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Evaluating the socio-economic profile and perceptions of farmers participating in a dairy mela

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Abstract

Dairy Melas have emerged as significant platforms for disseminating dairy farming technologies, improving market linkages, and enhancing farmers' knowledge. The present study assesses the effectiveness of the Dairy Mela conducted by the National Dairy Research Institute (NDRI), Karnal, Haryana, from February 26 to March 1, 2025. A total of 250 dairy farmers were surveyed to analyze socio-economic characteristics and their perception of the mela on their knowledge and farming practices. The study highlights key areas of success and suggests improvements for making future Dairy Melas more effective.

Keywords: Dairy mela, dairy farmers, socio-economic profile, farmer perception

Introduction

Dairy farming is a cornerstone of India's agricultural economy, serving as a primary source of livelihood for over 80 million dairy farmers, many of whom operate small-scale farms and contribute significantly to rural employment and income generation (Gandhi, 2024) [5]. India continues to be the world's largest milk producer, with milk production reaching a record 239.2 million tonnes in 2023-24 a growth driven by a vast bovine population exceeding 300 million head and sustained by strong cooperative networks such as AMUL (Fortune Business Insights, 2024; PIB, 2025) [4, 15]. The dairy sector contributes around 5% to India's GDP and underpins the rural economy by improving nutrition security and empowering women farmers (Khandelwal & Gupta, 2022) [9]. Despite these achievements, Indian dairy farmers face ongoing challenges, including lack of access to quality inputs, low technical knowledge, infrastructural deficits, inadequate veterinary services, and weak market linkages (Pandey and Ponnusamy, 2024) [13]. These constraints limit productivity and income growth, exposing farmers to market volatility and rising production costs such as feed and labor. The government and private sector have responded with innovative extension strategies to bridge these gaps and enhance adoption of best practices. Among such approaches, Dairy Melas have emerged as effective platforms for technology dissemination and knowledge sharing. These integrated events combine demonstrations of improved breeds, modern dairy practices, disease management, and financial schemes, enabling farmers to gain hands-on experience and interact with experts, fellow farmers, and policymakers (Pandey and Ponnusamy, 2024; ICAR-NDRI, 2025) [13, 8]. For instance, the National Dairy Mela at NDRI, Karnal annually attracts thousands of stakeholders and features technical sessions, competitions, and market engagements aimed at strengthening farmer capacities and linkages. The transformative potential of these Melas lies in their ability to catalyze awareness, technology adoption, and market access, thereby improving dairy productivity, profitability, and sustainability. The Dairy Mela organized at NDRI, Karnal, Haryana, aimed to address these issues by providing hands-on demonstrations, technical sessions, and networking opportunities for farmers, school children, and private industry representatives. Given the growing significance of such events in dairy extension, this study evaluates their effectiveness in enhancing farmers' knowledge, promoting technology adoption, and improving market linkages.

Methodology

The study was conducted at NDRI, Karnal, during the three-day Dairy Mela held from February 26 to March 1, 2025. A sample of 250 dairy farmers was selected using a stratified random sampling method. Data were collected through a structured questionnaire, covering socio-economic characteristics, perception of the Dairy Mela, and its effectiveness in addressing dairy farming challenges. The collected data were analyzed using frequency and percentage distributions. Perception refers to how dairy farmers understand and interpret the information, experiences, and demonstrations provided at the Dairy Mela.

Effectiveness refers to how well the Dairy Mela achieved its objectives of providing useful knowledge, improving skills, and helping farmers adopt better dairy farming practices. Perception and effectiveness was quantified on 3 point continuum with agree, undecided and disagree and scoring 3,2,1 was given accordingly.

