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An exploratory study on the socio-economic status of crossbred cattle Rearers in Jaipur district of Rajasthan

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Abstract

The present study was conducted to assess the socio-economic status and management practices of crossbred cattle owners in the Jaipur district of Rajasthan, specifically focusing on the Chomu and Amer tehsils. A total of 200 respondents were surveyed to analyze their personal, socio-economic, and psychological attributes in relation to dairy farming as a livelihood strategy. The findings revealed that the majority of respondents (53%) belonged to the OBC category, were predominantly middle-aged (51%), and possessed intermediate-level education (41%). Dairy farming was commonly practiced in combination with agriculture (90%), and most households fell into the medium-income bracket (₹4-6 lakh per annum; 51%) and belonged to joint family systems (79%). Family sizes were generally medium (6-8 members; 48%), with adults constituting the largest segment of the population (57.25%). Housing conditions were favorable, with 91.5% living in pucca houses. Experience in dairying varied, though nearly half (48.5%) had 10-20 years of experience. Despite this, a significant training gap was observed, as 75% of respondents had not undergone any formal training in dairying. Animal care was primarily managed by family members (88.5%), indicating a strong reliance on household labour. In terms of livestock preferences, 60% favored cattle, with an overwhelming 95% preferring crossbred cattle over indigenous breeds, underscoring a strong inclination toward higher-yielding animals. These results reflect the socio-economic heterogeneity and management patterns of crossbred cattle farmers, highlighting areas for potential intervention in training and resource support.

Keywords: Crossbred cattle, owners, socio-economic, dairy, family, labour, income, training, houses, breeds

Introduction

Livestock rearing is a cornerstone of rural livelihoods in Rajasthan, significantly contributing to household income, nutritional security, and agricultural sustainability. In Jaipur district, cattle are a major component of the livestock sector, providing a steady source of dairy income to thousands of families. As per the 20th Livestock Census (2019), the total cattle population in Jaipur district is 691,457, out of which 360,780 are crossbred cattle, indicating a strong shift toward improved breeds for higher productivity. The socio-economic importance of crossbred cattle is evident from their substantial contribution to milk production in the region. According to the 2023-24 estimates from the Directorate of Animal Husbandry, Rajasthan, crossbred cows in Jaipur produce an average of 9.784 kg of milk per day, totaling approximately 401.482 thousand tons annually. In comparison, indigenous cows yield 6.569 kg/day with a total production of 289.816 thousand tons, and non-descript cows yield 4.343 kg/day contributing 78.263 thousand tons of milk. This data underscores the superior productivity of crossbred cattle and their growing role in enhancing the economic well-being of dairy farmers. The increasing reliance on crossbred cattle reflects a broader trend of modernization in animal husbandry practices, ultimately contributing to rural development and socio-economic upliftment in Jaipur district.

Materials and Methods

The present study was conducted in Jaipur district of Rajasthan, purposively selected for its highest crossbred cattle population. Two tehsils (Chomu and Amer) with the highest number of crossbred cattle were chosen, and from each tehsil, ten villages were selected based on

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cattle density, totaling 20 villages. From each village, 10 farmers were randomly selected, yielding a sample size of 200 respondents. Data were collected during 2023-2024 through a pre-tested interview schedule via personal interviews, visual observations, and direct measurements. The schedule comprised socio-economic and management-related parameters. Statistical analyses such as frequency, percentage, chi-square test and p-value calculations were employed to interpret the data meaningfully and identify significant differences across variables.

Results and Discussion

This section outlines the socio-economic characteristics of crossbred cattle farmers, with results and discussion presented in the following tables.

Table 1: Distribution of respondents according to their caste

S. No	Category	Chomu		Amer		Overall	
		F	%	f	%	f	%
1.	SC	5	5.00	4	4.00	9	4.50
2.	ST	8	8.00	9	9.00	17	8.50
3.	OBC	48	48.00	58	58.00	106	53.00
4.	GEN.	39	39.00	29	29.00	68	34.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 2.584, P value 0.460							

The results showed that most crossbred cattle farmers belonged to the OBC category (53%), followed by General (34%), ST (8.5%), and SC (4.5%), with no significant difference between tehsils ($p = 0.460$). The dominance of OBC and General groups reflects their traditional engagement and better access to resources in dairy farming, while the lower representation of SC and ST communities highlights ongoing socio-economic challenges. These findings are consistent with Potdar *et al.* (2019) [18] and Princess *et al.* (2024) [20], who reported similar caste dynamics in livestock farming.

