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Socio-economic Status and Demographic Profile of Totapuri Goat Keepers in North-Eastern Rajasthan

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ABSTRACT

The present study was conducted during June, 2023 to August, 2024 at the Department of Animal Genetics and Breeding, College of Veterinary and Animal Science, Navania, RAJUVAS, Rajasthan, India to study the socio-economic status and demographic profile of Totapuri goat keepers in north-eastern Rajasthan. Based on an extensive analysis of a dataset comprising a total of 3080 goats across three districts in Rajasthan, this study presents significant findings pertaining to the socio-economic and demographic profile of Totapuri goat farmers. The analysis revealed a predominance of middle-aged individuals (41–60 years) within the goat rearing community across all three regions. Specifically, the distribution of respondents was 29.47% for younger individuals (under 40 years). The research also highlighted that the Scheduled Tribes (ST) category constituted the majority, particularly in Alwar and Dausa, constituting 70.53% of the studied region, while Karauli showed a substantial percentage of Most Backward Classes (MBC) at 34.61%. Furthermore, 90.52% of respondents were engaged in a combination of agriculture and animal husbandry in all the districts, underscoring the integrated nature of their livelihood activities. The housing situation indicated a relatively prosperous economic status among Totapuri goat keepers, as the majority lived in pucca houses. Additionally, a significant average family size of 7.75 members was observed, with variations across regions. Based on these findings, it can be concluded that goat farming, particularly of the Totapuri breed, plays a crucial role in sustaining the livelihoods of farm owners in the examined districts, with evident implications for rural economic development.

KEYWORDS: Totapuri goats, Alwar, Dausa, Karauli, socio-economic status

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1. INTRODUCTION

In India, agriculture is primarily a crop-livestock mixed production system where animal husbandry is a vital and integral part (Mishra et al., 2023). The livestock sector is a pivotal component of India's agricultural economy, contributing significantly to global agricultural output. Approximately 40% of global agricultural production is derived from livestock, with 20% originating from emerging nations (Anonymous, 2023b). Globally, India accounts for 2.16% of the world's meat production and 23.78% of the world's milk production (Anonymous, 2021 and Anonymous, 2022a)). Livestock sector contributed 30.87% to the Gross Value Added (GVA) of the agricultural and allied sectors during the Financial Year 2020–21 (Anonymous, 2022–23). The sector is projected to grow at an annual rate of 6.13% at constant prices, underscoring the need for enhanced livestock performance to drive economic growth (Anonymous, 2022–23).

Goat rearing is a widely adopted livestock practice in India, particularly beneficial for rural communities, smallholder, and marginal farmers in less favoured environments (Kumar et al., 2010). The Goat is one of the most important species of livestock in India, it has a short generation interval, high prolificacy, and is easily adaptable to a wide range of climatic conditions (Khan and Rehman, 2024). According to the 21st livestock census, India has a total livestock population of 536.76 million, with goats numbering 150 million, the highest after China (Anonymous, 2024a and Anonymous, 2024b). Goats contribute 8.4% to India's livestock GDP, generating revenue through meat (₹ 22,625 crores), milk (₹ 9,564 crores), skin (₹ 1,491 crores), manure (₹ 1,535 crores), and other products (₹ 3,360 crores) (Lata and Mondal, 2021). Rajasthan, known as the "goat capital" of India, has 20.84 million goats and produces significant amounts of milk and meat annually (Anonymous, 2023a). The state's semi-arid and desert regions make it an ideal place for goat rearing.

India is a rich repository of goat genetic resources, having 39 registered breeds of goat respectively (Anonymous, 2023c). These breeds have evolved through natural selection and selective breeding by rearers for adaptation to specific agro-ecological conditions. (Anonymous, 2022b). Effective management of these breeds requires a deep understanding of their traits, including physical attributes, distribution patterns, and agroclimatic resilience (Bedarda et al., 2019). Breed characterization through DNA molecular analysis, phenotypic characterization, and performance evaluation is essential for conserving and utilizing these genetic resources effectively (Anonymous, 2012; Anonymous, 2015).

