**Socio-Economic Profiling of Dairy Farmers in Kumaon Region of Uttarakhand (India): A Multidimensional Study on Knowledge, Adoption, and Access to Support Services and Resources**

**ABSTRACT**

*Dairy farming plays a critical role in meeting the nutritional needs of India's growing population while offering significant livelihood opportunities, particularly in rural and hilly regions like Uttarakhand. This study aimed to assess the socio-economic profile, knowledge level, adoption behavior, and access to resources among dairy farmers in the Kumaon region, covering the districts of Almora and Pithoragarh. A sample of 100 dairy farmers was selected randomly from ten villages in two districts, and data were collected through direct interviews using a pre-tested questionnaire. Findings revealed that dairy farming in the region is primarily managed by middle-aged male farmers with marginal landholdings and secondary-level education. Most farmers operate in joint family systems and engage in dairy alongside other agricultural activities. Despite a high willingness to adopt improved dairy practices, the majority demonstrated only medium levels of knowledge and adoption, with limited access to training and support services. Women, although heavily involved in daily operations, were underrepresented in ownership and decision-making roles. The study underscores the importance of targeted interventions to improve training, extension contact, media exposure, and gender inclusion. Enhancing access to resources and promoting women’s participation as recognized entrepreneurs are essential to making dairy farming more sustainable and equitable. These insights are vital for shaping region-specific strategies and policy frameworks that support the long-term viability of the dairy sector in hilly terrains.*

Keywords: Dairy Farming, Socio-economic profile, Knowledge and Adoption, Extension contacts, Media exposure, Kumaon Dairy Farming

**Introduction**

Dairy farming has long been a vital sector, not only for fulfilling the nutritional requirements of the population but also for enhancing the income of dairy entrepreneurs. Dairy products, available in a wide array of forms, meet diverse dietary needs across households while offering significant income-generating potential for producers. With India's growing population and the consequent surge in demand for dairy products, the dairy industry is under increasing pressure. Therefore, an imperative to focus on developing dairy farms in a sustainable manner. According to the National Dairy Development Board (NDDB, 2025), India’s milk production has increased 4.3 times over the past 25 years. Between 2014–15 and 2023–24 alone, milk production rose by 63.56%, from 146.3 million tonnes to 239.2 million tonnes—an impressive average annual growth rate of 5.7% (Press Information Bureau, 2025). Despite these achievements, there is a pressing need to assess whether this growth trajectory aligns with long-term sustainability goals. Understanding the sustainability of dairy farming requires a deep analysis of the socio-economic profile of farmers, as their behaviors and decisions are heavily influenced by these factors like age, gender, education occupation, income etc. Studying the socio-economic characteristics and knowledge-adoption behavior of dairy farmers is crucial to understanding what drives or hinders the adoption of sustainable practices. Variables such as education, income, landholding size, access to credit, and availability of extension services play a significant role in determining a farmer’s capacity to learn and apply improved dairy management practices. Analyzing these relationships helps identify gaps in knowledge dissemination and resource accessibility, enabling the design of targeted interventions that encourage the adoption of sustainable methods. Such research is fundamental for developing policies and programs that align innovative solutions with the real-world circumstances of farming communities, thereby promoting the long-term sustainability of the dairy sector.

By understanding the local context and profiling farmers accurately, this study aimed to evaluate the effectiveness of current extension services and the extent to which sustainable dairy practices have been adopted. The findings are intended to inform region-specific strategies that support sustainable dairy development, improve farmer livelihoods, and enhance the resilience of the dairy sector in Uttarakhand. In light of these considerations, the present study was conducted in the state of Uttarakhand, India. The region, with its diverse agro-climatic conditions and predominantly smallholder dairy farmers, offers a representative setting for examining how socio-economic variables influence knowledge levels, adoption behavior, and overall sustainability in dairy farming. Keeping in view the importance of socio-economic data in understanding the overall development of dairy business and in ensuring the sustainability of entrepreneur, the present study was planned with the following objectives.

