Print ISSN : 0972-8813
e-ISSN : 2582-2780

[Vol. 24(1) January-April 2026]

Pantnagar Journal of Research

(Formerly International Journal of Basic and Applied Agricultural Research ISSN : 2349-8765)

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https://doi.org/10.67063/pjr.vol.24.issue.01.02

From profile to problems: A study on socio-economic status and constraints of rural women in dairy farming

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ABSTRACT: The present study was undertaken to analyze the constraints faced by rural women in dairy farming and to understand their socio-economic profile. The study was conducted on a sample of 154 respondents selected from the study area using appropriate sampling techniques. Data were collected through a structured interview schedule and analyzed using descriptive statistics and the Garrett ranking technique. The findings revealed that the majority of respondents belonged to the middle age group, were primarily engaged in farming and allied activities, and had a moderate level of education. Most of the respondents were from nuclear families and belonged to the marginal farmer category, indicating limited access to land and resources. The income distribution further showed that a large proportion of respondents fell under the low-income category. The Garrett ranking analysis indicated that household responsibilities were the most severe constraint faced by rural women in dairy farming, followed by high cost of feed and fodder and inadequate availability of water. Other major constraints included low price of milk offered by dairy centres, lack of training facilities, and inadequate veterinary services. Limited awareness about government schemes and lack of access to improved breeds and disease management practices were also identified as important challenges. The study concludes that rural women face multiple interrelated constraints that hinder their effective participation in dairy farming. Therefore, there is a need for targeted interventions such as capacity building programmes, improved extension services, better access to veterinary care, and enhanced awareness of government schemes. Such measures can significantly improve productivity, income, and empowerment of rural women in the dairy sector.

Key words: Constraints, Dairy farming, Kumaon division, Rural women, Uttarakhand

Agriculture is the cornerstone of India's rural economy, and within this framework, dairy farming has emerged as a critical livelihood activity. With India holding the world's largest livestock population, the dairy sector accounts for nearly 5% of the national economy and sustains the nutritional security of millions. Rural women constitute an indispensable component of this sector, particularly in states like Uttarakhand, where mixed farming systems dominate household economies. (Singh and Verma, 2020). In India, nearly 88% of rural women are engaged in agriculture and allied activities, with dairying serving as one of their primary occupations. (Rajpoot *et al.,* 2018). Women's roles in dairy farming are multifaceted: they are involved in fodder collection, feeding and watering livestock, milking, cleaning cattle sheds, dung cake preparation, milk processing, and marketing (Bhat *et al.*, 2023). Despite this extensive participation, their contributions often remain undervalued and inadequately documented. In Uttarakhand's Kumaon Division, where households typically own small herds of cattle or buffalo, women bear the responsibility of ensuring continuous milk production and maintenance of animal health. The state of Uttarakhand, endowed with rich natural resources, has considerable potential for dairy development. Uttarakhand state contributes about 1.5% of India's total milk production, producing nearly 1.84 million metric tonnes annually. More than 90% of the dairy farmers in the state operate at a small or medium scale, with women's participation estimated at over 70%. Cooperative initiatives such as the Uttarakhand Cooperative Dairy Federation (UCDF) and government schemes like the Women Dairy Scheme and Ganga Gaay Mahila Dairy Yojana have attempted to empower women and strengthen dairy farming in the state. Despite the progress made,

rural women in Kumaon face a multitude of challenges that limit their productivity and participation in the dairy sector. Research highlights issues ranging from inadequate market facilities and low milk prices to lack of access to veterinary care, fodder shortages, and restricted mobility due to socio-cultural norms (Pushpa, 2010). These constraints not only reduce profitability but also discourage the adoption of scientific dairy practices. Marketing constraints are particularly critical, as delayed payments and unstable milk prices often undermine women's economic security. Financial barriers, including limited access to credit and high feed costs, exacerbate the situation, while institutional constraints such as bureaucratic delays and insufficient extension services further restrict women's potential. Personal barriers like illiteracy, low technical knowledge, and restricted decision-making power add to these challenges. Given this context, it is essential to systematically identify and analyze the constraints faced by rural women in dairy farming in the Kumaon Division. Understanding these barriers will help design gender-sensitive interventions that can improve efficiency, enhance livelihoods, and promote women's empowerment in the dairy sector.

