International Journal of Veterinary Sciences and Animal Husbandry

ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; SP-10(12): 70-76

www.veterinarypaper.com
Received: 05-10-2025
Accepted: 04-11-2025

Mangalapuri Pavani
Ph.D. Scholar, Department of Agricultural Economics, Agricultural College, Bapatla, Andhra Pradesh, India

KSR Paul
Professor, Department of Agricultural Economics, Agricultural College, Bapatla, Andhra Pradesh, India

P Kanaka Durga
Assistant Director, Centre for Management Studies, Manage, Hyderabad, Telangana, India

V Sitarambabu
Assistant Professor, Department of Agricultural Economics, Agricultural College, Bapatla, Andhra Pradesh, India

KN Sreenivasulu
Assistant Professor, Statistics & Computer Applications, Agricultural College, Pulivendula, Andhra Pradesh, India

Corresponding Author:
Mangalapuri Pavani
Ph.D. Scholar, Department of Agricultural Economics, Agricultural College, Bapatla, Andhra Pradesh, India

Socio-economic profile and production constraints of inland fish farmers in West Godavari District, Andhra Pradesh

Mangalapuri Pavani, KSR Paul, P Kanaka Durga, V Sitarambabu and KN Sreenivasulu

DOI: https://www.doi.org/10.22271/veterinary.2025.v10.i12Sb.2834

Abstract
The study examined the socio-economic profile and constraints of inland fish farmers in West Godavari district, Andhra Pradesh, using data from 90 inland fish farmers. To analyze the constraints faced by inland fish farmers, Garret's ranking method was used. The results revealed that the non-availability of quality fingerlings emerged as the major constraint, followed by frequent disease outbreaks and high feed costs. Other constraints include high labour costs, limited access to credit, inadequate extension services, price fluctuations, and lack of essential equipment. The findings highlighted the need for improved input supply systems, better financial support, and enhanced technical guidance through extension agencies to strengthen the productivity and profitability of inland fish farming in the study area.

Keywords: Constraints, Garrett's ranking method, inland fish farming, socio-economic profile, west godavari

Introduction
Fish is a vital source of food, providing essential animal protein that fulfills 20 per cent of the dietary requirements for about 50 per cent of the world's population. Approximately 35 per cent of India's population consumes fish, with a per capita availability of 9.0 kg, which falls short of the World Health Organization's recommendation of 13 kg for nutritional security. Global fish production reached approximately 223.2 million metric tonnes in 2022, up significantly from 148.1 million metric tonnes in 2010. In the world, China is the leading producer, accounting for around 36% of global fish output, while India ranks second with an 8% share. In the world, India's fish production increased to an impressive 17.54 million metric tonnes (2023-24) from 9.57 million metric tonnes (2013-14). India stands in a leading position as a fish producer, contributing significantly to food security, employment, and socio-economic development (Suresh and Pillai, 2024). In 2023, India's fish production capacity was approximately 17.54 million metric tonnes, with 4.43 million metric tonnes from marine fish and 13.11 million metric tonnes from inland fish. In India, Andhra Pradesh State is a leading producer of fisheries, with 14.96 lakh people involved in fish-related activities, benefiting economically underprivileged communities (National Fisheries Development Board, 2020). Andhra Pradesh contributed 41% of India's fish production in 2022-23, and the sector accounts for 7.4% of the state's GSDP (GoI, 2025) [4]. In Andhra Pradesh, West Godavari district is the top producer of freshwater aquaculture, with 1.28 million tonnes, followed closely by Krishna district with 1.27 million tonnes (District at Glance of Andhra Pradesh, 2022). The West Godavari district embraced innovative aquaculture practices, bolstered by the Blue Revolution, which promotes sustainable growth in fish farming. The wide diversity of fish species cultivated in the region particularly major carps such as Catla and Rohu, highlights its strong potential for aquaculture development. Despite having abundant fishing resources in this region, including an extensive coastline and numerous freshwater bodies, fish farmers continue to face several production-related challenges.

These issues reduce overall yields and, consequently, lower farmers' incomes, even as they invest more in fish production. In this context, studying the socio-economic characteristics of fish farmers and identifying the major challenges they face becomes essential for suggesting appropriate interventions and improving the sustainability of inland fisheries.

Materials and Methods

Andhra Pradesh was purposively selected as the leading state in inland fish farming, with West Godavari district chosen for its largest inland fish farming area. A multi-stage random sampling design was employed, selecting three mandals, and from each, the top three villages with the highest inland fish production, resulting in a total of nine villages. From each village, ten farmers were randomly selected, resulting in a sample of 90 farmers. Primary data was gathered from sample farmers for the Agricultural year 2021-22, using a pre-tested questionnaire, covering aspects such as socio-economic factors like age, education status, etc., and challenges faced by the fish farmers.

