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Study on socio-personal characteristics & adoption status of Garole sheep farmers in Sundarban area of the State West Bengal, India

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Abstract

India ranks second in sheep and goat farming worldwide, following China. Small ruminants, such as Sheep, play a crucial role in the Indian economy. Among these, the Garole breed of sheep, primarily found in the Sundarban region of West Bengal, stands out for its high prolificacy and adaptability. Sheep farming is particularly suited to the arid and semi-arid zones of India and is predominantly undertaken by marginal and landless farmers. The Garole sheep breed is widespread throughout the Sundarban region of West Bengal. This study aims to investigate the impact of knowledge-based adoption behaviour among farmers over the years and its implications for sheep farming in the region. The study was conducted in the Sundarban regions under North and South 24 parganas districts of West Bengal, with a focus on the Basanti and Sandesh Khali-II Blocks and their respective villages, selected based on the Sheep population. A total enumeration of 200 families was carried out, utilizing a structured interview schedule during the period of 2021-2022. The collected data were presented in a tabular format, highlighting frequencies and percentages across different categories and subcategories. Based on the findings of the study, various curative and preventive approaches and strategies are proposed to address the challenges faced by Garole sheep owners and minimize potential losses in their farming endeavours.

Keywords: Garole sheep, farming, Sundarban, knowledge, behaviour, adoption etc.

Introduction

The name "Sundarban" is believed to be derived from the Bengali word 'Sundari,' which describes the lush coastal regions of West Bengal and Bangladesh. This captivating region spans across 19 blocks in the South 24 Parganas and North 24 Parganas districts of West Bengal, India. Unfortunately, the inhabitants of this area still face significant deprivation and lack awareness regarding the application of modern technology for their survival and sustainability.

The livelihoods of the people in this region primarily depend on natural resources such as animal husbandry, fishery, and agriculture. However, the salinity of the soil poses a significant barrier and limitation to all-round agricultural cropping and productivity. Given these challenges, animal husbandry can be a viable means of livelihood for the people of this region. Among various livestock species-based farming systems, sheep husbandry, specifically the Garole breed of sheep, is the most primitive and rare species found predominantly in households, serving as a profitable farming practice in the Sundarban region of West Bengal.

Despite the frequent cyclones, extreme rainfall, and hot humid climatic conditions in the Sundarban area, the Garole sheep variety has managed to thrive, known for its high adaptability and prolificacy in the marshy land. The breed was first mentioned by Mason (1980) [3] with Turner (1982) [8] introducing the concept of prolificacy in this sheep breed from Bengal, related to the Merino strain known as Booroola. The name 'Garole' is a colloquial Bengali slang term, roughly translating to 'Stupid,' referring to its atypical behaviour pattern characterized by innocence and foolishness. In Bengali, farmers often refer to them as 'Bheda,' with males known as Rams and females as Ewes.

Recognizing the socio-economic significance of the Garole Sheep breed in the Sundarban region of West Bengal, it is imperative to analyze the livelihood generation potential of Garole sheep owners in this region. To enhance the production potential of these Sheep, there is a need to introduce improved animal husbandry technologies for widespread knowledge adoption, coupled with the creation of essential infrastructure to support sustainable livelihoods among Garole sheep farmers in the Sundarban region.

The successful implementation of improved animal husbandry technology in the field hinges on the knowledge-based adoption behaviour of individuals. Adoption of an innovation, as described by Wilkening (1953) [9], is a process involving learning, decision-making, and action over time. It is not a single decision but a series of actions and meaningful decisions. The North Central Sociology sub-committee for the study of diffusion of farm practices has identified five stages of the adoption process: awareness, interest, evaluation, trial, and adoption. These stages are crucial for the knowledge-based adoption of improved sheep husbandry practices, contributing to the holistic development of stakeholders.

While studies on the knowledge-based adoption behaviour of livestock owners have been conducted by many researchers, there is a lack of sufficient research on the knowledge-based adoption behaviour of Garole sheep owners in the Sundarban region of West Bengal. Such research is essential for strategic planning to promote sheep husbandry-based livelihoods among intended farmer beneficiaries, not only in the state but also throughout the country. In light of these considerations, the present study aims to investigate the knowledge-based adoption behaviour of Garole sheep farmers in the Sundarban region of West Bengal, India.

