattle are a major economic resource (Kitching, 1998). The electricity supply is available in Haju and Kalikhola only. The farmers avail the drinking water from the tube wells and alternatively manage water from the streams and rivers for domestic as well as livestock (Table 1).

Distribution and size of the Khutis

The size of the *Khutis* has been determined by the number of cattle present in the stocks of the respondents. Accordingly, the farms have been classified into very big (> 120 cattle), big (80-120 cattle) and medium (40-80 cattle). The largest farm was found in Haju *Khuti* with 150 cattle while the smallest farm was located at Zeroali *Khuti* with 40 cattle. Overall, there were 3 very big, 4 big and 5 medium-sized farms in the selected *Khutis* (Table 2). These *Khutis* are the milk-producing hub which contributes 70% of milk supply to Lohit district of Arunachal Pradesh as well as neighbouring Tinsukia district of Assam.

Nature and functioning of the Khutis

Lohit district in Arunachal Pradesh is well-known for *Khuti*-based dairy farming practices by the Nepali community. The term '*Khuti*' is originally derived from the Assamese word, which means the shed for cow and buffaloes. The original Nepali term for cowshed is'*Goth*', but it is negligibly used nowadays as they have also adopted '*Khuti*'due to the predominance of Assamese culture in the vicinity. In general, the term '*Khuti*'refers to the shed in which the farmers keep their cattle during the night.

Table 1. Salient features of the *Khutis*

Salient features	Name of the *Khutis*		
	Zeroali	Haju	Kalikhola
Distance from *Khuti* to their home (km)	39	45	42
Distance from *Khuti* to the nearest town (km)	15	11	10
Primary Health Centre	Nil	Nil	Nil
Electricity supply	No	Yes	Yes
Fuel used	Kerosene and firewood	Kerosene and firewood	Kerosene and firewood
Drinking water	Tubewell	Tubewell	Tubewell
Domestic & livestock water	Tube well and river	Tube well and river	Tube well and river
Schools	Nil	Nil	Nil

Source: Field survey, 2017 – 2018

Table 2. Distribution and size of the *Khutis*

Khutis	No. of Very big farms	No. of big farms	No. of medium farms	Total
Haju	1	2	3	5
Kalikhola	1	0	0	2
Zeroali	1	2	2	5
Total	3	4	5	12

Source: Field survey, 2017 – 2018

The *Khuti* system is a unique way of dairying whereby the farmers from Sadiya sub-division in Assam practice it in the Sunpura circle of Arunachal Pradesh through mutual understanding. This system might have evolved during the olden days owing to the vast stretch of unoccupied grasslands

Plate 1. Khuti (cowshed) Farms and owners

Source: Field Survey 2017-2018

nearby the rivers of Arunachal Pradesh under the reserved forests. Similar system of dairy farming has also been reported between Naukillo, Lower Dibang Valley district, Arunachal Pradesh and Sadiya sub-division, Assam (Komor and Borah, 2015). As the areas fall under the reserved forests, the farmers pay a tax of Rs. 300 per year to the Government of Arunachal Pradesh.

