



Socio-Economic Profile Analysis of Pisciculture Farmers in Puri District of Odisha, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Pisciculture significantly contributes to food security, nutrition, and rural livelihood in India, the world's second-largest fish producer. Odisha, with its abundant aquatic resources, offers immense potential for pisciculture, particularly in districts like Puri, where it serves as a critical livelihood activity. However, the socio-economic attributes of fish farmers, such as education, income, and resource access, remain inadequately explored, posing challenges to sustainable development in this sector. With this background, the current study was undertaken to evaluate the socio-economic

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profile of pisciculture farmers in Puri district using an ex-post-facto research design and multi-stage sampling technique with purposive sampling of district, block, village and gram panchayat. Data were collected from 120 randomly sampled respondents through pre-tested, structured interview schedule followed by detailed analysis. Key variables studied included age, caste, education, pond size, annual income, farming experience, family size, house type, type of pond, ownership of pond, extension contact, and information source use. Findings revealed that 49.2% of respondents were young, 71.7% belonged to the general caste, and 35% had education only up to primary school. Most farmers (49.2%) operated ponds of 0.3–0.4 ha, and 31.7% earned annual incomes up to Rs.30,000. Additionally, 71.7% had less than five years of farming experience, while 55% had large families of more than 4 members. Pucca houses (45.80%), seasonal ponds (55.8%) and revenue ponds (44.2%) were owned by the majority. The Assistant Director of Fisheries was the most contacted authority, with newspapers as the primary information source and friends and relatives as the preferred personal information channels. These findings highlight critical socio-economic gaps among fish farmers which need targeted interventions to enhance growth of pisciculture in Puri district.

Keywords: Agriculture; farmers; Odisha; pisciculture; socio-economic attributes.

1. INTRODUCTION

Pisciculture, or fish farming, has emerged as a critical component of India's aquaculture sector, contributing significantly to the nation's economy, employment, and food security (Kumar, et al., 2021). With a coastline of 7,517 km and vast freshwater resources, India is uniquely positioned to harness the potential of pisciculture (DOF, 2020). The sector provides livelihood opportunities to over 14 million people, and fish production has seen remarkable growth, increasing tenfold since India's independence (FAO, 2021). This growth trajectory highlights the sector's resilience and adaptability to meet rising domestic and global demand.

Odisha, a coastal state with a rich aquatic ecosystem, exemplifies India's pisciculture potential. The state boasts an extensive coastline of 481 km and abundant freshwater and brackish water resources, making it one of India's leading fish-producing regions (GOO, 2020). Notably, Odisha's Puri district, with its unique geographic and socioeconomic attributes, has become a focal point for sustainable aquaculture practices (Mishra & Das, 2019). The integration of traditional methods with modern techniques, supported by government initiatives and community participation, contribute to the district's role as a model for balanced economic and ecological development (Mishra & Das, 2019, Sousa, et al., 2019, Langa, et al., 2024).

Considering the opportunities for growth of pisciculture in Puri district, it is essential to explore the socio-economic attributes of farmers in the region. This would shed light on the

transformative potential of pisciculture in enhancing rural incomes, promoting food security, and contributing to the broader goals of sustainable development (World Bank, 2020). With this background, the current study to assess the socio-economic profile attributes of pisciculture farmers in Puri district of Odisha, India was undertaken.

2. MATERIALS AND METHODS

The current study was conducted to assess the socio-economic attributes of pisciculture farmers in Puri district of Odisha. It was conducted using ex-post-facto research design. Multistage sampling method was used for the study.

The study was conducted in Puri district of Odisha. The district known for its coastal expanse and abundant water resources, was purposively selected for the research due to the prevalence of pisciculture activities. Out of 11 administrative blocks of the district, Gop and Nimapada blocks were chosen purposively based on their significant engagement in pisciculture practices. From each block, two gram panchayats were selected purposively, i.e., Ganeswarpur and Kuanpada gram panchayat from Gop block and Denua and Sagada gram panchayat of Nimapada block. One village was then selected purposively from each gram panchayat, namely Subarnapur from Ganeswarpur gram panchayat, Oruali from Kuanpada gram panchayat, Denua from Denua gram panchayat, Renghalo from Sagada gram panchayat. A list of pisciculture farmers was obtained from the Assistant Fishery Officer of the respective blocks. Using a simple random