Materials and Methods

The present study was conducted in the Sundarban region of West Bengal, encompassing a total of 24 blocks from both

South and North 24 Parganas districts of W.B. To gain a better understanding and assess potential differences in sheep rearing practices, the researcher purposively selected two specific blocks, namely Basanti and Sandeskhali-II. Within these selected blocks, the researcher further randomly chose two villages from each block based on the sheep population data provided by the Block-level Livestock Departments. This resulted in a total of four villages being included in the study. From these four villages, a random sample of 50 Sheep farmers was selected, resulting in a total sample population of 200 respondents. Data collection was carried out through a pre-designed structured interview schedule developed by the researcher. Subsequently, the collected data was analyzed using various statistical tools, including- Frequency, Percentage, mean, and standard deviation. These analyses were conducted across different Socio-personal, Socio-economic, communication and socio-psychological attributes to gain insights into the sheep rearing practices in the selected villages of the Basanti and Sandeskhali-II blocks in the Sundarban region of West Bengal.

Results and Discussion

The data Collected through Structured interview schedule were presented in tabular format in terms of percentage distribution in North & South 24 Parganas districts are as follows:

Table 1: Percentage distribution of demographic and Socio-personal Characteristics of Sample from North and South 24 Parganas district of West Bengal.

Item	Category	North 24 Parganas		South 24 Parganas	
		Freq. (N=100)	Percent (%)	Freq. (N=100)	Percent (%)
Age	20-30 years	13	13.0	12	12.0
	31-40 years	15	15.0	53	53.0
	41-50years	62	62.0	18	18.0
	51-60years	10	10.0	7	7.0
	61 and above	0	0.0	10	10.0
Religion	Hindu	40	40.0	73	73.0
	Muslim	60	60.0	27	27.0
	Christian	0	0.0	0	0.0
Marital Status	Married	98	98.0	100	100
	widow/widower	2	2.0	0	0.0
Education	Illiterate	4	4.0	15	15.0
	Primary	22	22.0	47	47.0
	Middle	51	51.0	18	18.0
	High School	18	18.0	20	20.0
	Graduate	5	5.0	0	0.0
Family type	Single	83	83.0	78	78.0
	Joint	17	17.0	22	22.0
Family Size	Upto 5 members	8	8.0	23	23.0
	Above 5 member	92	92.0	77	77.0
Land	No land	5	5.0	13	13.0
	upto one hectre	54	54.0	45	45.0
	upto two hectre	28	28.0	21	21.0
	above 02 hectre	13	13.0	21	21.0
House Type	Hut	27	27.0	43	43.0
	Kuttcha House	23	23.0	30	30.0
	Mixed House	27	27.0	11	11.0
	Pucca House	17	17.0	13	13.0
	Mansion	6	6.0	3	3.0
Caste	Scheduled caste	39	39.0	39	39.0
	Scheduled Tribe	0	0.0	21	21.0
	OBC	57	57.0	37	37.0
	General	4	4.0	3	3.0
Occupation	Labour	36	36.0	38	38.0
	caste occupation	0	0.0	10	10.0

	Business occupation	13	13.0	20	20.0
	Cultivation	42	42.0	29	29.0
	Service	9	9.0	3	3.0
Annual Income	Below Rs.4000/-	13	13.0	18	18.0
	Rs. 4001/- to8000/-	37	37.0	12	12.0
	Rs.8001/- to12000/-	29	29.0	23	23.0
	Rs.12001 -16000/-	18	18.0	22	22.0
	Rs.16001/-&>	3	3.0	25	25.0

Table-1 presents key demographic and socio-personal data for farmers in North 24 Parganas and South 24 Parganas. In North 24 Parganas, 62% of farmers fall within the 41-50 age group. In contrast, in South 24 Parganas, 53% of farmers belong to the 31-40 age group, with 12% in the 20-30 age group. In both blocks, the majority of farmers come from Hindu and Muslim communities. In North 24 Parganas, 60% of farmers are Muslim, while in South 24 Parganas, Hindus dominate at 73%. In both blocks, almost all farmers are married, with a small percentage (2%) being widowed in North 24 Parganas. According to data, In North 24 Parganas, 51% of farmers completed their schooling up to the upper primary level, followed by 22% at the primary level, 18% at the high school level, and 5% with a graduation degree. In South 24 Parganas, the majority of farmers completed their education at the primary level (47%), followed by High school (20%), and middle school (18%). In both blocks, the prevalent family structure is nuclear, with 83% in North 24 Parganas and 78% in South 24 Parganas. In both blocks, the majority of families have more than five members, with 92% in North 24 Parganas and 77% in South 24 Parganas. Almost every farmer in both blocks owns more than one hectare of land, except for 5% in North 24 Parganas and 13% in South 24 Parganas. In North 24 Parganas, 54% of people have up to

one hectare of land, while in South 24 Parganas, 45% have one hectare of land. Analyzed data revealed that In South 24 Parganas, 43% of people live in mud-made houses or huts, whereas in North 24 Parganas, this percentage is lower at 27%. Kutch houses are more prevalent in South 24 Parganas (30%) compared to North 24 Parganas (23%). Only 3% of houses in South 24 Parganas are categorized as "Mansion," while in North 24 Parganas, it's 6%. In North 24 Parganas, 57% of the population belongs to Other Backward Castes (OBC), whereas in South 24 Parganas, 39% are Scheduled Castes, followed by OBCs at 37% and Scheduled Tribes at 21%.