Table 2: Distribution of respondents according to their age

Sr. No.	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Young age (upto 35)	33	33.00	9	9.00	42	21.00
2.	Middle age (36-50)	48	48.00	54	54.00	102	51.00
3.	Old age (> 50 yrs)	19	19.00	37	37.00	56	28.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 19.853, P value 0.000							

The majority of crossbred cattle farmers were middle-aged (51%), with significant age distribution differences between tehsils ($p = 0.000$). Amer had more older farmers (37%), while Chomu had more younger ones (33%). The

dominance of middle-aged farmers suggests a balance of physical capability and experience, whereas lower youth involvement, especially in Amer, may be due to migration. These results align with Mahesh *et al.* (2020) [11], Maurya *et al.* (2021) [12], and Ashoo *et al.* (2021) [1], who also observed a similar age trend in dairy farming.

Table 3: Distribution of respondents according to their education status

S. No	Education category	Chomu		Amer		Overall	
		F	%	f	%	F	%
1.	Illiterate	0	0.00	3	3.00	3	1.50
2.	Literate	4	4.00	8	8.00	12	6.00
3.	Primary	9	9.00	3	3.00	12	6.00
4.	Middle	10	10.00	30	30.00	40	20.00
5.	Secondary	25	25.00	16	16.00	41	20.50
6.	Intermediate	45	45.00	37	37.00	82	41.00
7.	Graduate	7	7.00	3	3.00	10	5.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 21.689, P value 0.001							

The study found that most crossbred cattle farmers (41%) were educated up to the intermediate level, with only 1.5% being illiterate. A significant variation in education levels between tehsils ($p = 0.001$) highlights regional influence. Higher education likely enhances awareness and adoption of scientific dairy practices, supporting findings by Panchabhai *et al.* (2017) [15] and Chavan *et al.* (2023) [5], though contrasting with earlier reports of lower literacy among dairy farmers.

Table 4: Distribution of respondents according to their occupation

S. No	Occupation	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Dairy + Wage earning	3	3.00	2	2.00	5	2.50
2.	Dairy + Agriculture	86	86.00	94	94.00	180	90.00
3.	Dairy + Business	8	8.00	4	4.00	12	6.00
4.	Dairy + Service	3	3.00	0	0.00	3	1.50
5.	Dairy alone	0	0.00	0	0.00	0	0.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 4.889, P value 0.180							

The study showed that 90.00% of respondents practiced dairy farming alongside agriculture, with higher prevalence in Amer (94%) than Chomu (86%), reflecting the traditional mixed farming system. No farmer relied solely on dairying, likely due to economic risks. A few combined dairy with business (6%), wage labor (2.5%), or service (1.5%). These results align with Chavan *et al.* (2023) [5] and Gopi *et al.* (2017) [7], highlighting dual livelihoods, unlike Olorunnisomo *et al.* (2010), who reported livestock as a sole occupation.

Table 5: Distribution of respondents according to their annual income

S. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Low income (upto 4.00 lakh)	33	33.00	9	9.00	42	21.00
2.	Medium income (4.00 to 6.00 lakh)	48	48.00	54	54.00	102	51.00
3.	High income (> 6.00 lakh)	19	19.00	37	37.00	56	28.00
Total		100	100.00	100	100.00	200	100.0
Chi-Square 19.853, P value 0.000							

The study found that 51.00% of crossbred cattle farmers belonged to the medium-income group (₹4-6 lakh/year), with income distribution varying significantly between

tehsils ($p = 0.000$). Amer had more high-income farmers (37%), while Chomu had more in the low-income group. This may reflect better infrastructure and market access in

Amer. The results align with Bansod *et al.* (2022) ^[2] and Kavithaa *et al.* (2021) ^[9], but contrast with Budharam *et al.* (2022) ^[3] and Farhana *et al.* (2023) ^[6], who noted lower incomes in less developed regions.