Results and Discussion

Table 1: Socio-economic profile of the dairy farmers (n=250)

Characteristic	Category	Frequency	Percentage (%)
Age	Up to 35 years	50	20.00
	35-55 years	130	52.00
	More than 55 years	70	28.00
Gender	Male	195	78.00
	Female	55	22.00
Education	Illiterate	80	32.00
	Primary	100	40.00
	Secondary	65	26.00
	Graduate & Above	5	2.00
Farming Experience	<5 years	40	16.00
	5-15 years	120	48.00
	>15 years	90	36.00
Dairy Experience	<5 years	50	20.00
	5-15 years	140	56.00
	>15 years	60	24.00
Primary Occupation	Dairy Farming	130	52.00
	Mixed Farming	90	36.00
	Non-agriculture	30	12.00
Farm Size	Small (<2 acres)	85	34.00
	Medium (2-5 acres)	110	44.00
	Large (>5 acres)	55	22.00
Herd Size	Small (<5)	90	36.00
	Medium (5-10)	110	44.00
	Large (>10)	50	20.00
Social Participation	Yes	180	72.00
	No	70	28.00
Extension Contact	Regular	120	48.00
	Occasional	80	32.00
	Never	50	20.00

The results from the table-1 indicates socio-economic characteristics of the dairy farmers shows that majority of respondents (52%) were aged 35-55 years, indicating that middle-aged farmers constituted the main group attending the Dairy Mela. This age pattern is common in rural India because many young people migrate to urban areas for non-farm work, while older farmers often hand over strenuous dairy tasks to the middle generation. About one-fifth (20%) were younger than 35 years and (28%) were above 55 years, showing that the event also reached both new and senior aged farmers, though to a lesser extent. Men formed the majority (78%) of respondents, with women accounting for only (22%). This reflects the gendered division of labour in dairying: although women do much of the day-to-day animal care, men more often attend fairs, training events and marketing activities. Such disparity underscores the need for deliberate measures to encourage female participation in extension events.

Educational levels were modest. Nearly (40%) had only primary schooling and (32%) were illiterate; just 2% were graduates. Low formal education is typical of rural areas and may limit farmers' ability to interpret technical material, hence extension messages need to be delivered in simple, visual and local-language formats. Experience profiles show that (48%) had 5-15 years of general farming experience and (56%) had a similar length of dairy experience. This suggests that the Dairy Mela successfully attracted a mix of established and relatively new dairy producers. Fewer farmers had less than five years' experience, which may reflect the relatively high start-up costs of dairying and the need for basic skills before venturing into it. Primary occupation data reveal that (52%) depended mainly on dairy farming for their livelihood, (36%) practised mixed farming, and 12% derived their main income from non-agricultural work. This distribution mirrors the importance of dairy as both a primary and supplementary income source in rural households (Premsing, 2019; Agrawal & Raju, 2021, Shilwant *et al*., 2020) [14, 1, 17].

Most respondents operated small to medium farms (34% <2 acres; 44% 2-5 acres) and kept small to medium herds (36% <5 animals; 44% 5-10 animals). These figures reflect the predominance of smallholders in India's dairy sector and highlight the need for technologies, credit and management practices that are affordable and scalable for such farms. A large majority (72%) reported some form of social participation, which is encouraging because group membership facilitates information exchange and collective action. Nevertheless, extension contact varied: only 48% had regular contact with extension staff, 32% occasional and 20% none. This gap indicates that, despite good social capital, a significant proportion of farmers still lack sustained professional support. These findings are similar with of Chinchmalatpure (2022) [3], Hannure and Belsare (2018) [7] and Rachna *et al*. (2017) [16].

Table 2: Perception of farmers on dairy mela practices n=250

Statement	Agree (%)	Undecided (%)	Disagree (%)	Mean Score
The Dairy Mela provided practical solutions to dairy farming challenges.	200	30	20	2.72
The event served as a valuable source for obtaining the latest dairy farming information.	213	25	12	2.80
It provided solutions for managing climate-related dairy challenges.	195	38	17	2.72
The event enhanced awareness about government schemes and subsidies.	205	33	12	2.77
It facilitated stakeholder interactions, including cooperatives and traders.	220	20	10	2.84
Information about improved breeds and feed supplements was effectively shared.	210	25	15	2.78
The Dairy Mela provided guidance on best feeding and nutrition practices.	203	28	20	2.76
The event provided demonstrations about modern dairy equipment.	218	23	10	2.84
Attending the Dairy Mela has positively influenced my approach to dairy farming.	208	25	17	2.77