Tools of analysis

Descriptive statistics

Tabular analysis was used to estimate and interpret results for the collected data.

Garret ranking technique

The respondents were asked to rank the problems encountered by them in fish production. These ranks were converted into percentage position by using the formula,

$$\text{Percentage position} = \frac{(R_{ij}-0.5)}{N_j} * 100$$

Where,

R_{ij} = Rank given for the i^{th} item by the j^{th} individual

N_j = Number of items ranked by the j^{th} individual

The percent position of each rank is converted to scores by referring to the tables given by Garett and Woodworth (1969). By referring to Garett's table, the percentage of positions estimated was converted into a score. Thus, for each problem, the mean score was estimated. The problem with the highest mean value was considered the most important one, and the others followed in that order.

Results and Discussion

Socio-economic characteristics of sample inland fish farmers

Socio-economic characteristics play a crucial role in determining farmers' access to various resources, often limiting their availability and leading to several constraints in inland fish farming. Therefore, it is essential to examine attributes such as age, farming experience, educational level, family size, access to credit, exposure to extension services, and the crop varieties cultivated by farmers. These characteristics are discussed in detail below.

Age of the respondents

The age of the respondents is an important socio-economic factor influencing their decisions in inland fish farming, such as the adoption of new technologies, risk-taking ability, and management practices**.** As presented in Table 1 and Figure 1, the majority of fish farmers (61.11%) belonged to the age group of 31-50 years, followed by 26.67% in the 21-30 year age group and 12.22% aged above 50 years. The age distribution of respondents showed that the majority of inland fish farmers belonged to the 31-50 years age group. This result was consistent with the findings of Rout *et al*. (2016) [13].

Table 1: Distribution of sample farmers according to age

Age group	Frequency	Percentage
21 to 30	24	26.67
31 to 50	55	61.11
> 50	11	12.22
Total	90	100.00

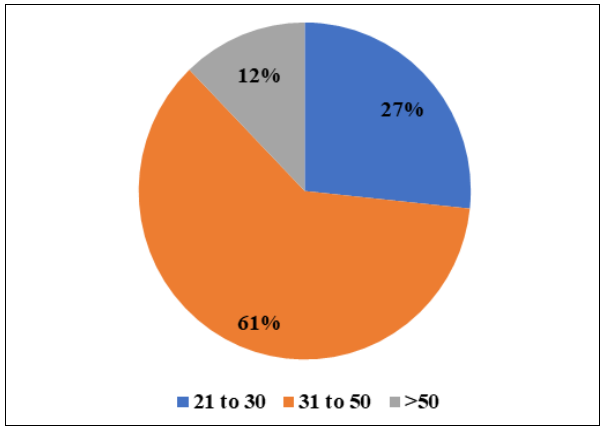

Fig 1: Classification of age group of respondents (%)

Educational level

Education plays a vital role in shaping the decision-making abilities of fish farmers, as it enhances their capacity to understand and adopt improved management practices that help reduce the risks associated with pests and diseases. As presented in Table 2 and Figure 2, a majority of fish farmers were educated up to the college level (36.67%), followed by those educated up to the primary school level (15.56%), illiterate farmers (18.89%), individuals with intermediate education (16.67%), and those who completed high school (12.21%). This distribution indicated that a considerable number of fish farmers had received formal education, which was consistent with the findings of Nongmaithem and Ngangbam (2014) [2].

Table 2: Educational level of respondents

Education	Frequency	Percentage
Illiterates	17	18.89
Primary school	14	15.56
High school	11	12.21
Intermediate	15	16.67
College	33	36.67
Total	90	100.00

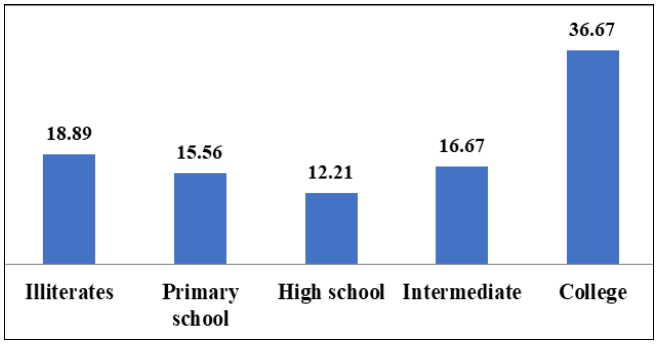

Fig 2: Educational level of respondents (%)