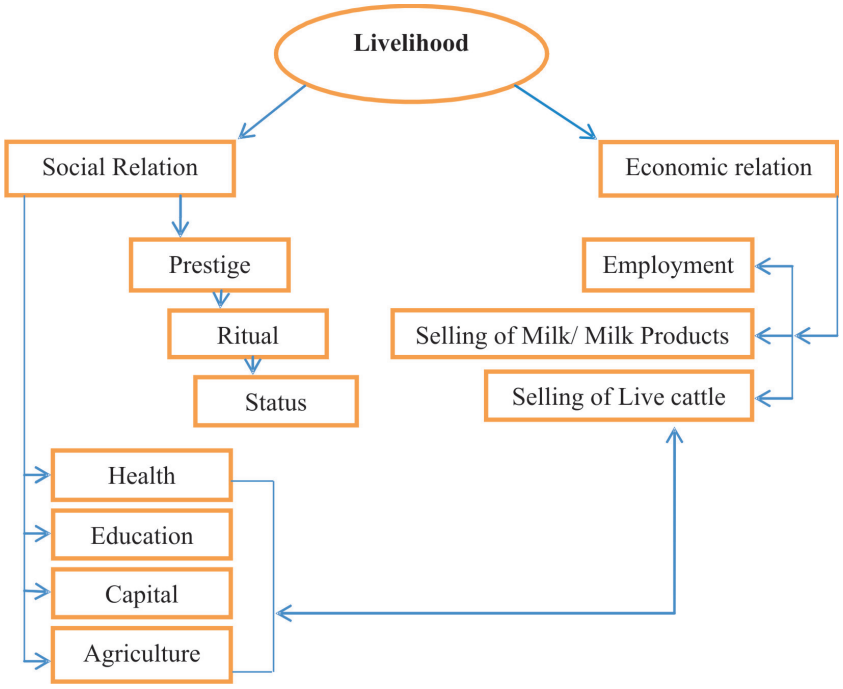
The dairy units or the *Khutis* are located in the far-flung areas with little anthropogenic influences and abundant supply of green grasses for fodder particularly near by the streams and rivers. Suchlocations provide the prerequisite conditions for the Nepali farmers to move their cattle and set up dairy units. Most of the *Khutis* are associated with the adjacent highways that are trampled into a pathway temporarily by the milkman (*Guwalas*) by clearing the forests. The raw milk from these dairy units is supplied to the local traders of Tezu town (Arunachal Pradesh) and Naogaon town (Assam). The traders employ a milk collector (Milkman) to collect the milk from the farmers. The milkman collects the milk at a particular time especially in the morning at the rate of Rs. 30 and sold at a higher rate of Rs. 45 to 50 in the markets. The bought milk finds its way to the local sweetshops and restaurants in the form of milk cake and confectionaries. A major share of the milk is supplied to Naogaon town for meeting the requirements of the sweet shops and restaurants. The local "*Pera*" (sweet) of Bhola Hotel at *Paya* is famous in the district as well as in the state of Arunachal Pradesh.

However, the *Khutis* are largely affected by cloudbursts leading to floods and submergence of the small corridors of the *Khuti* dwellers under floodwater. The *Khutis* are then cut off from the rest of the settlements and the fodder availability too decreases leading to reduction in per day milk production. In such a situation, the farmers find their way to produce butter, *ghee*, *paneer*, etc. to avoid the wastage of milk.

Socio-economic profile

Cattle rearing and dairy farming are essentially a cultural identity of the Nepali community. The ownership of cattle herds symbolizes the social acceptance and prestige because the higher the number of cattle in their farms, they receive better prestige in the community. Moreover, their belief system and religion are also linked to the cattle. The cow is considered pious and it is an integral part in most of the ceremonies performed by the community particularly the Bahun (Brahmin) and Chetry (Kshatriya) communities.

As per their tradition, a cow is donated to the Brahmin (*Gau Daan*) during a marriage ceremony



Model 2. Socio-economic linkages with dairy farming

known as '*Biye*' as well as during last day of the death rituals to getting rid of sins known as '*Terhvin*'. The Nepali community being Hindus by religion also treat cow as the second mother. All the products of cow like milk, curd, *ghee*, *gaumaya*, *gaumutram*, etc. are used in different rituals and ceremonies. Further, the urine of young female calf '*Gaumutra*' is also consumed after the ceremony of '*Sorad*' (parents' death anniversary) and '*Noran*' (naming ceremony of the child). The socio-economic linkages of the Nepali community with dairying are shown in Model 2.

Occupation of the respondents

The occupational pattern of the study area has been derived from the total population excluding the population below 5 years of age. Hence, the total population was 87, out of which 50 were male and 37 female. Majority of the population were found under student category (34.5%), followed by agriculture with 33.3%, and dairying with 21.8%. There were very less people in services with 5.7% and labour works with 4.6% only (Table 3). On the basis of the collected data, agriculture and dairying emerged as the main sources of income and occupation among the working population. Although some of the farmers practice agriculture in Assam, they largely depend on the dairy products especially milk to derive their livelihood. Paddy is the main food crop, which is cultivated for self-consumption only. Apart from paddy, the farmers also produce other crops like maize, mustard, buckwheat, ginger, and pulses. The results show most of the male members (30%) engaged in dairying while the female counter parts in agriculture (51.4%). The higher percentage of females in agriculture may be attributed to engagements in the household activities and look after the old-aged and children. The male members generally stay in the *Khutis* to take care of the livestock and extraction of the milk.

Educational status of the farmers

Educational status is one of the basic principles to understand the socio-economic progress and improvement of a community. The level of education has a great bearing on the occupational structure inclusive of the animal husbandry sector. The educational status of the dairy farmers is low due to challenging living environments and their migratory nature. Most of the villages are situated in remote areas with no provisions of schools. Besides, due to the distance factor, the poor farmers prefer to engage their grown-up children in assisting them in different household works including tending cattle and agricultural works.

