



A STUDY ON POTENTIALS OF DAIRY FARMING IN NAINITAL DISTRICT OF UTTARAKHAND, INDIA

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Abstract: Dairy farming is an important part of our agro-ecosystem and rural economy. It is a significant source of income and vital trail of subsistence to the small and marginalized farmers and to the landless laborers also. Commercial dairy farming plays a vital role in the socio-economic development of the rural people throughout the country especially in the hilly states where land holding and opportunities for livelihood are very limited. The growth and development of dairy farming mainly depends on the infra-structural facilities provided to the dairy farmers with proficient rewards to the produced milk through dairy co-operatives, milk producer's societies, and milk collection centers. Dairy farming to a large extent relies on the level and pattern of animal husbandry practices such as varieties of livestock, socio-economic conditions, aspirations and awareness among farmers, etc. Current study deals with the potentials of dairy farming in Nainital district of Uttarakhand. Major objective o the current study is to assess the potentials of milk societies in Nainital district and analyze their problems and solutions.

Index Terms- Socio-economic, animal husbandry, livestock, livelihood, sustainable development, marginalized farmer, dairy farming.

I. INTRODUCTION

Animal husbandry is an integral part of traditional agriculture system in India. It has emerged as an important fm of diversification of agriculture and appeared as a source of employment (Khan et al., 2009). The important role played by dairy farming in the sustenance of landless and poor people in the village economy is quiet evident (Pandey and Pathak, 1997). Dairy farming has been considered as one of the most important value added farming systems practiced in the country. Cows and buffalos are the most important in the sense of commercialized dairy farming. About 90% of the milk all over the world comes from cows only. Small land holders in the mountain prefer to diversification of agriculture and dairy farming in order to reduce risks and more economic benefits from the limited resources. The dynamic and diverse systems of livestock provide ideal safety nets for small landholders and landless farmers (Yadav, 2012). It has also been recognized as a tool for the socio-economic upliftment of the rural sector (Mathur, 2000). Among the various basic needs, the animal fulfills the need of milk. Cows and buffalos domesticated on the large scale for the production of milk and its products. Milk production is a result of various processes and procedures involved in dairy business such as offering fodder to cattles, cleanliness of livestock and their sheds, movement of livestock from one place to another place, rearing of animals in the fields, management of cattles and many more. Good Dairy

Farming Practice (GDFP) is an important practice tool used worldwide for supporting farmers to produce and market quality milk and milk products to satisfy the expectations of the consumers and food based industry (FAO, 2011).

Normally, farmer rears one or two cattle for milk purposes to fulfill their daily needs of milk but more livestock are reared in commercial scale as a source of revenue regeneration for their socio-economic development. Manure from animals provides a good source of organic matter for the improvement of soil nutrient status as a substitute of chemical fertilizer which also minimizes the chances of soil and as well as underground water pollution. Dairy farming in India has been taken up as a prime occupation all around the metro cities, markets and residential centres where the demand for milk remains always high. Dairy farming has been considered as a part of Indian agriculture system since very long time but remained subsistence and traditional in nature. Recently, it has achieved nature of an important commercial activity. In India, where about 70% population resides in the rural areas, the dairy farming as an alternate occupation provides employment opportunities throughout the year to the rural people all over the country. Dairy farming has become an alternate source of nutritional security of the country and the products derived from the milk are easily available with low risk of environmental degradation.

Dairy development boards, Dairy Co-operatives and village milk societies play a crucial role in the development of dairy business in India the economic development of rural population. The dairy co-operatives in India have three tier of structure which consists of state level federations, district milk unions and dairy cooperative societies at villages respectively (Huria and Acharya, 1980). Evolution of dairy co-operatives has empowered the rural people and promoted the rural development as well (Bandhopadhyay, 1996).

As a hill state, Uttarakhand is rich in natural resources like water, land, forests and biodiversity. After tourism, milk production is also an important source of livelihood. Geographical conditions like soil, climate, vegetation, etc are the main determinants of successful dairy farming particularly in the mountainous region. Various measures have also been taken by the government to develop dairy business and livestock farming. The government has provided infra-structural and policy framework from which millions of dairy farmers are being benefited along with the market and institutional help provided by the government.