Farming experience

Fish farming experience serves as a strong indicator of the practical knowledge and skills a farmer has acquired over time, enabling them to effectively address key challenges related to farm management and technology adoption. Experience is a crucial factor influencing productivity, efficiency, and the ability to manage risks in fish farming. As presented in Table 3 and Figure 3, the majority of the respondents (63.33%) had less than 10 years of experience in fish farming, indicating that most farmers are relatively new to the enterprise. About 22.22% of farmers had 11-20 years of experience, 11.12% had 21-29 years, and only 3.33% had 30 years or more of experience. This indicated that many fish farmers were still developing technical skills, highlighting the need for targeted training and exposure to modern aquaculture practices, consistent with Ogunmefun and Achike (2017) [10].

Table 3: Fish farming experience of respondents

Farm experience	Frequency	Percentage
<10	56	63.33
11 to 20	20	22.22
21 to 29	10	11.12
≥30	3	3.33
Total	90	100.00

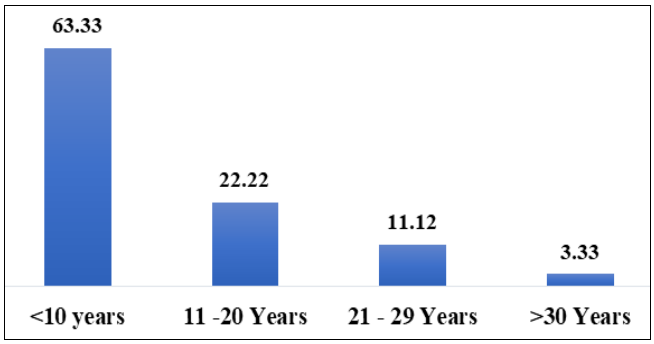

Fig 3: Classification of farming experience of respondents (%)

Family size

Family size plays a significant role in influencing fish farming practices, as it directly affects the availability of family labor, distribution of responsibilities, and allocation of household resources. As shown in Table 4 and Figure 4, a majority of the respondents (52.22%) belonged to small-sized families with 5 to 6 members, followed by 32.22% of respondents from nuclear families comprising 1 to 4 members, and 15.56% from large families with more than 6 members. This shows that most fish farmers belong to small families, offering a balance between labor and resource use.

Table 4: Family size of sample respondents

Family Size	Frequency	Percentage
Nuclear (1 to 4)	29	32.22
Small (5 to 6)	47	52.22
Large (>6)	14	15.56
Total	90	100.00

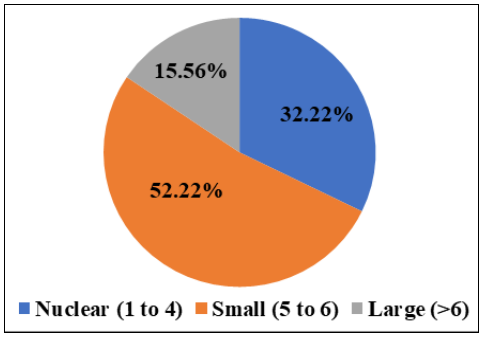

Fig 4: Classification of family size of sample respondents (%)

Land holding particulars

Landholding is a key determinant in fish farming, as it directly affects the scale of operation, level of productivity, and overall sustainability of aquaculture activities. As shown in Table 5 and Figure 5, the majority of respondents (28.89%) possessed small-sized farms, followed by those with medium-sized farms (23.33%), semi-medium farms (21.11%), large farms (14.45%), and marginal farms (12.22%). This pattern shows that many fish farmers operate on small to medium holdings, affecting their production potential and resource use efficiency. These results were consistent with the findings of Kumar *et al*. (2023) [12].

Table 5: Farm size particulars of the respondents

Farm size (in ha)	Frequency	Percentage
Marginal (> 1ha)	11	12.22
Small (1 to 2ha)	26	28.89
Semi-medium (2 to 4ha)	19	21.11
Medium (4 to 10ha)	21	23.33
Large (≥10 ha)	13	14.45
Total	90	100.00

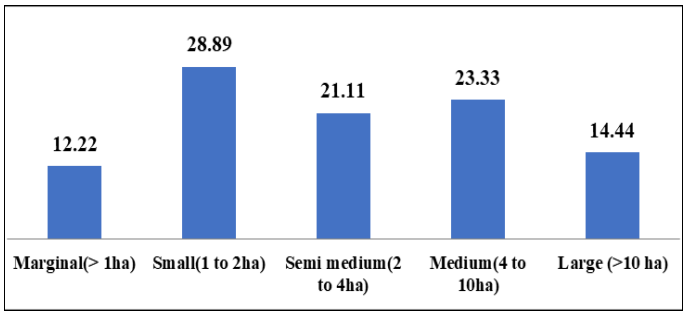

Fig 5: Farm size particulars of the respondents (%)

