

International Journal of Agriculture Extension and Social Development

Volume 8; SP-Issue 11; November 2025; Page No. 78-81

Received: 11-08-2025
Accepted: 13-09-2025

Indexed Journal
Peer Reviewed Journal

Profile of the dairy farmer and their knowledge about ectoparasite

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DOI: <https://doi.org/10.33545/26180723.2025.v8.i11Sb.2685>

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Abstract

A survey of 300 dairy farmers in the Ahmedabad district of Gujarat was explored their socio-demographic profiles and understanding of ectoparasites. The research revealed a farmer population largely composed of middle-aged men with primary or less formal education. Despite limited academic qualifications, these farmers possessed significant practical experience in animal husbandry. Their landholdings and herd sizes were generally small, reflecting a typically small-scale farming operation. Access to agricultural extension services and exposure to digital media were also found to be limited amongst the surveyed farmers. However, they demonstrated a high degree of self-confidence and a positive attitude towards dairy farming as a livelihood. Interestingly, the study highlighted a strong existing knowledge base regarding ectoparasites. Farmers demonstrated a good understanding of the identification, transmission pathways, clinical symptoms, and appropriate control measures for these parasites that commonly affect dairy cattle. This suggests a reliance on traditional knowledge and practical experience in managing livestock health despite limited access to modern informational resources. The findings provide a valuable baseline for developing targeted extension programs and educational initiatives aimed at further enhancing ectoparasite management strategies in the region.

Keywords: Dairy farmer, ecto-parasite infestation, knowledge

Introduction

Dairy farmers are very important part of agricultural sector, not only by providing essential dairy products to the people but also by maintaining the health and productivity of their animals. But while maintaining the good health of their animal they face many constraints and one of the major constraint is parasitic infestations which majorly affect animal health and lower the animal productivity. Approximately 1.49 billion cattle are susceptible for the parasitic infestation. The most commercially significant group of bovine ectoparasites are arthropods, primarily insects, mites, and ticks, due to the direct impact that severe infestations have on both food production and human health (Wall and Shearer, 2001) [13]. Injurious ectoparasite infestations impair the productivity of cattle and in extreme cases, result in mortality. Species of arthropods that infest livestock can be categorized into several groups: flies (both biting and non-biting), fleas, lice (including biting and sucking varieties), ticks (both soft and hard), and mites (which consist of burrowing, non-burrowing, and follicular types). Among these five key categories of ectoparasites, biting and non-biting flies, as well as ticks, serve as significant vectors for a variety of bacterial, viral, rickettsial and protozoan diseases. The emergence of resistance in helminths of veterinary importance is largely influenced by host-related physiological and environmental factors that drive the parasites' life histories; but importantly the rate at which this occurs can depend on operational factors such as frequent prophylactic drug treatments, under-dosing and

mass drug administration. (Shalaby, 2013) [9]. Management of ecto-parasite requires a multifaceted approach that combines preventive measures and treatment of animal. Farmers need to stay informed about the latest research and advancements in parasite control, including the use of integrated pest management techniques that minimize chemical interventions while maximizing animal health. Regular monitoring of livestock for signs of infestation, along with maintaining proper hygiene and environmental conditions, can significantly reduce the risk of ecto-parasite outbreaks. By fostering a comprehensive understanding of these parasites and their implications, dairy farmers can enhance their operational efficiency and contribute to sustainable agricultural practices, ultimately benefiting both their businesses and the broader community. Co-operation and sharing of information among dairy farmers can significantly enhance their understanding of ecto-parasites. Participating in workshops, local agricultural meetings and/or online forums allows farmers to exchange experiences and treatments that have worked for them. These engagements not only foster community spirit but also provide valuable insights into managing challenging situations. By building a strong network, dairy farmers can stay updated on the latest research and innovations in ecto-parasite management. This shared knowledge ultimately helps improve herd health and increases productivity, making it beneficial for farmers and the dairy industry as a whole. In animal husbandry practices, dairy farmers do have vast knowledge about dairy farming but when ask about

how parasites destroying the productivity of animal, they were clueless or have very little knowledge so considering this, the study was undertaken.

Materials and Methods

The study was conducted in Ahmedabad district of Gujarat state as it is operational area of Krishi Vigyan Kendra, Anand Agricultural University, Arnej, Ta. Dholka, Dist. Ahmedabad. Out of eleven Talukas of Ahmedabad district three Talukas viz., Dholka, Dhandhuka and Dholera were purposively selected for the study as the dairy farming is more in comparison to other talukas. Ten villages from each Taluka were selected purposively for the same reason. 300 dairy farmers were selected by random sampling from the selected villages of three Talukas of Ahmedabad district. Ex post facto design was used for the study. Based on the objectives of the study, standardized pre-structured Gujarati version interview scheduled was prepared in consultation with the experts of the field and used for collection of the data. The descriptive statistics was calculated for the analysis and interpretation of the data. Knowledge score card was developed by assigning one score to each correct response and zero score to each incorrect response.