Need details of hilly people and how they became a dairy farmers and etc. these details are missing.

1. To study socio-economic profile of the dairy farmers
2. To understand knowledge, adoption and access to resources by dairy farmers in hills.

**Research Methodology**

The present study was conducted during the year 2024-25 in Kumaon region of Uttarakhand covering two districts *vie* Alomra and Pithoragarh selected randomly. Fifty dairy farmers from five randomly selected villages (Ten from each selected village) were interviewed directly with a pre-tested scientific questionnaire to collect information and draw inferences from a total sample size of hundred dairy farmers. The data collected was compiled, tabulated, analyzed and interpreted with statistical means and comparison.

**Result and Discussion**

1. **Socio-economic Profile of Dairy Farmers**
2. **Age**

It could be seen from the Table 1 that the majority of the dairy farmers (44.00%) were under middle age category. The maximum and minimum of ages of dairy farmers was 67 and 24 years. The results observed to be in conformity with the study conducted by Jaiswal*et. al* ( 2024), Sumi *et al* (2024), Singh *et al* (2021), Basak et al (2021), Maurya*et.al* (2021), Anju Bala *et al* (2023) and Adhikari *et al* (2020)

1. **Gender**

Majority of dairy farms (75.00 percent) are controlled by males whereas female owns (25.00 percent) less dairy farms. The results of the study are in line with the findings of Similar findings were reported by Shyam (2023), Rajadurai et al (2018), Basak et al (2021) and Nirmala (2021) and Singh (2024).

1. **Occupation**

Occupation status indicates the type of income generating activities undertaken by the respondents. The present study reveals that majority of the respondent dairy farmers (60.00%) were having activity of dairy with other agricultural activities including agriculture labourer. Results obtained in the study are in line with the observations by Eyazhini *et al* (2021) and Mithun *et.al* (2022)

Table 1: Socio-economic profile of Dairy Farmers

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Parameter** | **Frequency (n=100)** | **Percentage** |
| 1 | **Age (in years)** | | |
|  | 1. Young age (<35) | 32 | 32.00 |
|  | 1. Middle age (35-50) | 44 | 44.00 |
|  | 1. Old age (>50) | 24 | 24.00 |
| 2 | **Gender** | | |
|  | 1. Male | 75 | 75.00 |
|  | 1. Female | 25 | 25.00 |
| 3 | **Occupation** | | |
|  | 1. Dairy farming | 20 | 20.00 |
|  | 1. Dairy + Other agricultural activities including agriculture labourer | 60 | 60.00 |
|  | 1. Dairy farming + Business / service | 20 | 20.00 |
| 4 | **Education status** | | |
|  | 1. Illiterate | 0 | 0.00 |
|  | 1. Functional literate | 8 | 8.00 |
|  | 1. Primary | 15 | 15.00 |
|  | 1. Middle | 14 | 14.00 |
|  | 1. Secondary | 26 | 26.00 |
|  | 1. Higher Secondary | 22 | 22.00 |
|  | 1. Graduate and above | 15 | 15.00 |
| 5 | **Year of farming experience** | | |
|  | 1. Short (<10) | 70 | 70.00 |
|  | 1. Medium (10-14) | 20 | 20.00 |
|  | 1. Long (>14) | 10 | 10.00 |
| 6 | **Financial help / loan received** | | |
|  | 1. Received | 76 | 76.00 |
|  | 1. Not Received | 24 | 24.00 |
| 7 | **Training received** | | |
|  | 1. No (0) | 6 | 6.00 |
|  | 1. Low (1) | 28 | 28.00 |
|  | 1. Medium (2) | 52 | 52.00 |
|  | 1. High (>2) | 14 | 14.00 |
| 8 | **Family type** | | |
|  | 1. Joint | 66 | 66.00 |
|  | 1. Nuclear | 34 | 34.00 |
| 9 | **Total operational land holding (hectare)** | | |
|  | 1. Marginal (<1) | 80 | 80.00 |
|  | 1. Small (1-2) | 12 | 12.00 |
|  | 1. Semi-medium (2-4) | 08 | 08.00 |
| 10 | **Herd size (No. of animals)** | | |
|  | 1. Small (<10) | 80 | 80.00 |
|  | 1. Medium (10-20) | 15 | 15.00 |
|  | 1. High (>20) | 05 | 05.00 |
| 11 | **Total dairy production (Litre milk/day)** | | |
|  | 1. Low (<100) | 90 | 90.00 |
|  | 1. Medium (100-200) | 08 | 08.00 |
|  | 1. High (>200) | 02 | 02.00 |
| 12 | **Media Exposure (per year)** | | |
|  | 1. Short (<4) | 30 | 30 |
|  | 1. Medium (4-6) | 50 | 50 |
|  | 1. High (>6) | 20 | 20 |
| 13 | **Extension contacts (per year)** | | |
|  | Low (<4) | 10 | 10 |
|  | Medium (4-5) | 70 | 70 |
|  | High (>5) | 20 | 20 |