Tenurial status of the sample respondents

Tenurial status is a significant factor in fish farming as it determines the degree of control farmers have over their land, shapes their investment decisions, and influences the long-term sustainability of aquaculture operations. The tenurial status of the sample respondents is presented in Table 6 and Figure 6. It was observed that the majority of fish farmers (71.11%) operated on their own land, while 28.89% were tenant farmers. The distribution showed that the most fish farmers operated on their own land, while a smaller proportion were tenant farmers. These results were consistent with the findings of Dubany *et al*. (2024) [9].

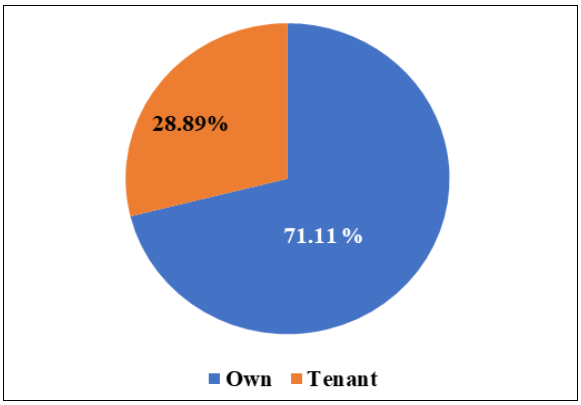

Fig 6: Classification according to the tenurial status of the respondents (%)

Table 6: Tenurial status of the sample respondents

Category	Frequency	Percentage
Own	64	71.11
Tenant	26	28.89
Total	90	100.00

Source of credits

Access to credit is essential for fish farmers as it enables them to invest in key inputs such as quality feed, fish seed, equipment, and pond construction or maintenance. Adequate and timely credit support allows farmers to adopt modern aquaculture practices, enhance production efficiency, and improve overall profitability. As presented in Table 7 and Figure 7, 45.56% of the sample farmers had access to institutional credit, while 40% relied on non-institutional sources. The remaining 14.44% of farmers did not avail credit from any source, meeting all their expenses through personal funds. This showed that most received their credits from institutional sources.

Table 7: Source of credit of sample respondents

Category	Frequency	Percentage
Institutional (Commercial Bank, Co-operative Bank)	41	45.56
Non-Institutional (Landlord, relatives' friends)	36	40.00
None	13	14.44
Total	90	100.00

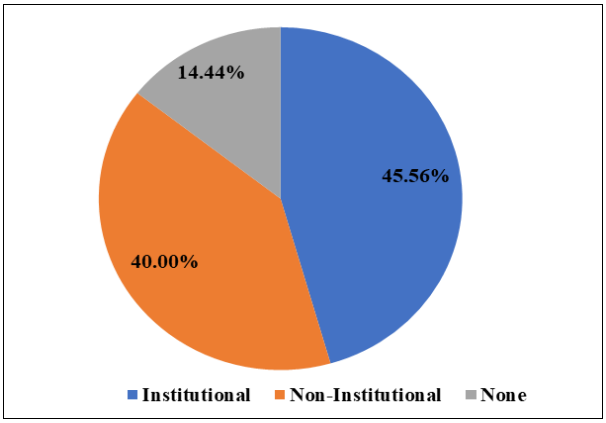

Fig 7: Classification of respondents according to the source of credit

Cultivated species

The choice of fish species is a key factor influencing the productivity and profitability of inland fish farming. As shown in Table 8 and Figure 8, the majority of respondents (67.78%) cultivated Rohu and Catla, followed by Rohu and Roop Chand (16.66%). A smaller share of farmers practiced polyculture with combinations such as Rohu, Roop Chand, Catla, and Pangasius (7.78%), Rohu, Roop Chand, Catla, and Mrigal (5.56%), and Rohu, Roop Chand, Catla, and Grass Carp (2.22%).

