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Comparative study on adoption behaviour of improved livestock farming practices by Santal women in West Bengal, India

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Abstract
The Santal people, with a population exceeding ten million, are the largest tribe in South Asia. They primarily inhabit the Indian states of West Bengal, Jharkhand, Bihar, and Orissa, with significant communities also found in Assam, Nepal, and Bangladesh. Their language, Santali, belongs to the Austroasiatic family and has proud origins tracing back to the historic Champa Kingdom in northern Cambodia. The Santal have evolved from skilled hunters and gatherers to practitioners of slash-and-burn agriculture, demonstrating their adaptability and deep connection to the land. They cultivate wet rice and raise livestock, with Santal women playing a crucial role in daily livestock farming. This includes feeding, cleaning, and managing the health of the animals using traditional methods passed down orally. A study was conducted in four districts of West Bengal, Bankura, Purulia, Jhargram and West Midnapore chosen for their high concentration of the Santal tribe. From each district, one block was selected, and within that block, one village was chosen. In total, 200 Santal women involved in livestock farming were randomly selected from these villages, with data collected through structured interviews. The study highlighted the respondents' adoption behaviours concerning improved livestock farming practices in the selected areas. The findings aim to draw specific recommendations for sustainable improvements tailored to their needs.

Keywords: Livestock farming, santal women, adoption behaviour, improved farming etc.

Introduction
India has a diverse population of tribal communities, also known as Adivasis, who are spread across different regions of the country. According to Article 342 of the Indian Constitution, at present, there exist six hundred and ninety-seven tribes as notified by the Central Government. The tribal population of India is 104 million constituting 8.6 percent of the total population which is larger than that of any other country in the world. The tribal population of India is more than the total population of France and Britain and four times that of Australia. The tribal communities in India have their unique customs, traditions, and languages. They are generally known for their close relationship with nature and their unique ways of living in harmony with the environment. Some of the prominent tribal communities in India include the Gonds, Bhils, Santhals, Mundas, and Oraons. The Santal people, with a population exceeding ten million, are the largest tribe in South Asia. They primarily inhabit the Indian states of West Bengal, Jharkhand, Bihar, and Orissa, with significant communities also found in Assam, Nepal, and Bangladesh. Their language, Santali, belongs to the Austroasiatic family and has proud origins tracing back to the historic Champa Kingdom in northern Cambodia.
In West Bengal, the Tribal population is 52,96,963 as per the Census 2011, which is about 5.8% of the total population of the State. The tribal population of West Bengal constitutes about 5.08% of the total Tribal population of the Country. Tribal communities are present in all the Districts of the State. A higher concentration of Tribal population is seen in the Districts like Darjeeling, Jalpaiguri, Alipurduar, Dakshin Dinajpur, Paschim Medinipur, Jhargram, Bankura, and Purulia.

There are about 40 distinct tribal communities present in West Bengal, out of which Santal are the most significant tribes. Santhal community is the largest and consists of about 52% of the state's total tribes.

"Livestock farming" is a vital component of Santali culture, and Santal women are at the forefront of this practice. Their involvement in livestock farming is not just a daily routine; it is a cornerstone of their cultural identity and community life. These women skilfully raise a range of farm animals, including poultry, cattle, buffaloes, pigs, and occasionally sheep, predominantly through traditional methods. This engagement not only bolsters their household income but also ensures the economic sustainability of their communities. As we move further into the 21st century, it is essential to examine how these women are embracing improved livestock farming techniques within the dynamic and competitive landscape of modern agriculture, particularly in regions like West Bengal. Analyzing their adoption behaviours towards innovative farming methods will yield critical insights into the interplay between cultural traditions and agricultural advancement. The study further will help to find the way to improve the livelihood of the Santal women as well as the society.

Materials and Methods

The study was conducted in the state of West Bengal from where purposively selected four districts: Bankura, Purulia, West Midnapore, and Jhargram. From each district, one block was randomly chosen, and from each block, one village inhabited by the Santal community was selected. In total, 50 Santal women were randomly chosen from each village, resulting in a sample size of 200 respondents for the study. Data was collected using a pre-designed semi-structured interview schedule, with individual questionnaires administered by the researcher. The collected data was then tabulated and analysed using statistical methods, such as percentiles and frequency analysis, to examine various socioeconomic and communication characteristics. This analysis facilitated a better interpretation of the data and helped lead to the study's conclusions.

Results and Discussion

In the present study, the data were analysed in two parts. Initially, frequencies and percentages were calculated to make a simple comparison and determine the ranking of adoption related to improve farming practices among selected sample Santal tribes in area.