The results show a very poor scenario of the education level among the *Khuti* households. Out of the total population, only 5% of the total male members are educated up to the college level and majority of the population are educated up to primary and secondary level of education (Figure 3). The school dropout rate was very high among the children especially girls. The primary reason for high dropout rates among the girls may be attributed to early marriage and assistance in household activities.

Basic amenities

The results show that the farmers of Naogaon village were more prosperous in compared to the other two villages in terms of basic amenities. Naogaon village has relatively higher percentages of pukka houses, televisions, mobile phones, bicycles and motorcycles (Figure 4). Availability of capital plays a vital role in the management of basic amenities and essential goods necessary to run the households. The farmers are meeting the household requirements through dairy activities anyhow.

Income from dairying

The farmers basically generate income by selling the milk and milk products like *paneer*, *ghee*, curd, etc.

Table 3. Occupationalpattern of the respondents

Sl. No.	Occupation	Male		Female		Total	
		Number	%	Number	%	Number	%
1.	Dairying	15	30.0	4	10.8	19	21.8
2.	Agriculture	10	20.0	19	51.4	29	33.3
3.	Service	3	6.0	2	5.4	5	5.7
4.	Student	18	36.0	12	32.4	30	34.5
5.	Labour	4	8.0	0	0.0	4	4.6
	Total	50	100	37	100	87	100

Source: Field survey, 2017 – 2018

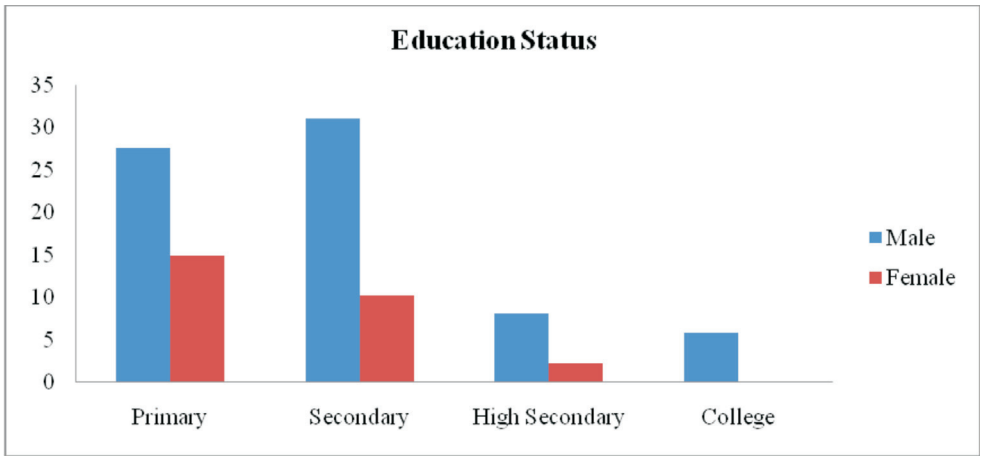
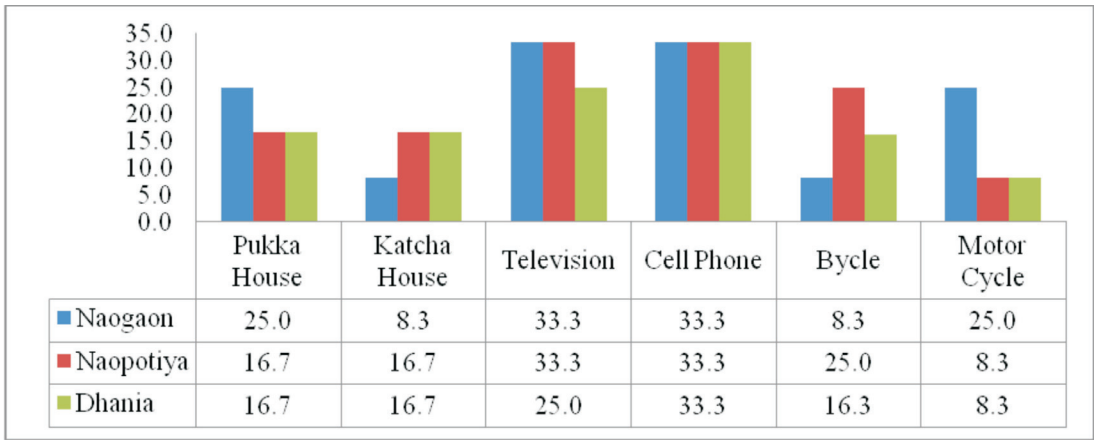


