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Assessment of perceived training needs regarding scientific management practices among cattle owners in Rajasthan

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Abstract

The current study involved 320 cattle owners randomly selected from four districts in Rajasthan i.e. Bharatpur, Kota, Jodhpur, and Sri Ganganagar. The aim was to assess their perceived training needs related to scientific cattle management practices. The results showed that most cattle owners (66.25%) had moderate training needs, while 18.75% had high and 15% had low training needs regarding overall scientific cattle management. The findings indicated that the age and education of the respondents were positively but not significantly related to their perceived training needs in cattle health care, feeding, and management practices. In contrast, age had a negative but not significant relationship with breeding practices, while education had a positive but non-significant relationship with the same. Variables such as land holding, membership in milk co-operative societies, socio-economic status, cattle holding, income from cattle rearing, and gross annual income showed negative correlations, with most being significant (P<0.01), with overall health care, feeding, breeding, and management practices. Additionally, extension contact and exposure to mass media were negatively and significantly correlated with the perceived training needs of the respondents regarding overall scientific cattle management practices

Keywords: Cattle owners, scientific cattle management practices, perceived training needs, Rajasthan

1. Introduction

The Indian economy is deeply intertwined with agriculture, as more than two-thirds of the rural population relies on farming, animal husbandry, and related activities to make a living (Tanwar and Kumar, 2014) [10]. In India, the dairy sector mainly operates on a small scale, with about 70% of livestock owners categorized as landless, small, or marginal farmers. This sector tends to emphasize community involvement over large-scale production, with most farmers typically managing just 1 to 3 milch cows or buffaloes on average (Bhasin, 2012) [3]. India is home to an impressive livestock population of 536.8 million, which includes cattle (36.04%), buffaloes (20.47%), sheep (13.83%), and goats (27.74%) (Anonymous, 2020) [2]. In Rajasthan, the state ranks 2nd and 6th in buffalo and cattle populations, boasting totals of 136.93 lakhs and 139.37 lakhs, respectively. Unfortunately, the average productivity of our livestock is relatively low, likely due to a lack of awareness about effective management practices (Kumar *et al.*, 2011) [5]. To enhance the average productivity of cattle and make their rearing more sustainable and profitable, it's vital to acquire knowledge and implement scientific management practices in areas such as health care, feeding, breeding, and overall management. Therefore, understanding the training needs of cattle owners regarding these scientific practices is crucial. This understanding will help pinpoint key areas for future training programs tailored to their specific needs. In light of this, the current investigation seeks to evaluate the perceived training needs among cattle owners in Rajasthan and examine how these needs connect to their socio-economic and personal characteristics.

2. Materials and Methods

The current study conducted in purposively selected four districts of Rajasthan: Bharatpur, Kota, Jodhpur, and Sri Ganganagar. Within these districts, we specifically selected the tehsils of Kumher, Ladpura, Jodhpur, and Suratgarh because they host the Pashu Vigyan Kendras, which are the training and research units of the Rajasthan University of Veterinary and Animal Sciences in Bikaner. These centers are dedicated to improving the welfare of livestock and their owners. We randomly picked four villages from each tehsil and selected 20 families from each village to participate in our study. In total, we interviewed 320 families who primarily owned cattle, using a semi-structured schedule to identify their perceived training needs related to scientific cattle management practices.

Perceived training needs means, the areas of training that respondents identified based on their own views about various cattle management practices. To assess these needs,

we calculated the mean score for perceived training needs among cattle owners. We compiled a list of key sub-areas, including health care, feeding, breeding, and management, after consulting with scientists, field veterinarians, and progressive farmers, as well as reviewing existing literature. Respondents were asked to rate their perception of training needs on a three-point scale: most important, important, and least important, which corresponded to scores of 3, 2, and 1, respectively.

To figure out the average score for perceived training needs in each sub-area, we first identified how many respondents rated each training area as most important, important, or least important. Next, we took the number of respondents in each category and multiplied those figures by 3, 2, and 1, respectively. After that, we added all those numbers together and divided the total by the overall number of respondents (N) to get the mean score for each training sub-area (Mishra, P., 2014) [6]. So, the perceived training need score for a respondent in a specific sub-area is calculated like this:

$$\text{Perceived training need mean score} = \frac{3x + 2y + z}{x + y + z}$$

x = Total no. of respondents who perceived a particular sub-area/area as most needed for training

y = Total no. of respondents who perceived a particular sub-area/area as needed for training

z= Total no. of respondents who perceived a particular sub-area/area as least needed for training

x+ y + z = Total number of the cattle owners interviewed (N)

3. Results and Discussion

3.1 Perceived training need in different areas of scientific cattle management practices

It is clear from the Table 1 that most cattle owners (66.25%) fall into the moderate category when it comes to their perceived training needs for scientific cattle management practices. Following them are those in the high (18.75%) and low (15%) categories. The findings suggest that a significant number of respondents feel they have a moderate level of training needs. This could be attributed to their average education levels and significant exposure to mass media, both of which likely shape their perspectives on effective cattle management.