Table 6: Distribution of respondents according to their type of family

Sr. No.	Type of family	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Nuclear	20	20.00	22	22.00	42	21.00
2.	Joint	80	80.00	78	78.00	158	79.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 0.121, P value 0.728							

The study revealed that 79.00% of crossbred cattle farmers belonged to joint families, with no significant regional difference between Chomu and Amer. This indicates the sustained role of joint families in rural dairy farming through shared labor and support. The presence of 21.00% nuclear families suggests a slow shift influenced by urbanization and socio-economic change. These findings align with Singh *et al.* (2023) ^[22] but differ from Prabex and Rahman (2023) ^[19] and Reddy *et al.* (2017) ^[21], who observed more nuclear families in other regions.

Table 7: Distribution of respondents according to their Family members

Sr. No.	Type of family		Chomu		Amer		Overall	
			f	%	f	%	f	%
1.	Children	M	176	21.76	195	24.22	371	22.99
		Fe	150	18.54	169	20.99	319	19.76
2.	Adult	M	249	30.78	224	27.83	473	29.31
		Fe	234	28.92	217	26.96	451	27.94
		Total	809	100.00	805	100.00	1614	100.00

The analysis showed a balanced family composition across Chomu and Amer, with adult males (29.31%) and females (27.94%) forming the majority, followed by children. The chi-square test indicated no significant regional difference, suggesting similar household structures and labor availability in both tehsils. This uniformity likely supports consistent livestock management and dairy farming efficiency across the study area.

Table 8: Distribution of respondents according to their family size

Sr. No.	Family size	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Small (< 5 members)	23	23.00	13	13.00	36	18.00
2.	Medium (6-8 members)	57	57.00	39	39.00	96	48.00
3.	Large (> 8 members)	20	20.00	48	48.00	68	34.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 17.682, P value 0.000							

The results revealed that medium-sized families (6-8 members) were most common among crossbred cattle farmers (48%), with significant regional variation ($p = 0.000$); large families were more prevalent in Amer, while medium-sized families dominated in Chomu. This suggests that family size plays a crucial role in labor availability for dairy activities, supporting earlier findings by Chandrasekar *et al.* (2017) ^[4] and Potdar *et al.* (2019) ^[18] linking larger households with more efficient livestock management.

Table 9: Distribution of respondents according to their land holding

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Small < 1ha	29	29.00	20	20.00	49	24.50
2.	Medium 1-2 ha	52	52.00	45	45.00	97	48.50
3.	Large > 2 ha	19	19.00	35	35.00	54	27.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 6.899, P value 0.032							

The study showed that most dairy farmers (48.50%) had medium landholdings (1-2 ha), with a significant regional difference ($p < 0.05$) as large holdings were more common in Amer. Medium landholders formed the backbone of integrated dairy and crop farming, while small farmers faced resource constraints. These findings, consistent with Chavan *et al.* (2023) ^[5] and Kale *et al.* (2011) ^[8], highlight the need for targeted interventions to support smallholders for sustainable dairy development.

Table 10: Distribution of respondents according to their type of house

Sr. No.	Type of house	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Kachcha	0	0.00	0	0.00	0	0.00
2.	Pucca	87	87.00	96	96.00	183	91.50
3.	Mixed	13	13.00	4	4.00	17	8.50
Total		100	100.00	100	100.00	200	100.00
Chi-Square 5.207, P value 0.022							

The study revealed that 91.50% of dairy farmers lived in pucca houses, with Amer (96.00%) showing a higher proportion than Chomu (87.00%), indicating a significant regional difference ($p = 0.022$). The absence of kachcha houses and limited mixed-type dwellings reflects high living standards and financial stability, likely supported by dairy income. These results contrast with Prabex and Rahman (2023) ^[19], highlighting regional disparities in rural infrastructure and economic conditions.

Table 11: Distribution of respondents according to their Experience in dairying (years)

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Low < 10 yrs	29	29.00	20	20.00	49	24.50
2.	Medium 10-20 yrs	52	52.00	45	45.00	97	48.50
3.	High > 20 yrs	19	19.00	35	35.00	54	27.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 6.899, P value 0.032							

The results showed that 48.50% of dairy farmers had medium experience (10-20 years), with Amer having more highly experienced farmers (35.00%) and Chomu more newcomers (29.00%). A significant regional difference ($\chi^2 = 6.90$) suggests that traditional practices are stronger in Amer, while dairy promotion initiatives may be attracting new entrants in Chomu. These findings align with Chavan *et al.* (2023) ^[5], Pasare *et al.* (2022) ^[17], and Kumar *et al.* (2018) ^[10], emphasizing the need for targeted extension services to support newer farmers and encourage knowledge exchange.