Results and Discussion

Personal variables: In the survey, a notable majority of the participants were male dairy farmers, comprising 60 per cent of the respondents, while female dairy farmers accounted for 40 per cent. The age distribution revealed that 53 per cent of the respondents fell within the middle-aged group, followed by 27 per cent who identified as older adults. Present result is in accordance with Jadav *et al.*, (2021) ^[3], Patel *et al.*, (2022) ^[5] and Patel *et al.*, (2023) ^[6] Educationally, over half (50.33 per cent) of the respondents were illiterate, and 40.67 per cent had completed only primary education. Present result is in accordance with Jadav *et al.*, (2021) ^[3], Namgyal *et al.* (2021) ^[4] and Hamadani *et al.*, (2023) ^[2]. Experience-wise, 56.67 per cent of the respondents had over 15 years in animal husbandry, whereas 17 per cent had between 6 to 10 years of experience. Similar result was observed by Jadav *et al.*, (2021) ^[3]. Smaller proportions reported 16.67 per cent with up to 5 years, and 10.67 per cent with 11 to 15 years in the field. Living arrangements showed that 68.33 per cent of families were nuclear, compared to 31.67 per cent residing in joint families. Similar result was observed by Hamadani *et al.*, (2023) ^[2].

Economic variables: Regarding land ownership, 35.67 per

cent had between 1 to 2 hectares, and 30.67 per cent managed land up to 1 hectare. Financially, over half (57.33 per cent) of the respondents earned an annual income between 1 to 3 lakh, with 35.33 per cent reporting incomes below 1 lakh and 7.33 per cent exceeding 3 lakhs. Similar result was observed by Asiya and Gopi, (2019) ^[1] and Patel *et al.*, (2023) ^[6]. In terms of livestock, 87.67 per cent owned fewer than three animals, while 9 per cent had herds ranging from four to six. Similar result was observed by Jadav *et al.*, (2021) ^[3], Hamadani *et al.*, (2023) ^[2] and Patel *et al.*, (2023) ^[6].

Social and communicable variables: Social participation among farmers is varied. While a quarter (25.00 per cent) report no organizational involvement, a significant proportion actively participates, with the largest group (34.00 per cent) holding Membership in one organization, followed by 27.00 per cent participating in more than two organizations. This indicates a moderate level of community engagement. Present result is in accordance with Sarita *et al.*, (2017) ^[8], Patel *et al.*, (2022) ^[5] and Patel *et al.*, (2023) ^[6] However, a critical finding is the limited interaction with agricultural extension services. A substantial 66.67 per cent of farmers exhibit Very low extension contact, with the remaining 33.33 per cent having only low contact. This general lack of engagement with extension services suggests a potential gap in information dissemination and adoption of modern farming practices. This result is in accordance with Asiya and Gopi, (2019) ^[1]. Exposure to digital media presents a mixed picture. While the largest group (35.33 per cent) has Low exposure, a notable 31.33 per cent also demonstrate High exposure, alongside 26.33 per cent with very low exposure. This varied digital engagement implies that while some farmers are leveraging digital information, a significant segment remains underserved or disengaged digitally.

Psychological Variables: Positively, the farming community demonstrates high levels of self-confidence, with an overwhelming 75.00 per cent of the farmers reporting High self-confidence. This inherent belief in their abilities could be a significant asset for new initiatives and adoption of change. Furthermore, a strong positive sentiment towards Animal Husbandry (A.H.) is evident, with a large majority (73.33 per cent) holding a High positive attitude which very well supported by Patel *et al.*, (2023) ^[6]. This favourable disposition bodes well for the promotion and development of livestock-related activities within the community.

Table 1: Profile of the Dairy farmers (n = 300)

Sr no.	Characteristics	Category	Frequency (per cent)
Personal variable			
1	Sex	Male	180 (60.00)
		Female	120 (40.00)
2	Age	Young age (Up to 35 years)	60 (20.00)
		Middle age (36 to 50 years)	159 (53.00)
		Old age (Above 50 years)	81 (27.00)
3	Education	Illiterate	151 (50.33)
		Primary (Up to 8 th Standard)	122 (40.67)
		Secondary (10 th Standard)	19 (6.33)
		Higher Secondary (12 th Standard)	8 (1.67)