The present study was undertaken with the objectives to explore the socio-personal, economic, psychological, and communication characteristics of rural women; to know constraints faced by rural women towards dairy farming; to study the relationship between how selected socio-personal, economic, psychological, and communication characteristics correlate with knowledge and attitude of rural women towards dairy farming in Kumaon. Such an analysis is crucial for designing location-specific, gender-sensitive policies that enhance women's participation and productivity in the dairy sector.

MATERIALS AND METHODS

The present study was conducted in the Kumaon Division of Uttarakhand**,** specifically in the Kotabagh block of Nainital district. Using simple random sampling**,** three villages- Devipur, Naripur, and Khadakpur were selected. A total of 154 rural women involved in dairy farming were chosen as respondents using the Probability Proportionate to Size (PPS) method, with the sample size determined using Yamane's formula**.**

Yamane's formula:
$n = N / (1 + N * (e^2)$
Where, n = sample size,
N = population size,
e = margin of error

The total population across the three villages was 628, and at a 7% precision level, the required sample size was calculated as 154 (88 from Devipur, 38 from Naripur, and 28 from Khadakpur). Data collection was done using structured interview schedule through personal interviews in the local dialect to ensure clarity and accuracy. The study employed a descriptive research design, appropriate for systematically describing existing conditions, characteristics, and relationships among variables without manipulation. The socio-economic status of the respondents was measured using the scale developed by Pandya and Pandya (2007)

The data collected were analyzed using frequency, percentage, mean score, and data were analyzed using garrett ranking technique to prioritize constraints. Respondents were asked to rank their major problems, and scores were converted into mean percent positions to obtain the final ranking. Independent Variables: Age, education, annual income, landholding, herd size, socio-political participation, mass media exposure, extension participation, personal achievement, and experience in dairy farming. Dependent Variables: Knowledge of dairy farming, Attitude towards dairy farming. Data were collected using a pre-tested structured interview schedule covering socio-economic profile, and attitude scale (developed by Prajapati, 2018).

RESULTS AND DISCUSSION

General Information of respondents

Age: The age composition of the respondents revealed that a substantial majority (67.53%)

belonged to the middle age group (39–54 years), followed by 19.48 per cent in the old age category (>54 years), while only 12.99 per cent were young (<39 years). This indicates that the study predominantly involved individuals in their economically productive and decision-making phase, which may positively influence adoption behaviour and participation in developmental activities.

Caste: The caste distribution showed that the majority of respondents (61.04%) belonged to the general category, followed by Other Backward Classes (26.62%), Scheduled Tribes (7.14%), and Scheduled Castes (5.19%). The dominance of the general category suggests a relatively higher representation of socially advanced groups in the study area, which may have implications for access to resources and institutional support.

Occupation: Occupational analysis revealed that an overwhelming majority of respondents (79.87%) were engaged in farming and allied activities, indicating agriculture as the primary source of

Table 1: Socio-personal, economic, psychological and communication characteristics of rural women (n=154)

Sr. No.	Variable	Category	Frequency	Percentage
1	Age	Young (<39)	20	12.99
		Middle (39–54)	104	67.53
		Old (>54)	30	19.48
2	Caste	General	94	61.04
		OBC	41	26.62
		ST	11	7.14
		SC	8	5.19
3	Occupation	Govt. service	7	4.55
		Farming/Business	123	79.87
		Private service	5	3.25
		Unskilled	19	12.34
4	Education	College/Postgraduate	19	12.34
		High school	41	26.62
		Middle school	21	13.64
		Primary	39	25.32
		Functionally literate	11	7.14
		Illiterate	23	14.94
5	Annual Income (₹)	1,00,001–1,50,000	11	7.14
		50,000–1,00,000	46	29.87
		Up to 50,000	97	62.99
6	Family Type	Joint	41	26.62
		Nuclear	113	73.38
7	Family Size	1–2	4	2.59
		3–4	33	21.43
		5–6	78	50.65
		7–8	31	20.13
		>8	8	5.19
8	Land Holding	Medium	6	3.90
		Semi-medium	25	16.23
		Small	32	20.78
		Marginal	91	59.09
9	Socio-political Participation	Active	5	3.25
		No participation	149	96.75
12	Type of House	Double storied	9	5.84
		Concrete	145	94.16
13	Personal Achievement	Award received	2	1.30
		No award	152	98.70