In the rural areas, dairy farming has become a major source of income for the people with limited land holdings and living in the poor conditions and also an alternate source of employment as well. With the development of urban and industrial centres like, Nainital, Haldwani, Dehradun, Rudrapur, Haridwar, Rishikesh, Pantnagar, Kashipur, Roorkee, etc, the demand for milk and milk products is continuously increasing day by day In this regard, the role of Uttarakhand Co-operative Dairy Federation Limited (UCDFL) and milk producer's unions of the districts is important, who are working with thousands of milk producer's societies all over the state. Financial status of the milk producers of these milk societies is continuously being improved by the sale of milk. By the time, various problems are also associated with the milk societies and milk producers. Exposure and hesitation is another reason due to which educated youth of the area feel shame in doing dairy business in spite of huge economic benefits rather than doing work in industries (Bohra et al., 2007). This is a fact that, agriculture has still not gained its prestige. Society still feels dairy and agriculture practice as a shameful job.



Nainital district lies in the Central Himalayas and consists of a series of ridges and valleys throughout its territory. The district is situated between $78^{\circ} 51' 11.34''$ and $79^{\circ} 58' 23.06''$ east longitude and $28^{\circ} 8' 31.84''$ and $29^{\circ} 36' 45.19''$ north latitude. Total area of the district is 3860 km^2 . District is bounded in north-east and north by the district of Almora and on the west side lies Pauri district of Garhwal and whereas the district of Champawat is on the east of Nainital. The annual average temperature recorded for the district Nainital is 28°C to -4°C . The district has a highly rugged terrain, marked with steep and high ridges and deep and narrow valleys

through which Gaula, Kosi, Bhakhra, Nandhaur rivers flow. Nainital district is also known as Lake District of

Uttarakhand. District receives an average annual rainfall of almost 1500 mm in most parts of the district and around 2000 mm in some areas of the central part of the district. Some amount of rainfall also occurs in winters whereas higher altitude of the district witness snowfall. In 2011, Nainital had population of 954,605 of which male and female were 493,666 and 460,939 respectively (Census, 2011).

II. MATERIALS AND METHODS

The present study is based mainly on the secondary sources of data and information. Problems have been identified by analyzing the data, personal observations and interaction with the concerned authorities of the different societies and Nainital Dugdh Utpadak Sahkari Sangh Ltd. Lalkuwan, Nainital. Various research articles, journals, magazines, newsletters, Sankhiki patrika as well as different reports of Uttarakhand Co-operative Milk Federation and Nainital Dugdh Utpadak Sahkari Sangh Ltd., have been consulted for the collection of data and literature.

III. RESULTS AND DISCUSSION

3.1 Pattern of Livestock distribution in Nainital district: The geographical conditions and the socio-economic profile of the study area are major determinants of the rearing and distribution of the livestock resources in the area. Dairy business in the study area is growing and has emerged as an alternate and reliable source of income generation and national security. It has provided employment to the rural masses directly or indirectly and opened a window of opportunities to get additional income through numerous dairy operations. Number of livestock used for dairy is important in the study related to dairy development. Table 1 shows the cattle demography of Nainital district for the year 2020-21.

Dairy development has resulted in the form of improvement in the consumption and nutrition intake of the people. It has also increased the purchasing power and standard of living of the people in the rural areas. The purchasing power, existing pattern of demand and supply and regional distribution of livestock are the major components which play a vital role in the development of dairy business.

According to the census 2021, in Nainital district the indigenous cows were 249180 while cross breed were 36876. Out of which, the above 3 years age class male cows were 94530 while female were 87914. Below 3 years age class, the total indigenous male and female cows were 66736. In case of cross breed cows, the number of male livestock was 4356 while it was 16540 for female cross breeds. The total cross breed cows who are below 3 years age class were 15980 (Table 1). In case of buffalos, the total number of buffalos was 139213. Out of which, the male buffalos above 3 years were 1831 while, it was 80932 in case of female. The total male and female buffalos who are below 3 years were 56450 (Table 1).

It is very much clear that, the 373 milk societies were working in Nainital district in the year 2020-21 (Table 2). Out of 373 societies, 152 societies are providing up to 1000 Litres of milk, 78 societies are providing 1001 to 2000 litres, 56 societies providing 2001 to 3000 litres, 40 societies providing 3001-4000 litres, 22 societies providing 4001 to 5000 litres, 16 societies providing 5001 to 6000 litres of milk per day. Only 9 milk societies fall under the category of above 6000 litres per day (Table 2).

3.2 Available animal related services in Nainital district: To get good quality and sufficient amount of milk reared livestock should be of good health and high breed. Government is providing animal hospitals and different reproduction centres and development farm to support dairy farming especially in rural and hilly regions for the upliftment of the socio-economic status of the rural peoples. In Nainital district, 56 veterinary hospitals are available. There are about 120 livestock development centres, 44 modern fertilization centres, 38 modern fertilization sub-centres and 10 animal reproduction farms also working within the district in the year 2020-21 (Table 3).