The results from Table 2 indicate that the Dairy Mela was highly effective in addressing farmers' needs. A majority of respondents (88%) agreed that the event facilitated stakeholder interactions, including with cooperatives and traders. This high level of agreement may be attributed to the informal yet focused interactions during the Mela, where farmers could discuss challenges, share experiences, and explore potential collaborations in a less formal environment than typical meetings. Similarly, 87% of participants appreciated demonstrations of modern dairy

equipment. This reflects farmers' preference for practical, hands-on exposure, allowing them to observe the operation of machinery, understand its benefits, and assess whether it could improve productivity in their own farms. About 85% considered the Mela a valuable source of up-to-date information on dairy farming, likely because the event presented current trends, research findings, and locally relevant practices that farmers could immediately relate to their operations.

Additionally, 84% of respondents agreed that information on improved breeds and feed supplements was effectively shared. Farmers may have found this particularly useful as it addressed key constraints like low milk yield and poor animal health, providing them with options to improve productivity through practical changes. Guidance on feeding and nutrition practices was acknowledged by 81% of participants, suggesting that simple demonstrations and clear explanations helped farmers understand how to optimize feed use for better milk quality and animal well-being. Furthermore, 82% reported increased awareness of government schemes and subsidies. Farmers likely valued the clear, step-by-step guidance on how to access benefits, including explanations about documentation, eligibility, and implementation, which are often difficult to navigate independently. Importantly, 83% of respondents stated that attending the Mela positively influenced their approach to dairy farming, indicating that exposure to practical solutions, innovations, and success stories encouraged them to adopt improved practices (Ansari & Paswan, 2018; Kumari etal., 2018) [2, 10].

Overall, these high levels of agreement reflect the Dairy Mela's success in providing practical knowledge, hands-on demonstrations, accessible guidance, and opportunities for peer learning. The combination of real-life demonstrations, interactive discussions, and exposure to locally relevant solutions appears to have effectively addressed farmers' challenges. The mean scores, ranging from 2.71 to 2.84, further support the positive perception of the event. The results are similar with (Lal *et al*., 2015, Shilwant etal., 2020, Gudadhe & Gudadhe, 2013) [11, 17, 6].Despite the overall positive impact, there is scope for improvement. Future Dairy Melas can enhance participation by incorporating more targeted sessions on financial literacy, climate adaptation, and digital dairy solutions. Moreover, strengthening networking opportunities between farmers and industry experts can lead to long-term business relationships.

Conclusion

The study confirms that Dairy Melas play a crucial role in disseminating knowledge, facilitating technology adoption, and strengthening market linkages for dairy farmers. Analysis of farmers' perceptions reveals a consistently positive view of the Dairy Mela as a platform for information and interaction. Very high agreement scores across key statements show that participants regarded the Mela as a dependable source of updated dairy farming knowledge, a venue for hands-on exposure to modern equipment and improved breeds, and a clear channel for understanding government schemes and subsidies. The respondents also perceived it as a space for meaningful engagement with cooperatives, traders and other stakeholders an aspect often missing from routine extension activities. These perceptions indicate that, from the farmers' point of view, the Mela successfully met their expectations for relevant content, practical demonstrations and opportunities to exchange experiences with peers and experts. At the same time, the patterns observed point to areas where perceptions could be strengthened further: increasing the visibility of women and younger farmers, providing more information on climate-related challenges, and ensuring mechanisms for post-event follow-up.

Overall the study confirms that farmers perceive Dairy Melas as trusted, one-stop events for learning and networking in the dairy sector. By reinforcing the features most valued by participants and addressing perceived gaps, future Melas can consolidate this positive image and continue to serve as an important interface between research, policy and farming communities. This study provides evidence that Dairy Melas are an essential tool for agricultural extension and can significantly contribute to the growth and sustainability of the dairy sector in India.

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