Table 1: Distribution of cattle owners according to their perceived training needs in different areas of cattle management practices

S. No.	Sub area	Need level	Composite group (N= 320)
1.	Health care	Low (<1.73)	52 (16.25)
		Moderate (1.73-2.46)	200 (62.5)
		High (>2.46)	68 (21.25)
2.	Feeding	Low (<1.58)	46 (14.37)
		Moderate (1.58-2.16)	208 (65)
		High (>2.16)	66 (20.62)
3.	Breeding	Low (<1.72)	64 (20)
		Moderate (1.72-2.51)	217 (67.81)
		High (>2.51)	39 (12.18)
4.	Management	Low (<1.69)	34 (10.62)
		Moderate (1.69-2.13)	242 (75.62)
		High (>2.13)	44 (13.75)
5.	Overall	Low (<1.73)	48 (15)
		Moderate (1.73-2.27)	212 (66.25)
		High (>2.27)	60 (18.75)

Data in parentheses indicates per cent respondents

The data presented in Table 2 to 5 regarding perceived training needs revealed that respondents in composite group had the highest overall perceived training needs regarding breeding practices (mean score 2.11), followed by health care (2.09), feeding (1.92) and management aspect (1.91). In terms of overall mean score of respondents of composite group, perceived training needs were highest in breeding followed by healthcare, feeding and least in management practices. In terms of subarea results, respondents had the highest perceived training need regarding reproductive problems in cows (2.70), first aid (mean score 2.65), preparation of balance feed for different stages of cattle (2.55), and management during calving (2.52) in breeding, health care, feeding, and management aspect, respectively. Respondents also had least perceived training need regarding debudding (1.24), calf feeding (1.48), selection of breeding bull (1.55) and identification and quarantine of sick animal (1.77) from the aspect of management, feeding, breeding and health care, respectively.

Kavithaa and Rajkumar (2014) [4] found in their study that majority of the respondents perceived repeat breeding management, preparation of balanced ration and vaccination as the most important needed training areas and Abiola *et al.* (2020) [1] reported in their study that more than 90 per cent of cattle owners perceived training needs in feeding as most important. Shahjar *et al.* (2018) [8] reported that urea treatment of straw was the most needed training area in sub-areas of feeding practices, while time of feeding was perceived as least needed.

Table 2: Distribution of cattle owners according to their perceived training needs in healthcare practices (rank ordering)

S. No.	Sub areas	Composite group (N= 320)	
		Mean score	Rank order
1.	Identification and quarantine of sick animals	1.77	VI
2.	Common diseases	2.30	II
3.	First aid	2.65	I
4.	Zoonotic diseases and preventive measure	2.03	III
5.	Importance of vaccination and deworming	1.97	IV
6.	Prevention and control of metabolic diseases	1.83	V
	Overall	2.09	

Table 3: Distribution of cattle owners according to their perceived training needs in feeding practices (rank ordering)

S. No.	Sub areas	Composite group (N= 320)	
		Mean score	Rank order
1.	Preparation of balance feed for different stages of cattle	2.55	I
2.	Feeding pregnant and lactating cow	1.93	V
3.	Benefits of mineral mixture	2.08	IV
4.	Preservation of green fodder	2.25	II
5.	Calf feeding	1.48	X
6.	Azola cultivation	1.80	VI
7.	Preparation of Urea Molases Mineral Block	1.72	VII
8.	Urea treatment of poor quality roughage	2.13	III
9.	Use of unconventional feeds	1.68	VIII
10.	Knowledge about commonly prevalent toxic plants	1.67	IX
Overall		1.92	

Table 4. Distribution of cattle owners according to their perceived training needs in breeding practices (rank ordering)