3.3 Potentials and problems related to dairy farming in Nainital district: Dairy development board, department of animal husbandry and Nainital Dugdh Utpadak Sahkari Sangh Ltd. Are providing different dairy related services in the district. Dairy business is evolving in the district continuously. Veterinary hospitals are working to provide their services, medication and dispensary services. Most of the animals in the district are of indigenous or local breed. Therefore, the produced milk is of good quality while its commercial value is very

low. There is a huge demand in the district to improve the quality of cattle breed. But, in the areas of hilly terrain, there are unlimited problems and challenges associated with the dairy business;

- 3.1.1 *Connectivity and topography:* Most of the villages are not well connected by roads especially in the hilly regions. Farmers face the problems related to carrying milk to the dairy centres and suffer a lot due to such a hilly area or remote area where seldom plains and level terrain is available. Lack of transport is a major concern in the course of dairy business development.
- 3.1.2 *Fodder and feed problem:* Dairy animals are mostly dependent for their food on the crop residue. Most of the farmers and people with small land holdings are involved in the dairy farming. Lack of proper nutrient and imbalance diet in the animal feed results in poor health and unproductive and less amount of milk. People are not much aware about the fodder crops and their cultivation as they preferably dependent on locally available grasses and on forests for fodder which remains available for few months throughout the year. They collect grass after rainy season and use it for the rest of the year which seldom prove to be sufficient for the whole year. Grasses available to the nearby areas can't sustain the dairy business effectively because of the huge demand for commercial dairy farming.
- 3.1.3 *Unavailability of market:* Dairy farmers haven't any access to ready market, so there is no any option to sell their milk and milk products at a very low price before it gets spoiled. Due to inaccessibility to urban market in the remote areas, farmers face a heavy financial loss.
- 3.1.4 *Lack of minimum support price:* In absence of milk collection centres in the nearby areas, the standard price generally distorted by the middle man. Due to lack of standard or minimum support price dairy farmer face the financial loss.
- 3.1.5 *Storage and processing problem:* there is total absence of cold storage and deep freezers and other processing units in the rural and hilly areas of Nainital district. Due to which quality of milk decreases and the dairy farmer face the overall economic loss.
- 3.1.6 *Lack of hospitals and veterinary amenities:* With the increasing population of milk producing animals, there are very Government is providing it at block level with deputing one veterinary doctor for the whole area. Due to which dairy farmers are bound to take services of private doctors for their livestock's treatment at higher charges which again results in heavy financial loss to the dairy farmer.
- 3.1.7 *Exploitation by middleman:* Major proportion of milk produced by the milk producers and farmers in the Nainital district is purchased at much lower prices by the middleman but they sell it in the town area at very high prices which results as heavy financial loss to the actual dairy farmers.
- 3.1.8 *Unavailability of credit and loan facilities in the remote areas:* Most of the farmers need financial assistance especially in remote areas and hilly regions of the district. They are unaware and unable to get the loans and avail the credit facility from government agencies, banks, etc. Due to fear and lack of awareness, they take loans from landlords which results in the form of exploitation in various ways. Most of the dairy workers don't have enough money to purchase livestock and modern tools which are required for the commercial dairy farming.
- 3.1.9 *Lack of awareness:* Dairy workers do not have reliable information about the dairy and dairy development programs and schemes initiated by the government. Ineffective dairy development program, low level of commercial education and literacy of dairy farmer are the major barriers in this field. Due to which, they are neither in the condition to get benefits from them nor they cultivate benefits of dairy business programs, policies and plans.
- 3.1.10 *Migration problem:* Migration is a big issue in hilly region the district. A huge number of people migrate every year in the search of jobs and for better education. Thus, agricultural activities are continuously decreasing and creating fodder problems as dairy business need great work force.
- 3.1.11 *Water crises:* Water is an essential element in the dairy business such as, for drinking, for cleaning animals and their living places, etc. In the remote areas and especially in hills, availability is at high risk. Available resources are depleting and decreasing continuously day by day due to poor and uncertain rain. Quality of water is another issue with the dairy farmers due to increasing use of chemicals and fertilizers in agricultural activities.
- 3.1.12 *Problems with hybrid animals:* Animals in hill region of the district give less milk as compare to foothills and Bhabhar region of the district. Local breeds are not much suitable as compared to hybrid ones for commercial purposes. Hybrid animals require more care and advanced tools and techniques for

rearing to them. Poor farmers are not in the capacity to invest huge amount for such technologies and tools and cannot afford hybrid animals without government support.