Goat rearing is an enterprise which has been practiced by a large section of population in rural areas (Singh et al., 2021). However, the success of goat rearing depends on the identification and selection of suitable breeds for the local environment (Modi et al., 2024). Goat enterprise has also shown promise of its successful intensification and commercialization (Khadda et al., 2022). The rural and tribal farmers prefer to rear the goats due to their quick return, low initial investment, ease in handling by kids and women and high market demand of meat (Das et al., 2024). The Totapuri goat, a dual-purpose breed native to the Alwar, Dausa and Karauli region, is primarily raised for meat production. It is characterized by its parrot-shaped nasal bridge and distinctive bicolour pattern. This breed is known for its prolificacy and higher twinning rates. However, the genetic potential of Totapuri goats remains underutilized due to a lack of systematic research. It is critical to understand the socioeconomics of Totapuri goat farming before embarking on any major intervention to improve or develop the farming of Totapuri goats. This study was aimed to understand the socioeconomic status and production system of Totapuri goat keepers in the districts of Alwar, Dausa, and Karauli in Rajasthan.

2. MATERIALS AND METHODS

2.1. Study area

The experiment was conducted during June, 2023 to August, 2024 at the Department of Animal Genetics and Breeding, College of Veterinary and Animal Science, Navania, RAJUVAS, Rajasthan, India. Rajasthan State consists of 33 districts, out of which Alwar, Dausa, and Karauli which were characterized by semi-arid climatic conditions. These districts were selected purposively due to the high population of Totapuri goats in these areas. The study area was located at the coordinates: 27.5530°N and 76.6346°E, 26.5050°N and 7.0268°E, and 26.8997°N and 76.3324°E. Two sub-districts (tehsils) from each identified district were selected for the study, resulting a total of six tehsils. The villages were selected based on the maximum number of Totapuri goats reared by farmers.

2.2. Data collection

Data were collected from farmers' flocks of Totapuri goats in rural areas of Alwar, Dausa, and Karauli districts. The data collection process involved visiting farmers' doorsteps to gather information. A complete list of villages from the selected tehsils where Totapuri goats were reared was prepared with the assistance of personnel from the Department of Animal Husbandry. From that list, a minimum of five villages were selected from each tehsil based on the maximum number of Totapuri goats. A total of 42 villages being identified for the investigation.

2.3. Sample size

The data were recorded from approximately 3080 goats

from June 2023 to August 2024 (Table 1).

2.4. Socio-economic data collection

In addition to the goat data, socio-economic information was collected from the respondents using structured schedules.

2.4.1. Age

The age was operationalized as the number of completed years by the respondents at the time of interview. The age of respondents was ascertained with the help of direct questioning and the data were categorized into three groups on the basis of age.

2.4.2. Caste

Caste refers to the categories of persons arranged in levels according to the social status in the society by birth. The information was collected from the respondents through prepared structured schedule. The respondents were grouped into five caste categories.

2.4.3. Education

Education can be operationalized as formal education received by an individual respondent. Education refers to education the respondents had obtained during their academic career. A structured schedule was developed for collection of the information. The collected information was grouped into four categories according to their educational level.

2.4.4. Occupation

The occupation of an individual, an important economic factor which contributed to sustain the family and provided certain social status. Moreover, it also reflects in form of income. As per their occupation, they are classified into three categories.

2.4.5. Annual income

It is believed that a sound economic position could help in multipurpose activities for development of a family. Considering the fact, an annual income was mean out as a quantum of money earned during the year by the members of respondent''s family. The annual income of respondents was ascertained with the help of direct questioning and the data were categorized into three groups on the basis of mean and standard deviation.

2.4.6. Type and size of family

This variable referred as the total number of members in the family of the respondents.

Family type was operationally defined as the type of family the respondent associated with (joint or nuclear family). Respondents were grouped into two classes depending upon the composition of family type.

Table 1: List of villages from the selected tehsils

Sl. No.	Name of district	Name of tehsil	Name of village	No. of animal recorded
1.	Alwar	1. Reni	Theteda	96
			Babari	92
			Makarana	95
			Jamroli	98
			Bhojpuri	107
		2. Rajgarh	Bajada	104
			Boreta	108
			Tosda	164
			Indpura	104
			Nayagaon Pratappura	98
		Total		1066
2.	Dausa	1. Basva	Aliapuda	35
			Biwai	108
			Digria Bhhem	228
			Digria kapur	77
			Nihalpura	62
			Sabdwali	38
		2. Mahua	Amarpura	88
			Dabar	34
			Juitiyada	30
			Juitiyada Kala	53
			Kayam pur	106
			Pipripada	116
			Naurang Wada	46
			Langipura	60
		Total		1081
3.	Karouli	1. Todabhim	Nisura	68
			Akhawada	79
			Scihijanpur	54
			Machadi	132
			Bhandari	67
			Pethela	45
			Pahadi	18
			Madkapura	46
		2. Hindaun City	Dadrauli	22

Table 1: Continue...