Table 1. Socio-economic variables and their standard measurement

Sl. No.	Independent variables (X)	Empirical measurement
1	Age (X1)	According to chronological age
2	Caste (X2)	Scale developed for the study
3	Education (X3)	Scale developed for the study
4	Pond size (X4)	Scale developed for the study
5	Annual income (X5)	Scale developed for the study
6	Farming experience (X6)	Scale developed for the study
7	Family size (X7)	Scale developed for the study
8	House type (X8)	Scale developed for the study
9	Type of pond (X9)	Scale developed for the study
10	Ownership of pond (X10)	Scale developed for the study
11	Extension contact (X11)	Scale developed for the study
12	Information source use (X12)	Scale developed for the study

sampling technique, 120 respondents (30 from each village) were selected. A structured interview schedule was developed to collect the data. A total of 12 independent variables were included in the interview schedule, namely age, caste, education, pond size, annual income, farming experience, family size, house type, type of pond, ownership of pond, extension contact, information source use. The variables under study have been listed in Table 1. The data were collected via face-to-face interview with the respondents. It was then tabulated and analysed for further interpretation. Statistical tools like frequency and percentage were used to analyse the data.

3. RESULTS AND DISCUSSION

The socio-economic attributes of pisciculture farmers of Puri district of Odisha were studied and the findings are presented in Table 2, followed by their discussion.

3.1 Age

The study found that among the 120 respondents, 59 (49.20%) belonged to the young age group, 44 (36.60%) were in the middle-aged category, and the remaining 17 (14.20%) were classified as older adults. The findings are in alignment with the results obtained by Kumar et al. (2018).

3.2 Caste

The findings revealed that 71.70% of the total respondents were from general caste, 9.20% of them were from OBC (Other Backward Classes) category, 11.60% were from SC (Scheduled Castes) category and rest 7.50% of the total

respondents under study were from ST (Scheduled Tribes) category.

3.3 Education

The study revealed that 30.80% of the total respondents were found to be functionally literate, 35.00% had primary qualification, 15.00% of them had passed middle school, 13.30% of them had passed high school and rest 5.90% of the total population had gone to college and above. Similar findings were obtained by Goswami and Samajdar (2016).

3.4 Pond Size

The findings revealed that 49.20% of the total respondents had pond size between 0.3 to 0.4 acre, 1.70% of the total population had pond size below 0.1 acre, 20.80% had pond size between 0.1 to 0.2 acre and 11.70% of the respondents had pond size of 0.4 acre and above.

3.5 Annual Income

It was observed from the study that 31.70% of the total respondents had annual income upto Rs.30,000, 23.30% of the respondents had their annual income between Rs.30,000 - 60,000, 8.30% of the respondents had annual income between Rs. 60,000 - 90,000, 15.00% of the respondents had annual income between Rs. 90,000 -1,20,000 and rest 21.70% of the total population had annual income above Rs.1,20,000 per annum. The result obtained was due to the reason that maximum pisciculture farmers were having annual income of around Rs. 30,000 from the pisciculture only. It was observed that majority of the farmers were earning less than Rs. 50,000 from pisciculture sector.

3.6 Farming Experience

It was observed that 71.70% of respondents had farming experience of 5 years, 9.20% had farming experience of 6 to years, 11.60% had farming experience of 11 to 15 years and rest 7.50% of the respondents had farming experience of more than 15 years.

3.7 Family Size

It was seen that 45.00% of the total respondents had family size upto 4 members and rest 55.00% of the respondents had family size more than 4 members.

3.8 House Type

It was seen that 45.80% of the respondents had pucca house, 30.80% had kutcha house and rest 23.40% of the them had mixed house.

3.9 Type of Pond

It was observed that out of 120 numbers of respondents, 67 numbers of them were using ponds seasonally and rest 53 numbers of respondents were using ponds perennially whose corresponding percentages were found to be 55.80 and 44.20%, respectively. However, it is evident from the table that, a greater number of farmers were using ponds seasonally as compared to perennially.

3.10 Ownership of Pond

As evident from Table 2, 8.30% of the respondents had their own pond, 17.50% of the respondents had leased ponds from others, 16.70% of the respondents were using Gram panchayat ponds, 44.20% were using revenue pond for fish farming and rest 13.30% were using other ponds for fish farming.