Table 2: Constraints faced by rural women towards dairy farming

S. No.	Constraints	Percent Position (%)	Garrett Score	Mean Score	Rank
1	Household responsibilities	5	82	53.15	I
2	High cost of feed and fodder	15	70	52.44	II
3	Availability of water	25	63	52.38	III
4	Low price of milk offered by dairy centres as compared to market price	35	58	51.68	IV
5	Lack of training facilities in dairy sector	45	53	50.39	V
6	Lack of veterinary facilities in village	55	47	49.05	VI
7	Inadequate information about government schemes related to dairy farming	65	42	48.95	VII
8	Disease prevention	75	37	48.76	VIII
9	Non-availability of superior breeds	85	29	46.83	IX
10	Distant location of artificial insemination centres	95	17	41.32	X

livelihood. A smaller proportion of respondents were employed in government service (4.55%), private sector jobs (3.25%), and unskilled occupations (12.34%). This reflects the agrarian nature of the study area and the dependence of households on agriculture-based income.

Education: The educational status of respondents indicated a moderate level of literacy. The highest proportion (26.62%) had education up to high school, followed by primary level (25.32%). About 13.64 per cent had middle school education, while 12.34 per cent had attained college or postgraduate education. However, a considerable proportion (14.94%) of respondents were illiterate, and 7.14 per cent were functionally literate. This distribution highlights the presence of both educated and less-educated groups, which may influence knowledge dissemination and technology adoption.

Annual Income: The income distribution revealed that a majority of respondents (62.99%) belonged to the low-income category, earning up to ₹50,000 annually. About 29.87 per cent were in the medium-income group (₹50,000–1,00,000), while only 7.14 per cent earned between ₹1,00,001 and ₹1,50,000. The absence of respondents in higher income categories reflects the economically constrained conditions of the study population, which may limit their capacity for investment and risk-taking.

Family Type: Analysis of family type showed that a large majority of respondents (73.38%) belonged to nuclear families, whereas 26.62 per cent were part of joint families. This trend indicates a shift from traditional joint family systems towards nuclear family structures, which may influence decision-making autonomy and resource allocation within households.

Family Size: With respect to family size, more than half of the respondents (50.65%) had medium-sized families comprising 5–6 members. This was followed by 21.43 per cent having 3–4 members and 20.13 per cent having 7–8 members. Only a small proportion had very small (2.59%) or very large families (5.19%). This suggests that most households maintain a moderate family size, which is considered optimal for resource management.

Land Holding: The distribution of landholding indicated that a majority of respondents (59.09%) were marginal farmers (up to 1 hectare), followed by small farmers (20.78%), semi-medium farmers (16.23%), and only a few medium farmers (3.90%). This clearly highlights the predominance of small and marginal landholders in the study area, reflecting limited agricultural resources and fragmented land ownership.

Socio-political Participation: Socio-political participation among respondents was found to be very low, with 96.75 per cent reporting no participation in any formal organizations or leadership roles. Only 3.25 per cent were actively involved as office bearers. This indicates limited

engagement in community decision-making processes and suggests a need for strengthening institutional participation.

Material Possession: All respondents reported possession of various household and farm-related assets, including communication devices, agricultural implements, and basic amenities. This indicates a satisfactory level of access to material resources, which may support livelihood activities and improve living standards.

