

Impact of Veterinary Institutional Access on the Adoption of Scientific Feeding Practices among Women Dairy Farmers in Himachal Pradesh, India

Devesh Thakur^{1*}, Rakesh Ahuja², Manoj Sharma³, Madhu Suman Sambyal⁴, Krishanender Dinesh⁵, Sanjay Kumar Khurana⁶

ABSTRACT

This study evaluated the adoption of scientific animal feeding practices among women dairy farmers in regions with good access to veterinary institutions. Access to these services is crucial for gender equality, economic empowerment, and sustainable agriculture. But, such studies are lacking in India. This research involved 150 women farmers in Kangra, Himachal Pradesh, with easy access to veterinary institutions. High adoption levels were observed for most scientific dairy feeding practices. Colostrum feeding for new-born calves was the most adopted, while home preparation of animal feed was the least. The study revealed significant correlations between adoption levels and factors like landholding size, dairy experience, and market orientation. In summary, multiple veterinary institutions' support positively influences the adoption of scientific dairy feeding practices among women dairy farmers.

Key words: Adoption, Dairy farmers, Feeding practices, Veterinary institutions, Women

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INTRODUCTION

Dairy farming remains one of the most sought-after additional occupations for 5.29 crore rural women currently engaged in domestic duties in India. Approximately 92.6 lakh women in India prefer dairy farming as an alternative source of income alongside their household chores (Patel and Mitra, 2015). This sector has the potential to empower women as micro-entrepreneurs (Krishnan, 2021). Despite their significant role in animal husbandry, women's contributions have been overlooked and underappreciated, rendering them invisible workers (Dudi *et al.*, 2019; Kaur, 2015). Existing research highlights the substantial involvement of women in dairy farming practices in rural (Niamir, 1994; Thakur and Chander, 2006; Lahoti *et al.*, 2012; Pandya *et al.*, 2014). The feminization of the Indian livestock sector has been on the rise since the 1990s and 2000s, particularly following liberalization and industrialization (Jothilakshmi *et al.*, 2014). This trend is likely applicable in Himachal Pradesh, given the high proportion of female-headed households due to male members migrating for employment opportunities in the plains (Snehi, 2016). Improving institutional access for women in dairy farming is essential to promote gender equality and empower them in the livestock sector (Galie *et al.*, 2019). Despite the growing importance of women in this field, there is a lack of specific studies on the adoption patterns of dairy feeding practices among women in regions with better veterinary institutional support in India. This study aims to fill this gap by assessing the adoption levels of women dairy farmers in the Kangra district, which benefits from strong veterinary institutional support.

^{1, 2, 3, 6}Department of Veterinary and Animal Husbandry Extension Education, Dr. G.C. Negi College of Veterinary and Animal Sciences, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur (HP), India

⁴Department of Animal Nutrition, Dr. G.C. Negi College of Veterinary and Animal Sciences, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur (HP), India

⁵Department of Animal Genetics and Breeding, Dr. G.C. Negi College of Veterinary and Animal Sciences, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur (HP), India

Corresponding Author: Devesh Thakur, Assistant Professor, Department of Veterinary and Animal Husbandry Extension Education, Dr. G.C. Negi College of Veterinary and Animal Sciences, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Palampur (HP), India. E-mail: drdth4@gmail.com.

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MATERIALS AND METHODS

This study was conducted in the Kangra district of Himachal Pradesh, with a focus on the areas of Palampur and Baijnath, chosen due to their proximity to the state's only government veterinary college in Palampur. The Department of Veterinary & Animal Husbandry Extension Education, Dr. G.C. Negi College of Veterinary & Animal Sciences organized five

National Commission of Women (NCW)-funded on-campus dairy training programs from September 2022 to February 2023. Each training batch included five consecutive days of theoretical and practical exposure to scientific dairy feeding practices. These farmers were selected from villages in both Palampur and Baijnath regions. A total of 150 women dairy farmers from ten nearby villages participated in the training program. Out of 150 women dairy household farmers 131 were residing close (less than 1 Km) to the nearest veterinary dispensary headed by a veterinary pharmacist. Likewise 107 out of 150 farmers had the nearest veterinary hospital within 5 kilometres range of distance. For all the respondents, maximum observed extent of range for nearest veterinary dispensary, nearest veterinary hospital and veterinary college was under 5 Km, 10 Km and 20 Km, respectively.

They were active dairy farmers, recommended by local veterinary/para-veterinary staff, and randomly selected from a list provided. To assess the adoption of scientific dairy feeding practices, a semi-structured interview schedule was used. A pre-training scale was developed to gauge the existing adoption level of women dairy farmers. Farmers were categorized into three groups: small (1-2 milch animals), medium (3-5 milch animals), and large (more than 5 milch animals) based on the number of milch bovines in their dairy farms. Data was collected through personal interviews, and descriptive statistical tools in SPSS were used for analysis.

RESULTS AND DISCUSSION

Table 1 suggests that majority (52.17%, 83.78% and 76.19% of small, medium and large category, respectively) of the respondents had high adoption level regarding scientific dairy feeding practices. Pooled analysis also revealed the similar pattern of the adoption level of the respondents, with average adoption score of 12.69.