1. **Education status**

Education is an act or process of acquiring general knowledge, developing the process of reasoning and judgment, and preparing oneself for mature life. Education status of an individual farmer plays vital role in realizing higher performance. The data depicted in Table 1 reveals that majority of the dairy farmers (26.00%) were having secondary level of education followed by higher secondary level of education (22.00%). 15 per cent of the dairy farmers were also reported to have education level of graduate & above. Results obtained in the present study are in conformity with the findings of Jaiswal *et. al* (2024), Thakur & Monga (2022), Singh *et. al* (2021), Eyazhini *et. al* (2021), Nirmala (2021) and Rahman (2011) and Sahu *et. al* (2017) in different studies on dairy farming.

1. **Year of farming experience**

Farming experience is the factor that contributes to the sustainability of the dairy farming. In the presented study, the data presented at Table 1 reveals that majority of the dairy farmers in Kumaon region of Uttarakhand were having short farming experience (70.00%), followed by medium level of farming experience (20.00%)

1. **Financial help/loan received**

Study revealed that majority (76.00%) of the dairy farmers has taken financial help from at least one financial institution where as 24 per cent farmers has never taken any financial help to run their dairy farming activities.

1. **Training received**

Data of the study presented in Table 1 reveal that majority of the farmers (52.00%) lies in the medium training received category followed by Low level (28.00%) of training received category.

1. **Family type**

The joint families were found to be involved more in dairy farming (66.00%) than nuclear families (34.00%). The reason for the phenomenon can be explained as the labour intensive job nature of dairy farming. Similar observations were reported by Anju Bala *et. al* (2023) and Jaiswal *et. al* (2024)

1. **Operational land holding**

The present study reveals that majority (80.00 %) of the farmers involved in dairy farming activities has marginal land holding followed by small land holding farmers (12.00%). The hilly nature of the study area can be the explanation for the phenomenon. Adhikari *et al* (2020), Gautam *et. al* (2017) also observed the same along with Rajadurai *et. al* (2018), Maurya *et. al* (2021) who reported majority of the farmers with small and marginal land holdings respectively.

1. **Herd size**

Majority (80.00%) of the dairy farmers were found to have small herd size up to the size of 10 followed by medium (15.00%) herd size and least (5.00%) of the farmers were found with high herd size. Similar results were reported by Anju *et. al* (2023), Jaiswal*et. Al* (2024), Shankar *et. al* (2019) and Mithun *et.al* (2002) in studies related to dairy farming.

1. **Dairy production**

Majority of the dairy farming venture (90.00%) were found with low level of production followed by medium level (8.00 %) and high level (2.00%) of production. Rajput *et . al* (2023) and Manjunath *et. al* (2020)also observed low level of dairy production for majority of farmers in study conducted in Gujraat and Karnataka respectively.