Sl. No.	Name of district	Name of tehsil	Name of village	No. of animal recorded
			Gouaviyapura	11
			Liloti	29
			Gadipatti	37
			Gurjargawda	26
			Toddupura	47
			Khanwada	143
			Sanatkpura	53
			Banvaripur	42
			Karwarmeen	14
		Total		933
	Grand total			3080

2.4.7. Land holding

This variable was operationalized as the number of bigha of land possessed and used by them for their livelihood. It was an important variable which determined the economic as well as the social status of an individual. The land holding was measured with the. information about total area of lands owned by the respondents was classified into four categories.

2.5. Statistical analysis

Data were analysed using Central Tendency Simple Statistical model.

3. RESULTS AND DISCUSSION

3.1. Socio-economic status of respondent

3.1.1. Age of respondent

The respondents were categorised as per age (Table 2). The majority of Totapuri goat keepers across all regions were in the 41–60 years (56.84%). Both younger (under 40 yrs) and older (over 60 years) individuals had lower participation rates, with 29.47% and 13.68% respectively.

Table 2: Age of Respondent

Age of goat keepers	Alwar		Dausa		Karauli		Total	
	N	%	N	%	N	%	N	%
<40 years (Younger)	10	29.41	12	34.29	6	23.08	28	29.47
41–60 years (Middle)	20	58.82	17	48.57	17	65.38	54	56.84
>60 years (Older)	4	11.77	6	17.14	3	11.54	13	13.68

N: No. of respondent

Similarly, Bagri (2022) found that the bulk of responders (48.12%) of Sojat goats were in the middle age range (43–52 years). According to Kumar (2023), the majority of Karauli goat respondents (64.38%) were middle-aged. On the other hand, according to Gupta et al. (2024), 59% of Malvi goat owners were under 45 years old.

This indicates that the majority of people in the examined area who owned goats were middle-aged. This could be as a result of older people retiring from the physically taxing job of goat husbandry or younger people looking for alternative work possibilities.

3.1.2. Caste category of respondents

Survey was conducted to know the caste categories of the Totapuri goat keepers. The distribution of respondent by caste categories across three districts: Alwar, Dausa, and Karauli given in table 3. The majority of the studied region (70.53%), especially in Alwar and Dausa, belonged to Scheduled Tribes (ST). Karauli had a considerable percentage of members of the Most Backward Classes (MBC) (34.61%). The percentage of Scheduled Castes (SC) and Other Backward Classes (OBC) in all districts were comparatively low (12.63%).

Table 3: Details of Totapuri goat keepers on the basis caste

Caste category	Alwar		Dausa		Karauli		Total	
	N	%	N	%	N	%	N	%
SC	2	5.88	4	11.43	3	11.34	9	9.47
ST	28	82.35	26	74.29	13	50	67	70.53
OBC	2	5.88	4	11.43	1	3.85	7	7.37
MBC	2	5.88	1	2.86	9	34.61	12	12.63
Total	34	100	35	100	26	100	95	100

N: No. of respondent

Kumar (2023) revealed similar findings, indicating that the majority of Karauli goat responders (49.37%) belonged to the ST category. Deshpande et al. (2009) also reported that 45.45% of the 1243 goat keepers in 45 villages in the south Gujarati districts of Surat, Navsari, and Bharuch belonged to the ST category. According to Tanwar et al. (2007), the majority of goat farmers in Rajasthan's Udaipur district (90%) were classified as ST.

3.1.3. Occupation of totapuri goat respondent

The occupation of respondent was also surveyed in three districts: Alwar, Dausa, and Karauli (table 4). Totapuri goat keepers were distributed among 5 households (5.26%), 4 households (4.21%), and 86 households (90.52%) according to their occupations: agriculture, animal husbandry, and animal husbandry+agriculture respectively.