Table 1: Adoption of improved farming practices by the Santal women 200 respondent in Bankura, Purulia, Jhargram and West Midnapore District

Variables of Improved Farming Practices	Adopted	Overall Respondents		Rank related to improved farming practices
		Frequency	%	
Artificial insemination of dairy animal	No	159	79.5	5
	Yes	41	20.5	
Deworming and vaccination for disease management	No	80	40	3
	Yes	120	60	
Cultivation of green fodder	No	200	100	8
	Yes	0	0	
Feeding of green fodder and concentration mixture	No	145	72.5	6
	Yes	55	27.5	
Feeding of colostrum to new-born calf	No	6	3	1
	Yes	194	97	
Feeding of Urea and molasses treated straw	No	200	100	8
	Yes	0	0	
Improved broiler farming practices	No	198	99	7
	Yes	2	1	
Ghungroo piggery practices	No	64	32	2
	Yes	136	68	
Scientific backyard poultry and Duckery farming	No	82	41	4
	Yes	118	59	

The analytical study clearly demonstrates the effectiveness of various improved farming practices among respondents, ranked in descending order of adoption. Feeding colostrum to new-born calves is the most widely adopted practice, embraced by an impressive 90% of respondents (Rank 1). Ghungroo piggery practices follow closely behind, adopted by 68% of respondents (Rank 2). Deworming and vaccinations for disease management are strongly practiced, with 60% of respondents implementing these measures (Rank 3). Scientific backyard poultry and duck farming are also highly regarded, with 59% of respondents participating (Rank 4). Feeding green fodder and concentrate mixtures holds a significant place, adopted by 27.5% of respondents (Rank 5). Artificial insemination of dairy animals is utilized by 20.5% of respondents (Rank 6). Improved broiler farming practices, although less common, are still practiced by 1% of respondents (Rank 7). Importantly, it is evident that Santal women have not adopted the practices of cultivating green fodder or utilizing urea and molasses-treated straw at all, highlighting an area for potential growth and development in farming techniques. A comparative study was conducted to measure the adoption index of improved farming practices by the Santal women using Kruskal Wallis's test in four selected districts in the state of West Bengal.

The analytical study assessed the mean scores for the adoption of improved farming practices across different districts. It found that Purulia district had the lowest mean scores for all practices evaluated. Specifically, the scores were as follows: deworming and vaccination for disease management (2.92), Ghungroo farming practices (4.86), colostrum feeding of new-born calves (15.00), feeding of green fodder and concentrated mixture (2.44), artificial insemination of dairy animals (1.16), backyard poultry and duck farming (2.62), and improved broiler farming (0.00). In contrast, West Midnapore district recorded the highest mean scores, with the following results: deworming and vaccination for disease management (4.74), Ghungroo farming practices (6.40), colostrum feeding of new-born calves (15.38), feeding

of green fodder and concentrated mixture (3.96), artificial insemination of dairy animals (1.80), and backyard poultry and duck farming (3.36). Additionally, Bankura district had the highest mean score for improved broiler farming, which was recorded at 0.24.

Table 2: Comparative study about Adoption of improved farming practices by the Santal women in Bankura, Purulia, Jhargram, and West Midnapore District by using Kruskal-Walli's test

Districts	Score means of adoption						
	Deworming and vaccination for disease management	Ghungroo farming practices	Colostrum feeding to the new-born	Feeding of green fodder	Artificial insemination	Backyard poultry and duckery farming	Improved broiler farming
Bankura	4.20	5.98	15.08	2.96	1.68	2.74	0.24
Purulia	2.92	4.86	15.00	2.44	1.16	2.62	0.00
Jhargram	4.10	5.64	15.06	3.08	1.48	2.96	0.00
West midnapore	4.74	6.40	15.38	3.96	1.80	3.36	0.00
Kruskal-Wallis Chi sq.	4.880	2.219	0.114	1.906	1.807	2.152	6.030
Asymp. Sig.	0.181	0.528	0.990	0.592	0.613	0.541	0.110

Conclusion

The study concludes that while some improved farming practices on animal Husbandry have been widely adopted possibly because they resemble traditional agricultural methods other important practices have been neglected. To achieve both economic growth and overall sustainable progress, it is essential to place greater emphasis on awareness, hands-on training, and demonstration of results. Additionally, the demographic emphasis should be noted as Purulia district ranks last in all aspects of improved livestock farming practices compared to the other three districts in the state of West Bengal, India.

Conflict of Interest

Not available

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Reference

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