Table 12: Distribution of respondents according to their Trainings undergone (days)

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Off Campus (1 day)	6	6.00	9	9.00	15	7.50
2.	On Campus (3 days)	8	8.00	6	6.00	14	7.00
3.	Vocational Training (7 days)	8	8.00	13	13.00	21	10.50
4.	Not any	78	78.00	72	72.00	150	75.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 2.316, P value 0.509							

The study found that 75.00% of dairy farmers lacked formal training, with slightly higher non-participation in Chomu (78.00%) than Amer (72.00%). Vocational training (7-day) was most common among the trained, especially in Amer, while short-duration programs saw limited uptake. The chi-square test ($p = 0.509$) showed no significant regional difference, indicating a shared gap in training access. This lack of training may hinder the adoption of improved dairy practices. The findings, consistent with Parmar *et al.* (2022) [16] and Misro and Ghosh (2022) [13], emphasize the need for targeted awareness and accessible training initiatives to enhance dairy sector performance.

Table 13: Distribution of respondents according to their Management of animal care

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Labour	3	3.00	2	2.00	5	2.50
2.	Family	84	84.00	93	93.00	177	88.50
3.	Labour + Family	13	13.00	5	5.00	18	9.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 4.213, P value 0.122							

The results showed that 88.50% of dairy farmers depended on family labor for animal care, with a higher proportion in Amer (93%) than Chomu (84%). Only 9.00% used both family and hired labor, and just 2.50% relied solely on hired help. The chi-square test indicated no significant regional difference. This dominance of family labor reflects traditional, cost-effective practices and highlights the need for skill development among family members to boost efficiency in household-managed dairy farming.

Table 14: Distribution of respondents according to their Liking of animal

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Cattle	60	60.00	60	60.00	120	60.00
2.	Buffalo	33	33.00	27	27.00	60	30.00
3.	Sheep	0	0.00	0	0.00	0	0.00
4.	Goat	7	7.00	13	13.00	20	10.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 2.400, P value 0.301							

The study found that 60.00% of respondents preferred rearing cattle, followed by buffaloes (30.00%) and goats (10.00%), with no preference for sheep. Chi-square analysis showed no significant regional difference in species preference. Cattle were favored for their higher yield and economic benefits, buffaloes for rich milk fat, and goats for low maintenance. The absence of sheep reflects their lower profitability. These trends highlight regional variations, contrasting with findings from Maharashtra, where buffaloes were more dominant.

Table 15: Distribution of respondents according to their Liking of cattle

Sr. No	Category	Chomu		Amer		Overall	
		f	%	f	%	f	%
1.	Crossbred	94	94.00	96	96.00	190	95.00
2.	Indigenous	6	6.00	4	4.00	10	5.00
Total		100	100.00	100	100.00	200	100.00
Chi-Square 0.421, P value 0.516							

The study showed that 95.00% of respondents preferred crossbred cattle, with minimal variation between Amer and Chomu. Only 5.00% favored indigenous breeds, indicating their declining popularity. Chi-square analysis found no significant location-based difference. The strong preference for crossbreds is driven by their higher milk yield and adaptability, though the low indigenous breed usage raises conservation concerns. These findings are consistent with More *et al.* (2020) [14], highlighting the need for balanced breeding strategies to protect native cattle genetic resources.

Conclusion

The study concludes that crossbred cattle farming in Jaipur district is largely driven by OBC and General category farmers, primarily middle-aged and moderately educated, reflecting their traditional involvement and capacity for adopting scientific dairy practices. Mixed farming with agriculture is the dominant livelihood model, supported mainly by joint families and family labor. Most farmers have medium income, landholdings, and housing standards, indicating relative economic stability. Amer tehsil showed higher income, experience, and infrastructure levels, while Chomu had more youth and new entrants. Despite widespread preference for crossbred cattle due to productivity, low adoption of formal training and indigenous breeds highlights areas needing policy focus for sustainable dairy development.

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