3.1.13 Poor interest towards dairy farming: Rural people of the Nainital district are migrating towards towns in search of their livelihood. They are not interested to adopt dairy farming as a means of livelihood. Exposure and hesitation is another reason due to which educated youth of the area feel shame in doing dairy business in spite of huge economic benefits rather than doing work in industries which are far from home area. This is a fact that, agriculture has still not gained its prestige. Society feels dairy and agriculture practice as a shameful job.

3.1.14 Potentials and suggestions for dairy development: As many as possible dairy cooperatives should be set up by the government for the promotion of dairy farming and welfare of dairy workers in Nainital district and surroundings.

Requirement of some provisions to provide financial assistance to the farmers engaged in dairy business in such adverse conditions. Provision of money in advance should be facilitated as producers are bound to sell their milk to the middleman. So, the credit facilities and collection centres should be established to abolish the exploitation by milkman. Development and establishment of modern chilling plant /centres are the necessity of the area. Most probably each block must have a chilling plant according to their area and availability of transportation in the block to avoid problems in milk collection and distribution.

Veterinary services should be provided to maintain the productivity and health of animals for the village –based producers. Animals should be fed with balanced diet to increase productivity and maintain health standards. Connectivity, infrastructure and transport system of these villages involved in dairy business should be improved.

There should be a developed price determination mechanism in the dairy farming and price should be fixed. Proper guidance and modern techniques should be provided to dairy producers to enhance the productivity and profitability of dairy farming. Dairy development programs should encourage rearing of highly productive animals like modern breeds of buffalos and cows for the development of dairy farming as a sustainable livelihood generation project. Government and non-government agencies should organize various workshops and seminars to make dairy workers aware about the modern dairy farming practices, tools and technologies. Most of the agricultural works in Uttarakhand and also in Nainital done mainly by women especially related to livestock. Therefore, it is essential to support and provide financial assistance and training to them who are involved in dairy business. Proper use of cow dung can support the organic farming rather than the dependency on chemical fertilizers. Women are deprived of land ownership rights. They are unable to run their enterprise individually and cannot get credit facilities from the co-operative societies without rights on land which is essential and mandatory for loan sanction. It is also suggested that the women involved in the dairy farming should be given free access to the education and training provided by dairy co-operatives.

There is huge demand of fodder crops for running the dairy business successfully in Nainital district. Classification of fodder plants and grasses should be done properly by the government so that farmers can use those plants and their leaves for feeding their milch animals without damaging them. Plants like Bheemal, Timal, Khadik, etc and many more can be planted on the boundaries of the fields.

IV. CONCLUSION

Dairy farming is one of the important sources of the revenue generation and providing business opportunities to the rural families and farmers in Nainital district. Dairy co-operatives have played an important role in the daily development. In the study area, dairy farming is done mainly by small, marginalized farmers and landless laborers. Dairy development has resulted in the improvement of nutritional intake and milk products consumption along with milk. It has also increased the purchasing capacity and socio-economic status of rural people. Various problems discussed are affecting dairy farming in Nainital district and reduces the pace of socio-economic development in the rural areas. Women's active participation, people's awareness, proper management and government support can take the dairy business to the new heights which can resolve the livelihood security issues of the rural as well as hilly people of the district to a maximum extent.

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Table 1: Cattle population in Nainital District (2020-21).

TYPE	GROUP	POPULATION	TOTAL
Indigenous Cow	Male above 3 yrs	94530	249180
	Female above 3 yrs	87914	
	Male + Female below 3 yrs	66736	
Cross Breed Cow	Male above 3 yrs	4356	36876
	Female above 3 yrs	16540	
	Male + Female below 3 yrs	15980	
Buffalo	Male above 3 yrs	1831	139213
	Female above 3 yrs	80932	
	Male + Female below 3 yrs	56450	
Total			425269

Table 2: Procurement of milk from village societies by Nainital Dugdh Utpadak Sahakari Sangh Ltd. (2020-21).

MILK PROCUREMENT (In Litres)	NUMBER OF SOCIETIES
01-1000	152
1001-2000	78
2001-3000	56
3001-4000	40
4001-5000	22
5001-6000	16
Above 6000	09

(Source: Based on Annual Progress Report of Nainital Dugdh Utpadak Sahkari Sangh Limited, 2020-21.)

Table 3: Animal related services in district Nainital, 2020-21.

VETERINARY HOSPITALS AND OTHER SERVICES IN NAINITAL DISTRICT, 2020-21	
Veterinary Hospitals	56
Livestock Development Centres	120
Modern Fertilization Centres	44
Modern Fertilization Sub-Centres	38
Animal Reproduction Farm	10

(Source: Sankhiki Patrika, 2020.)