Fig. 3: Educational status of the Nepali dairy farmers

Source: Field survey, 2017 – 2018



	Pukka House	Katcha House	Television	Cell Phone	Bycle	Motor Cycle
Naogaon	25.0	8.3	33.3	33.3	8.3	25.0
Naopotiya	16.7	16.7	33.3	33.3	25.0	8.3
Dhania	16.7	16.7	25.0	33.3	16.3	8.3

Fig. 4. Basic amenities of the villages

Besides, the selling of live cattle also helps in generating additional income. Normally, the draught cattle are sold to the traders in 2 to 3 years gap. During the survey period, the selling price of milk at the farm level was fixed as Rs. 30 per liter. The milk production is seasonal as the production during the dry months (non-lactating period) is negligible. The lactating period of the cow is nearly about 170 to 180 days only. The total cattle population was 1,100, out of which 283 were milch cattle. The total milk production per day was 611 liters, out of which Zeroali produced the highest 326 liters, followed by Haju with 212 liters and Kalikhola with 73 liters. The highest income of Rs. 9,780 was recorded from 6 farms of Zeroali followed by Rs. 6,360 from 5 farms of Haju and Rs. 2,190 from 1 farm in Kalikhola *Khuti* (Table 4).

Apart from the milk and milk products, the farmers also supply draught animals for ploughing in the agricultural fields and pulling of the carts. They sell

Table 4. Income from milk/day from the dairy farm

Khutis	Farms	Cattle	Milch cattle	Production/day (liters)	Income (Rs.)
Zeroali	6	540	163	326	9,780
Kalikhola	1	130	20	73	2,190
Haju	5	430	100	212	6,360
Total	**12**	**1,100**	**283**	**611**	**18,330**

Source: Field survey, 2017 – 2018

draught cattle to the local traders and the traders again sell it to the middleman who supplies the cattle to various slaughter houses in the district as well as in the neighbouring state of Assam. Mostly the draught cattle are purchased by the local farmers to plough their agricultural fields. The local tribal people also purchase male cattle for rituals. The prices of draught cattle are not fixed and it varies depending on the size and health of the cattle.

Income generated from milk is influenced by the infrastructure development which includes the farm input prices like feeding cost, labor cost, veterinary services, water and electricity cost (Ahmad *et al*., 2013; Jayaweera *et al*., 2007; Sarker and Ghosh, 2008). Hence, the association between income coming from milk and infrastructure development was analyzed through a correlation analysis. The infrastructure development has been used as an independent variable (X) and the income coming from milk as a dependent variable (Y). The correlation analysis yield a correlation coefficient value of r = 0.996 showing strong positive relationship between income coming from milk and infrastructure development. Therefore, proper infrastructure development of the *Khutis* could increase the milk production and multiply their income to meet their day to day requirements. Besides, the surplus production can also be supplied to the nearby markets of Arunachal Pradesh and Assam to meet the rising demands of milk.

Conclusion

Khuti system of dairy farming by the Nepali community is a traditional practice and an integral part of their culture that is embedded in deriving their livelihood. The farmers are mostly dependent on dairy activities however; they also substantially practice agriculture that adds up to their overall economy. Most of the farmers are uneducated and their standard of living is low. Dairy farming is an important income-generating activity for them and also associated with their status, wealth, pride, and prosperity. Flood is a recurrent problem for developing dairy units in the area. Every year the farms are damaged by flood, but there are no restoration policies for the poor farmers. Apart from floods, the farms are lacking in infrastructure facilities especially veterinary services leading to outbreak of various contagious diseases like FMD, stomachache, skin diseases, etc. in cattle. Consequently, the production and development of dairy units in the area is hampered to a great extent. Moreover, the increasing interferences by the local landholders also cannot be ruled out. Hence, it can be concluded that the continuity of such a unique system of dairy farming is under threat. Therefore, concerted efforts focused on infrastructure development and mutual agreements on fixation of taxes by involving the local land owners and the government of Arunachal Pradesh and Assam appears highly essential at the moment. Such positive steps would ensure the continuum of traditional dairy farming of the Nepali community and also meet the milk demands of nearby localities.

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