Table 4: Details of respondent on the basis of main occupation

Occupation	Alwar		Dausa		Karauli		Total	
	N	%	N	%	N	%	N	%
Agriculture	5	14.70	0	0	0	0	5	5.26
Animal husbandry	1	2.94	3	8.57	0	0	4	4.21
Animal husbandry+ agriculture	28	82.35	32	91.42	26	100	86	90.52
Total	34	100	35	100	26	100	95	100

N: No. of respondent

Gupta et al. (2024) also revealed similar findings for Malvi goats, with the majority of respondents (75.63%) working in agriculture and animal husbandry. In contrast to the current study, Kumar (2023) found that the majority of respondents (83.12%) of Karauli goats were engaged in animal husbandry exclusively, while the rest 16.88% were involved in both agriculture with animal husbandry. According to Bagri (2022), 40% of respondents had agriculture+animal husbandry as their occupation, while the majority (60%) of respondents of Sojat goats had animal husbandry alone.

The majority of occupations (90.52%) in all three districts were a combination of agriculture and animal husbandry, underscoring the importance of those two sectors to the assessed households' means of subsistence. In Dausa and Karauli, agriculture and animal husbandry by themselves were not important independent professions, and they were barely present in Alwar. Because so many households participate in both, integrated farming methods were essential to the sustainability and stability of the local economy.

3.1.4. Size of family

The average size of a Totapuri goat keeper's family was 7.75±0.41 members, ranging from 2 to 21 members per family (table 5). The greatest range (4–21) and the largest average family size (8.48±0.78) were seen in Karauli, indicating the existence of both large nuclear and extended households. With the smallest average family size (6.89±0.42) and a more constrained range (4–13), Dausa exhibited more homogeneous family structures. With an average family size of 8.06 ±0.86 and a range of 2–12, Alwar represented a mix of tiny and fairly large families.

Table 5: Average family member of house hold

	Alwar	Dausa	Karauli	Total
Size of family (Members)	8.06±0.86	6.89±0.42	8.48±0.78	7.75±0.41
Range (Members)	2-12	4-13	4-21	2-21
No. of house holds	34	35	26	95

According to Kumar (2023), the majority of Karauli goat respondents had large families (>5 members). According to Bagri (2022), the majority of Sojat goat respondents had large families (>5 people).

3.1.5. Types of residence

The overall (80%) Totapuri goat keepers owned pakka residence (table 6). The prevalence of Pakka houses in Alwar, Dausa and Karauli were 82.35%, 74.28% and 80% respectively.

Table 6: Type of residence of Totapuri goat keepers

Occupation	Alwar		Dausa		Karauli		Total	
	N	%	N	%	N	%	N	%
Kaccha	6	17.64	9	25.71	4	15.38	19	20
Pakka	28	82.35	26	74.28	22	84.61	76	80
Mix	0	0	0	0	0	0	0	0
Total	34	100	35	100	26	100	95	100

N: No. of respondent

Similar results were also reported by Bagri (2022) that the majority of Sojat goat owners (75%) lived in pakka houses. In contrary to the present investigation, Gupta et al. (2021) and Kumar (2023) reported that 57.61% and 58.75% respectively of the Karauli goat keepers were living in the kaccha house.

This suggests a relatively higher economic status of Totapuri goat keepers compared to Karauli goat keepers. Pakka houses were typically more durable and require higher investment, indicating that these goat keepers might had a stable income from their goat farming, allowing them to afford better housing.

3.1.6. Land holding

The land holding status of Totapuri goat keepers across three districts: Alwar, Dausa, and Karauli were depicted in table 7. The average land holding of Totapuri goat keepers were 5.30±0.45 bigha, majority had access to cultivated and irrigated land (95.78%) and a small percentage of Totapuri goat keepers across the three districts were landless (4.21%).

According to Kumar (2023), 16.88% of Karauli goat keepers were landless. The current study's findings showed that most Totapuri goat keepers did not face significant land access issues, despite the fact that this was essential for maintaining goat keeping through the production of fodder and other crops.

Table 7: Land holdings of respondent

Land holding (Bigha)	Alwar		Dausa		Karauli		Total	
	N	%	N	%	N	%	N	%
Land less	1	2.94	3	8.57	0	0	4	4.21
Cultivated land	33	97.05	32	91.42	26	100	91	95.78
Irrigated land	33	97.05	32	91.42	26	100	91	95.78
Unirrigated land	0	0	0	0	0	0	0	0.0
Average land holding	4.19±0.57		5.56±0.83		5.58±0.97		5.30±0.45	

N: No. house hold

3.1.7. Composition of totapuri goats

The composition of goat flocks across three districts were given in table 8. The proportion of does bucks and kids were 40.34, 3.77 and 55.89% respectively.