Item-wise Extent of Adoption of Scientific Dairy Feeding Practices

Table 2 highlights adoption trends among women farmers of different categories. Among small-scale farmers, the most adopted practices were colostrum feeding to new-born calves (I), providing quality green fodder (II), and feeding concentrate to pregnant animals (III). Medium-scale farmers favoured chaffing dry and green fodder (I), offering green fodder to animals (II), and colostrum feeding to calves (III). For large-scale farmers, feeding 1 to 2 kg of concentrate to pregnant animals (I), colostrum feeding (II), and regular mineral mixture feeding to milch animals (III) were most adopted practices. In summary, colostrum feeding, offering quality green fodder, and feeding pregnant animals with concentrate saw the highest adoption. Conversely, preparing animal feed with local ingredients and milk production-based feeding were the least adopted practices.

Table 1: Level of adoption of scientific dairy feeding practices by women dairy farmers

Category	Small Farmers (92)		Medium Farmers (37)		Large Farmers (21)		Overall (150)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Low (5-8)	7	7.61	1	2.70	2	9.52	10	6.67
Medium (9-12)	37	40.22	5	13.51	3	14.29	45	30.00
High (13-16)	48	52.17	31	83.78	16	76.19	95	63.33
Mean		12.55		13.22		12.38		12.69
SD		2.75		3.68		4.44		3.26

Table 2: Item-wise extent of adoption of dairy feeding practices by women dairy farmers

Sr. No.	Items	Small Farmers (92)				Medium Farmers (37)				Large Farmers (21)				Overall (150)			
		Total Score	MS	MPS	Rank	Total Score	MS	MPS	Rank	Total Score	MS	MPS	Rank	Total Score	MS	MPS	Rank
1.	I feed concentrate at 1 to 2 kg per day to pregnant animal.	167	1.82	90.76	III	62	1.68	83.78	V	39	1.86	92.86	I	268	1.79	89.33	III
2.	I regularly feed mineral mixture to my milch animals.	136	1.48	73.91	VI	63	1.70	85.14	IV	36	1.71	85.71	III	235	1.57	78.33	V
3.	I offer good quality green fodder to my animals	172	1.87	93.48	II	67	1.81	90.54	II	32	1.52	76.19	V	271	1.81	90.33	II
4.	I offer good quality fodder grasses such as Napier Bajra, Setaria to my animals	146	1.59	79.35	V	55	1.49	74.32	VI	29	1.38	69.05	VI	230	1.53	76.67	VI



5.	I chaff dry and green fodder before offering them to animals.	153	1.66	83.15	IV	68	1.84	91.89	I	33	1.57	78.57	IV	254	1.69	84.67	IV
6.	I feed my animals according to their milk production level.	118	1.28	64.13	VII	55	1.49	74.32	VI	26	1.24	61.90	VIII	199	1.33	66.33	VII
7.	I give colostrum to the new born calf for the first five days after birth.	175	1.90	95.11	I	66	1.78	89.19	III	38	1.81	90.48	II	279	1.86	93.00	I
8.	I prepare animal feed with locally available ingredients at home.	88	0.96	47.83	VIII	53	1.43	71.62	VII	27	1.29	64.29	VII	168	1.12	56.00	VIII

Relationship between Personal Attributes of Women Dairy Farmers and their Adoption of Scientific Animal Feeding Practices

Table 3 highlights among small-scale farmers, those with lower landholding sizes and annual incomes showed a negative correlation with scientific practice adoption, indicating a higher reliance on dairy animals for income. Medium-scale farmers, on the other hand, exhibited positive correlations with education and market orientation. Large-scale farmers had a negative correlation with landholding size but positive correlations with dairy farming experience and market orientation. The overall correlation analysis revealed that as landholding size decreases, women dairy farmers increasingly depend on dairy animals for their livelihood and income. This is particularly pronounced among landless farmers. Furthermore, experienced dairy farmers may be less inclined to adopt scientific feeding practices, potentially due to their familiarity with traditional methods (Ahn, 2022).

Table 3: Correlation analysis ("r" values) of adoption of scientific animal feeding practices with personal attributes of respondents

Independent variables	Small	Medium	Large	Overall
Age	-0.12	-0.28	0.04	-0.12
Education	0.09	0.35*	0.19	0.16
Landholding Size	-0.30**	0.08	-0.44*	-0.21*
Annual Income	-0.21*	0.15	-0.13	-0.06
Caste	0.07	-0.24	-0.15	-0.06
Dairy Experience	0.00	-0.12	-0.72**	-0.21*
Social Participation	-0.05	0.18	-0.29	0.00
Mass Media Exposure	-0.06	0.12	-0.16	0.01
Market Orientation	-0.01	0.35*	0.58**	0.21**

*Significant at 5% level
**Significant at 1% level

CONCLUSIONS

Women dairy farmers with access to multiple veterinary institutions had higher adoption levels of scientific feeding practices. Adoption was high across all farmer categories (small, medium, and large). Those with market orientation and

smaller landholdings exhibited greater adoption. Regions with ample veterinary access provide opportunities for women to access animal healthcare, vaccination, and training. Enhanced access to these resources positively influences adoption. Technical assistance and support from veterinary institutions have a positive impact. Continuous support and feedback address challenges and lead to increased adoption rate of scientific feeding practices.

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