1. **Media Exposure**

Exposure to various forms of media plays a crucial role in equipping farmers with up-to-date information on dairy farming practices, market trends, and government policies. A farmer’s level of media exposure often reflects their degree of progressiveness and openness to adopting new agricultural technologies. In the current era, media has emerged as a pivotal tool for the dissemination of innovative farming techniques and critical information. Channels such as magazines, newspapers, radio, television, and telephone are instrumental in spreading awareness and enhancing agricultural knowledge. Given this significance, it becomes imperative to assess the level of media exposure among farmers. Table 1 presents the classification of farmers based on their media exposure levels along with the corresponding frequency distribution. A perusal of the data reveals that 30.00% of the farmers fall under the category of low media exposure, while 50.00% demonstrate high media exposure. These findings are consistent with those reported by Onima *et . al.* (2015), Prakash (2009), and Gaungly (2005), who also observed a positive correlation between media exposure and agricultural advancement,. These observations are in line with Wetal *et. al* (2023), Khalangre and Suryawanshi (2023 and Manjunath *et. al*  (2020).

**Table 2: Knowledge, adoption, extension contacts and access to resources and support services Table 2 should present below the extension contcat**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Parameter** | **Frequency (n=100)** | **Percentage** |
| 1 | **Knowledge on improved dairy practices** | | |
|  | 1. Low | 30 | 30.00 |
|  | 1. Medium | 48 | 48.00 |
|  | 1. High | 22 | 22.00 |
| 2 | **Adoption level of improved dairy farming practices** | | |
|  | 1. Low | 20 | 20.00 |
|  | 1. Medium | 52 | 52.00 |
|  | 1. High | 28 | 28.00 |
| 3 | **Access to Resources and Support Services** | | |
|  | 1. Low | 26 | 26.00 |
|  | 1. Medium | 54 | 54.00 |
|  | 1. High | 20 | 20.00 |

1. **Extension contacts**

Prompt and effective transfer of agricultural technologies largely depends on regular extension contact between farmers and various change agents. Frequent interactions with these agents significantly motivate farmers to adopt new and improved farming practices. Moreover, such consistent engagement encourages farmers' active participation in decision-making processes related to agricultural development. The categorization of respondents based on the frequency and nature of their extension contacts is presented in **Table 1. Majority of the farmer found to have medium (70.00%) extension contacts followed by high (20.00%) and low (10.00%) extension contacts.** These observations are in line with Wetal *et. al* (2023), Khalangre and Suryawanshi (2023) and Manjunath *et. al* (2020).

1. **Knowledge, Adoption, and Access to Support Services and Resources**
2. **Knowledge on improved dairy practices**

Knowledge is the fact or condition of being aware of something, acquaintance with or understanding of a sequence, art or technique, familiarity gained through experience or association. Data presented in Table 2 reveal that majority (48.00%) of the dairy farmers were processing medium level of knowledge on improved dairy farming practices followed by low (30.00%) level of knowledge on improved dairy farming practices. Mali *et. al* (2014) also reported the majority of farmers in medium category of knowledge on improved dairy practices.

1. **Adoption of improved dairy farming practices**

The level of adoption of improved dairy farming practices was investigated and presented in Table 2 which depicts that majority (52.00%)of the farmers were in medium category of adoption followed by high level of adoption (28.00%) and dairy farmers with low level of adoption were 20.00%. The results are in conformity with Panday *et. al* (2024), Mali *et. al* (2014).

1. **Access to Resources and Support Services**

Data on access to resources and support services was collected and has been compiled and depicted in Table 2 which reveals that majority (54.00%) of the dairy were having medium level of access to resources and support service followed by low level (26.00 %) of access to resources and support services.

**Conclusion**

The study revealed that dairy farming in the area is largely managed by middle-aged male farmers with secondary education and marginal land holdings. Despite being a joint family activity, where women play a crucial role in daily cattle rearing, they remain excluded from ownership and entrepreneurial recognition. The gender disparity in dairy entrepreneurship highlights the need for targeted interventions. Enhancing women's participation as entrepreneurs—not just as workers—can address the prevailing gender gap while also boosting the sector’s overall productivity. Policy reforms and support programs must be directed toward empowering women with ownership rights, access to resources, and decision-making roles in the dairy industry.

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