Herd Size: Livestock ownership was found to be a common practice among respondents, with a majority owning cattle and small ruminants. This reflects the integration of crop and livestock enterprises, suggesting a mixed farming system that contributes to livelihood diversification and income stability.

Type of House: Housing conditions were relatively good, as a vast majority of respondents (94.16%) resided in concrete houses, while only 5.84 per cent lived in double-storied structures. This indicates an overall improvement in living conditions and infrastructure in the study area.

Personal Achievement: Personal achievement levels were observed to be very low, with only 1.30 per cent of respondents having received any form of award or recognition, while the remaining 98.70 per cent had not received any such acknowledgment. This suggests limited exposure to competitive or recognition-based platforms.

Constraints Faced by Rural Women towards Dairy Farming

The constraints experienced by rural women in dairy farming were analyzed using the Garrett ranking technique, and the results are presented in Table 2. The analysis provides a clear understanding of the major challenges that limit the efficiency and participation of rural women in dairy-related activities. The findings reveal that household responsibilities were perceived as the most severe constraint, securing the first rank with the highest mean score (53.15). This indicates that the burden of managing domestic chores alongside dairy farming significantly restricts the time and effort women can devote to productive activities. The high cost of feed and fodder was ranked second (52.44), highlighting the economic pressure associated with maintaining livestock. Similarly, availability of water emerged as the third major constraint (52.38), emphasizing the critical role of water resources in sustaining dairy operations.

The issue of low prices offered by dairy centres compared to open market rates was ranked fourth (51.68), indicating dissatisfaction among respondents regarding price realization and profitability. This reflects the need for better pricing mechanisms and market linkages.

Institutional and capacity-related constraints were also prominent. The lack of training facilities in the dairy sector was ranked fifth (50.39), suggesting inadequate opportunities for skill development among rural women. Furthermore, lack of veterinary facilities in villages (49.05) and inadequate information about government schemes (48.95) were ranked sixth and seventh, respectively, indicating gaps in extension services and institutional support. Technical constraints such as disease prevention (48.76) and non-availability of superior breeds (46.83) were ranked eighth and ninth, reflecting limited access to scientific dairy management practices and improved genetic resources. The distant location of artificial insemination centres was ranked tenth (41.32), indicating that although it is a constraint, it is relatively less severe compared to other challenges. Overall, the study concludes that time constraints due to household workload, high input costs, and inadequate institutional support systems are the major barriers faced by rural women in dairy farming. Addressing these constraints through targeted interventions such as women-centric training programmes, improved access to veterinary services, subsidized inputs, and better dissemination of government schemes can significantly enhance the productivity and participation of rural women in the dairy sector.

CONCLUSION

The present study concludes that rural women engaged in dairy farming face a combination of domestic, economic, and institutional constraints that significantly affect their efficiency and level of participation. Among these, household responsibilities emerged as the most critical constraint, indicating that the dual burden of domestic and productive roles limits the time and energy available for dairy-related activities. Economic factors, particularly the high cost of feed and fodder and low price realization for milk, further restrict the profitability of dairy enterprises. In addition, resource-related issues, such as inadequate availability of water, continue to hinder smooth dairy operations. The study also highlights important institutional gaps, including lack of access to training facilities, veterinary services, and insufficient awareness about government schemes, which collectively reduce the scope for capacity building and technological adoption among rural women. Technical constraints such as limited access to improved breeds and challenges in disease management further indicate the need for strengthening extension and support systems. Although infrastructural issues like the distant location of artificial insemination centres were found to be relatively less severe, they still contribute to the overall set of challenges. Overall, the findings emphasize that improving the status of rural women in dairy farming requires a holistic approach, including reduction of drudgery through labour-saving technologies, provision of affordable inputs, strengthening of extension and veterinary services, and enhancing awareness and accessibility of government schemes. Addressing these constraints can significantly improve productivity, income generation, and empowerment of rural women in the dairy sector.

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Received: December 24, 2025
Accepted: March 22, 2026