4	Experience	Up to 5 years	47 (15.67)
		Between 6 to 10 years	51 (17.00)
		Between 11 to 15 years	32 (10.67)
		More than 15 years	170 (56.67)
5	Family type	Nuclear	205 (68.33)
		Joint	95 (31.67)
Economic variables			
6	Land Holding	Landless	18 (6.00)
		Marginal (up to 1.0 ha)	92 (30.67)
		Small (1.1 to 2.0 ha)	107 (35.67)
		Semi- medium (2.1 to 4.0 ha)	81 (27.00)
		Medium (4.0 to 10.0)	2 (0.67)
		Large (More than 10.0 ha)	0 (0.00)
7	Annual family income	Up to ` 1 lakh	106 (35.33)
		Between ` 1.01 to ` 3 Lakh	172 (57.33)
		Above ` 3 Lakh	22 (7.33)
8	Herd size	Small (Up to 3 animals)	263 (87.67)
		Medium (4 to 6 animals)	8 (9.00)
		Large (More than 6 animals)	4 (3.33)
Social and communicable variables			
9	Social Participation	No participation	75 (25.00)
		Membership in one Organization	102 (34.00)
		Membership in two organization	42 (14.00)
		Membership in more than two organization	81 (27.00)
10	Extension contact	Very low (score Up to 4.0)	200 (66.67)
		Low (score between 4.1 to 8.0)	100 (33.33)
		Medium (score between 8.1 to 12.0)	0 (0.00)
		High (score between 12.1 to 16.0)	0 (0.00)
		Very high (score more than 16.1)	0 (0.00)
11	Digital media exposure	Very low (score up to 1.2)	79 (26.33)
		Low (Score between 1.3 to 2.4)	106 (35.33)
		Medium (Score between 2.5 to 3.6)	21 (7.00)
		High (Score between 3.7 to 4.8)	94 (31.33)
		Very high (Score more than 4.9)	0 (0.00)
Psychological Variables			
12	Self confidence	Very low (Score up to 8)	0 (0.00)
		Low (Score between 8.1 to 16)	0 (0.00)
		Medium (Score between 16.1 to 24)	75 (25.00)
		High (Score between 24.1 to 32)	225 (75.00)
		Very high (Score more than 32.1)	0 (0.00)
13	Attitude of dairy farmer toward A.H.	Very low (Score up to 9.6)	0 (0.00)
		Low (Score between 9.61 to 19.2)	0 (0.00)
		Medium (Score between 19.21 to 28.80)	80 (26.67)
		High (Score between 28.81 to 38.40)	220 (73.33)
		Very high (Score more than 38.41)	0 (0.00)

Data mentioned in table no. 2 depicted that respondents demonstrated a substantial understanding of ecto-parasites, with 80.67 per cent able to identify them and 74.00 per cent knowledgeable about the types of animals affected by ectoparasite infestations. Similar result was observed by Namgyal *et al.*, (2021) ^[4]. Their awareness of how ecto-parasites are transmitted was similarly robust, with a knowledge level of 79.24 per cent. Namgyal *et al.* (2021) ^[4] and Tesfaye and Abate, (2023) ^[11] had observed that respondents had adequate knowledge about ecto parasites as potential vectors of diseases in humans and animals. Additionally, dairy farmers showed a commendable understanding of the signs and symptoms indicating an animal's struggle with ecto-parasites, achieving a knowledge level of 69.24 per cent. Similar result was observed by Jadav *et al.*, (2021) ^[3], Namgyal *et al.*, (2021) ^[4], Suolaniemi *et al.*, (2022) ^[10] and Thakur *et al.*, (2022) ^[12]. Their grasp of prevention and control measures for ectoparasite

infestations was also noteworthy, with a knowledge level of 70.71 per cent. Present result is in accordance with Jadav *et al.*, (2021) ^[3] and Thakur *et al.*, (2022) ^[12]. Paucar-Quishpe *et al.* (2024) ^[7] observed that the farmers with “good knowledge” demonstrate excellent knowledge of the biology of ticks, the diseases they transmit, the economic losses they cause, and the breed predisposition.

Table 2: Knowledge level (per cent) of dairy farmers about major components of bovine ectoparasites (n=300)

Sr no.	Major components	Knowledge level (per cent)
1	Identification of ectoparasite	80.67
2	Which type of animals can get infection	74.00
3	Transmission	79.24
4	Sign and symptoms of suffering animal ectoparasite infestation	69.24
5	Prevention and control of ectoparasite	70.71

Conclusion

The survey of dairy farmers revealed a majority of the respondents were male, middle-aged, and highly experienced. Education levels were low, with over half being illiterate or having only primary education. They primarily lived in nuclear families, owned small landholdings and maintained small herds. Over the half of the respondents earned an annual income of 1-3 lakh. Contact with extension services and digital media was limited. Despite this, respondents exhibited high self-confidence and a strong positive attitude towards animal husbandry. Crucially, they demonstrated substantial knowledge regarding ecto-parasites, covering identification, affected animals, transmission, signs/symptoms, and prevention/control.

Conflict of Interest

No conflict of interest among researchers.

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