Table 2. Socio-economic profile of Pisciculture farmers in Puri district of Odisha

Sl. No.	Variables	Category	Frequency	%
1.	Age	Young(<35years)	59	49.20
		Middle aged(35-55years)	44	36.60
		Old (55years and above)	17	14.20
2.	Caste	General	86	71.70
		OBC	11	9.20
		S.C	14	11.60
		S.T	9	7.50
3.	Education	Functionally literate	37	30.80
		Primary School	42	35.00
		Middle School	18	15.00
		High School	16	13.30
		College & above	7	5.90
4.	Pond Size(ha)	<0.1	2	1.70
		0.1-0.2	25	20.80
		0.2-0.3	20	16.60
		0.3-0.4	59	49.20
		0.4 and above	14	11.70
5.	Annual income	Upto Rs. 30,000/-	38	31.70
		Rs. 30,000/- to 60,000/-	28	23.30
		Rs. 60,000/- to 90,000/-	10	8.30
		Rs. 90,000/- to 1,20,000/-	18	15.00
		Above Rs. 1,20,000	26	21.70
6.	Farming Experience	Up to 5 years	86	71.70
		6-10 years	11	9.20
		11-15 years	14	11.60
		More than 15 years	9	7.50
7.	Family size	Up to 4	54	45
		More than 4	66	55
8.	House Type	Pucca	55	45.80
		Kutcha	37	30.80
		Mixed	28	23.40

Sl. No.	Variables	Category		Frequency	%		
9.	Type of Pond	Seasonal		67	55.80		
		Perennial		53	44.20		
10.	Ownership of pond	Pond owned		10	8.30		
		Pond leased form others		21	17.50		
		Gram panchayat pond		20	16.70		
		Revenue pond		53	44.20		
		Others		16	13.30		
11.	Extension Contact	Fishery Extension Officer	Frequently	67	55.83		
			Sometimes	28	23.33		
			Never	25	20.84		
		Asst. Director of Fisheries	Frequently	71	59.17		
			Sometimes	32	26.67		
			Never	17	14.17		
		NGO personnel	Frequently	47	39.17		
			Sometimes	55	45.83		
			Never	18	15.00		
		FFDA personnel	Frequently	32	26.67		
			Sometimes	59	49.17		
			Never	29	24.17		
		Bank personnel	Frequently	52	43.33		
			Sometimes	57	47.50		
			Never	11	9.17		
12. a)	Information source use Mass media & other methods	New paper	Frequently	115	95.83		
			Sometimes	5	4.17		
			Never	0	0.00		
		Television	Frequently	48	40.00		
			Sometimes	65	54.17		
			Never	7	5.83		
		Radio	Frequently	17	14.17		
			Sometimes	36	30.00		
			Never	67	55.83		
		Literatures	Frequently	9	7.50		
			Sometimes	69	57.50		
			Never	42	35.00		
		Training	Frequently	8	6.67		
			Sometimes	64	53.33		
			Never	48	40.00		
		Demonstrations	Frequently	24	20.00		
			Sometimes	75	62.50		
			Never	21	17.50		
		b)	Personal localites	Progressive farmer	Frequently	67	55.83
					Sometimes	27	22.50
					Never	26	21.67
				Friends and relatives	Frequently	71	59.17
					Sometimes	32	26.67
					Never	17	14.17
				Local leader	Frequently	47	39.17
					Sometimes	55	45.83
					Never	18	15.00
				Neighbours	Frequently	38	31.67
					Sometimes	58	48.33
					Never	24	20.00

3.11 Extension Contact

It was observed that Fishery extension officer and Asst. Director of Fishery had the most frequent contact with the farmers.

3.12 Information Source Use

It was observed that in context of information source use, among the mass media sources, newspaper was used frequently by the respondents followed by television, demonstrations, literatures, training, and radio respectively.

Likewise, so far as personal localities were concerned, it was observed that the respondents were getting majority of information from their friend and relatives followed by progressive farmers, local leaders and neighbours respectively.

4. CONCLUSION

The study generates crucial insights on the socio-economic attributes of pisciculture farmers in Puri district of Odisha. From the study, it was reported that 49.20% of respondents belonged to young age group, 71.70% belonged to general caste, 35.00% had education upto primary school only, 49.20% had pond size of 0.3-0.4 ha area, 31.70% had annual income upto Rs 30,000, 71.70% of the respondents had experience of upto 5 years, 55.00% had a family size of more than 4 members, 45.80% had a pucca house, 55.80% had seasonal ponds for fish culture, and 44.20% owned revenue ponds. It was revealed that Assistant Director of Fisheries was the most frequently contacted by the respondents, and in the context of information source use, newspaper was the most frequently used information source among mass media sources whereas friends and relatives were the most preferred source of information among the personal localities.

The result obtained indicates that planned, strategic interventions like use of various extension teaching methods, awareness programmes, exposure visits, training and demonstration, better credit availability should be adopted to improve the socio-economic profile of the fish farmers in the study area.

The findings from the study would help policy makers, extension personnel, in getting meaningful insights on the socio-economic

condition of pisciculture farmers in Puri district of Odisha, thereby helping them in formulating better extension strategies and action plans for fish farmers.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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