Kumar (2023) reported a larger percentage (83.45%) of adult females of the Karauli breed, which was contradictory to the present analysis. Similarly, a greater percentage (86.26%) of adult females was found by Gupta et al. (2021) on Karauli goat producers. Additionally, Bagri (2022) found that 61.89% of Sojat goats were adult females. Does made-up a large percentage of the population and were essential for reproduction. Bucks were kept in smaller numbers since they were essential for breeding, which reflects a pragmatic approach to flock composition. The percentage of offspring indicated active and fruitful breeding techniques in every location and represented the flocks' future.

The high number of female goats suggested an emphasis on breeding and milk production, essential for sustaining and growing the goat population. The survey demonstrated a strong emphasis on goat farming, particularly the Totapuri breed, which dominated the livestock population. The distribution suggested a focus on maintaining versatile and adaptable livestock, with specific preferences likely driven by local conditions, breeding practices, and economic considerations.

Table 8: Composition of Totapuri goat flocks

Flock	Alwar		Dausa		Karauli		Total	
	No. of goats	%	No. of goats	%	No. of goats	%	No. of goats	%
Composition								
Doe	483	45.31	414	38.30	346	37.04	1243	40.34
Bucks	39	3.66	43	3.98	34	3.64	116	3.77
Kids	544	51.03	624	57.72	553	59.31	1721	55.89
Total	1066	100	1081	100	933	100	3080	100

3.1.8. Totapuri goats flock size

The holding of flock size by responder was determined using a survey (Table 9). The highest rate was 60.99% for all goats kept in large flocks (more than 30 Goats). The fact that half (50%) of the farmers in Karauli maintained sizable flocks of goats implied a trend toward larger-scale goat farming. Goat keepers in category 20–30 comprised a smaller percentage of the population (26.32%), with just 25 goat keepers compared to those in category 10–20. In Alwar, where more than one-third (35.29%) of the farmers were keeping a flock of 20–30 Totapuri goats, the distribution revealed that keeping 20–30 goats was also a typical practice. Similar to the current study, Kumar (2023) found that the majority of respondents (74.38%) had flock sizes ranging

Table 9: Totapuri goats flock size holding by respondent (Range)

Flock size	Alwar		Dausa		Karauli		Total	
	No. of farmer	Goats	No. of farmer	Goats	No. of farmer	Goats	No. of farmer	Goats
<10 Goats	2 (5.88)	20	2(5.72)	17	1(3.85)	6	5(5.26)	43(1.40)
10–20 Goats	9(26.47)	161	9(25.71)	162	8 (30.77)	140	26(27.37)	463(15.03)
20–30 Goats	12(35.29)	349	9(25.71)	234	4 (15.38)	112	25(26.32)	695(22.56)
>30 Goats	11(32.35)	536	15(42.86)	668	13(50.00)	675	39(41.05)	1879(60.99)
Total	34(100)	1066	35 (100)	1081	26 (100)	933	95(100)	3080(100)

Figures in parenthesis indicate percentage, N: No. of respondent

from 20–95 Karauli goats. Contrary to the current findings, Bagri (2022) revealed that the majority of respondents (70%) owned medium-sized flocks (15–30 Sojat goats). Naidu et al. (2016) found that the majority of respondents (58.75%) owned medium-sized goat flocks (21–40 goats) in the Andhra Pradesh district of Vizianagaram. The information showed a distinct trend among Totapuri goat keepers toward larger flock sizes. Economic advantages, improved resource use, or cultural preferences could be the cause of typical practice of keeping Totapuri goat flocks.

4. CONCLUSION

Most Totapuri goat keepers were in their middle ages belonging to ST category residing in pakka huts with an access to land that was farmed and irrigated, suggesting a somewhat stable economic situation. Majority of respondents worked in both agriculture and animal husbandry emphasizing their interwoven livelihoods. A large proportion of Totapuri does and offspring in the flock suggested that breeding is still ongoing with a cultural preferences or economic advantages toward bigger flock numbers (>30 goats).

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