S. No.	Sub areas	Composite group (N= 320)	
		Mean score	Rank order
1.	Identification of heat	1.78	V
2.	Selection of breeding bull	1.55	VI
3.	Artificial Insemination	2.00	IV
4.	Pregnancy Diagnosis	2.40	II
5.	Reproductive problems in cows	2.70	I
6.	Maintaining of breeding records	2.27	III
Overall		2.11	

Table 5: Distribution of cattle owners according to their perceived training needs in management practices (rank ordering)

S. No.	Sub areas	Composite group (N= 320)	
		Mean score	Rank order
1.	Housing and sanitation	1.71	VII
2.	Identification of breeds	1.90	VI
3.	Selection of milch animals	2.05	V
4.	Management during calving	2.52	I
5.	Principles of clean milk Production	2.15	IV
6.	Weaning practice	1.37	IX
7.	Debudding	1.24	X
8.	Cattle management in different season	1.70	VIII
9.	Cattle waste utilization	2.22	III
10.	Maintaining of different records	2.25	II
Overall		1.91	

3.2 Relationship between socio-economic characteristics and perceived training needs regarding overall scientific cattle management practices

The findings in Table 6 indicated that both age and education had a positive but non significant, relationship with how respondents perceived their training needs in areas like cattle health care, feeding, and management practices, while age showed a negative (but again, not significant) correlation, education was positively linked to breeding practices, though still not significantly. This might suggest that perceived training needs stem from the respondents' own feelings and observations, influenced by their surroundings about the advantages of certain practices. Ultimately, these perceptions could be shaped by the respondents' age and educational background. On the other hand, factors such as land holding, membership of milk cooperative, socio-economic status, cattle holdings, income from cattle rearing, and gross annual income were found to have negative associations, with many showing significant correlations ($P<0.01$) to overall health care, feeding, breeding, and management practices. Extension contact and exposure to mass media were negatively correlated with health care, feeding, and breeding practices, but positively and significantly correlated with the respondents' perceived training needs regarding management practices. This could imply that these variables are closely related to economic status and the level of awareness among respondents, leading them to assess the benefits of these practices rather than simply relying on their observations or feelings from their immediate surroundings.

Table 6: Distribution of cattle owners according to correlation between independent variable and perceived training needs regarding overall cattle management practices

S. No.	Variables	Health	Feeding	Breeding	Management
1.	Age	0.037	0.024	-0.008	0.028
2.	Education	0.037	0.037	0.012	0.007
3.	Land holding	-0.037	-0.028	-0.085	.119*
4.	Membership of milk co-operative society	-228**	-.226**	-0.078	-0.063
5.	Socio-economic status	-.127*	-.119*	-0.080	0.070
6.	Cattle holding	-.249**	-.244**	-.164**	-0.078
7.	Income from cattle rearing	-.176**	-.181**	-.149**	0.041
8.	Gross annual income	-.289**	-.279**	-.238**	-0.072
9.	Extension contact	-.199**	-.171**	-0.060	.181**
10.	Mass media exposure	-0.043	-0.037	-.125*	.212**

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

Sharma *et al*. (2011) [9] found that variables like education, socio-economic status, livestock holding, exposure to mass media, and contact with extension services, all had a significant negative impact on how farmers perceived their training needs. Similarly, Rajput *et al*. (2012) [7] noted that social participation, mass media exposure, extension contact, and the respondents' knowledge were also negatively significant ($P<0.05$) when it came to perceived training needs related to improved dairy farming practices. In a different study, Shahjar *et al*. (2018) [8] discovered that age and experience positively correlated with perceived training needs, while mass media exposure, extension contact, education, and social participation showed a significant negative correlation for dairy farmers. Taray *et al*. (2024) [11] highlighted a significant link between farmers' views on professionalism and staff attitudes, noting that those in the western region who frequently accessed services had a more positive perception of livestock extension service delivery ($P<0.05$). However, some differences in perception were observed between respondents from two districts, emphasizing the importance of tailored approaches to tackle specific regional challenges and improve the effectiveness of extension services.

4. Conclusion

In light of the results of this study, it can be concluded that most respondents were in the moderately perceived training need category for the overall scientific cattle management practices. A reasonable conclusion might be that based on their perception, cattle owners needed more information about different aspects, particularly in relation to Breeding and then Health care, Feeding and Management. The researchers recommend working to provide them knowledge in breeding, health care, feeding and management to enhance their knowledge, skill and attitude towards more efficacious management of their cattle to make cattle rearing more profitable and viable.

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