In North 24 Parganas, 42% of the population depends on agriculture as their primary source of occupation. In South 24 Parganas, 38% of people rely on daily labor as their primary source of income. In North 24 Parganas, 29% of farmers earn an average annual income ranging from Rs. 8,001 to Rs. 12,000 from sheep farming. In South 24 Parganas, 25% of farmers earn more than Rs. 16,001 and above from sheep farming. This data provides valuable insights into the demographic, socio-economic, and occupational characteristics of farmers in North 24 Parganas and South 24 Parganas, highlighting key differences between the two regions in the state of West Bengal.

Table 2: Adoption Status of various animal Husbandry practices by Garole Sheep Owners from selected North and South 24 Parganas district of West Bengal

Category	Items	N.24 parganas		S.24 Parganas	
		Freq. (N=100)	Percent (%)	Freq. (N=100)	Percent (%)
Vaccination Against Contagious diseases	Adopted	60	60.0	61	61.0
	Non-Adopted	40	40.0	36	36.0
Deworming for parasitic control	Adopted	86	86.0	100	100
	Non-Adopted	14	14.0	0	0.0
Cultivation of Green Fodder	Adopted	0	0.0	0	0.0
	Non-Adopted	100	100	100	100
Feeding of Green Fodder	Adopted	100	100	100	100
	Non-Adopted	0	0.0	0	0.0
Feeding of Concentrate Mixture	Adopted	10	10.0	32	32.0
	Non-Adopted	90	90.0	68	68.0
Feeding of Colostrum to new born	Adopted	69	69.0	76	76.0
	Non-Adopted	31	31.0	24	24.0
Feeding of Urea & molasses treat	Adopted	0	0.0	00	0.0
	Non-Adopted	100	100	100	100
Castration by Bardizzo castrator	Adopted	0	0.0	10	10.0
	Non-Adopted	100	100	90	90.0
Value addition of milk and Meat	Adopted	0	0.0	00	0.0
	Non-Adopted	100	100	100	100

Table-2 depicted that In North 24 Parganas, 60% of beneficiaries have adopted vaccination against various contagious diseases. In South 24 Parganas, a slightly higher percentage, 61% of farmers, have adopted vaccination. The non-adoption rate stands at 40% in North 24 Parganas and 36% in South 24 Parganas, indicating room for improvement in vaccination coverage. In North 24 Parganas, a substantial 86% of respondents are aware of deworming practices. In

South 24 Parganas, 100% of respondents have adopted deworming practices, suggesting a higher level of awareness and compliance. In both North 24 Parganas and South 24 Parganas, the predominant feeding practice for livestock is pasteurization or open grazing, with nearly all farmers relying on free grazing due to sufficient available resources. A small percentage of farmers in North 24 Parganas (10%) and South 24 Parganas (32%) have started incorporating concentrated

food into their livestock's diet. This adoption is notably higher in South 24 Parganas, possibly due to better access to information and awareness efforts by local Prani Mitras. A majority of farmers, 69% in North 24 Parganas and 76% in South 24 Parganas, believe in the benefits of colostrums for newborn kids. This underscores the awareness of the importance of this initial milk secretion for the health of newborn livestock. It is notable that almost 100% of farmers in both districts do not use urea and molasses for treating their sheep. This suggests a traditional and possibly safer approach to livestock management. Traditionally, farmers in both districts have used traditional methods for castrating sheep. However, the data indicates a growing awareness of castration machines, often utilized by Prani Mitras for this purpose. Only 10% of farmers in South 24 Parganas have adopted the new technique, indicating that traditional methods are still prevalent. However, those who have adopted the new technique report positive results, emphasizing the potential benefits of modernization in livestock management practices. Both North 24 Parganas and South 24 Parganas farmers typically sell their sheep directly to local markets (foray) without engaging in value-added product production. This suggests a need for exploring opportunities for enhancing the value chain in sheep farming. In summary, the data highlights variations in adoption rates and practices related to livestock management and healthcare between North 24 Parganas and South 24 Parganas districts. There is potential for improving vaccination coverage, promoting modernized practices, and exploring value-added opportunities within the sheep farming.

Conclusion

The study highlights the challenges faced by Garole sheep farmers in the Sundarbans region and the innovative measures they have taken to overcome these difficulties. It also suggests strategies for government agencies and organizations to enhance the adaptability of animal husbandry practices, ultimately improving the well-being of Garole sheep farmers and the sustainability of their livelihoods.

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