Table 8: Cultivated species

Cultivated species	Frequency	Percentage
Rohu, Catla	61	67.78
Rohu, Roop Chand	15	16.66
Rohu, Roop chand, Catla, Pangasius	7	7.78
Rohu, Roop chand, Catla, Mrigal	5	5.56
Rohu, Roop chand, Catla, Grass carp	2	2.22
Total	90	100

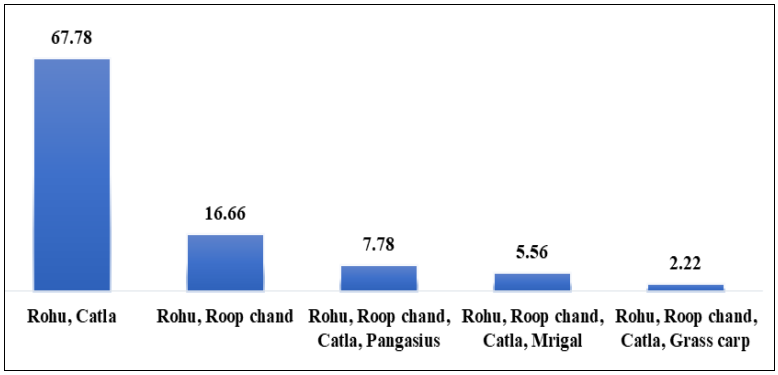

Fig 8: Classification of respondents according to the cultivated species (%)

Constraints faced by the inland fish farmers in fish farming

The constraints faced by inland fish farmers in the West Godavari district were analyzed and ranked using Garrett's ranking method, a statistical tool that helped prioritize issues based on their severity as perceived by the respondents.

Table 9: Constraints faced by the inland fish farmers in fish farming in West Godavari district of Andhra Pradesh (N=90)

S. No.	Constraints	Mean score	Rank
1.	Non-availability of quality fingerlings	72.54	I
2.	High disease attack	72.02	II
3.	High cost of Feed	66.52	III
4.	High labour cost	57.07	IV
5.	Lack of capital	46.33	V
6.	Lack of extension services	45.63	VI
7.	Price fluctuation	41.80	VII
8.	Lack of equipment	37.32	VIII

The results of Garrett's ranking method, presented in Table 9, indicated the major challenges that affected the productivity and profitability of fish farming in the study area. The non-availability of quality fingerlings emerged as the major constraint, with the highest mean score of 72.54. The limited supply of healthy and fast-growing fingerlings had restricted optimal stocking, which in turn reduced growth performance and yields. This issue was further intensified by the absence of certified hatcheries and an inadequate seed distribution network consistent with Vaumik *et al.*, 2017 [16]. The second major constraint, with a mean score of 72.02, was frequent disease attacks, poor water quality management, insufficient disease control measures, and lack of veterinary support often resulted in outbreaks that caused heavy mortality and financial losses to farmers the result was consistent with Bhuyan *et al*., 2022 [1]. The high cost of feed ranked third (mean score 66.52). Feed constituted a major portion of the total production cost, and frequent price fluctuations had severely affected the profitability of small and medium-scale farmers. Consequently, many farmers had resorted to using low-quality or homemade feed, which further reduced fish growth and productivity, this result was consistent with Ogunmefun and Achike 2017 [10]. The high labour cost was ranked fourth (mean score 57.07). Labour shortages and rising wages had increased operational expenses, particularly during pond preparation, stocking, feeding, and harvesting activities, finding was similar with Samal *et al*., 2022 [14].

The lack of capital ranked fifth (mean score 46.33) which indicated that limited access to institutional credit had forced many farmers to rely on informal financial sources, restricting their ability to invest in quality inputs, technology, and pond improvement. The lack of extension services was identified as the sixth constraint (mean score 45.63). Inadequate technical guidance and infrequent visits by fisheries officials had hindered the adoption of modern aquaculture practices, leading to poor management and lower productivity, in line with Raj *et al*., 2022 [11]. The seventh constraint was price fluctuation (mean score 41.80). Frequent variations in market prices, caused by seasonal changes and inconsistent demand, had created uncertainty in income and discouraged farmers from making long-term investments, which was aligned with Shubham *et al*., 2023. Finally, the lack of equipment ranked eighth (mean score 37.32). The limited availability or high cost of essential equipment, such as aerators, nets, and water testing kits, has restricted efficient pond management and maintenance of water quality, thereby reducing overall production efficiency.

Summary and Conclusion

The study on inland fish farmers in West Godavari district revealed that most respondents were young, moderately educated, and had limited experience in fish farming. Most belonged to small families, owned small to medium farms, and operated on their own land, indicating moderate access to resources. Institutional credit access was limited, with many relying on personal savings or informal sources for investment. Rohu and Catla were the dominant species cultivated due to their faster growth and higher market demand. The major constraints identified included the lack of quality fingerlings, frequent disease outbreaks, high feed and labour costs, inadequate capital, limited extension support, price fluctuations, and insufficient equipment availability. In conclusion, inland fish farming in West Godavari holds strong potential for economic growth, but its progress is hindered by financial, technical, and infrastructural challenges. Strengthening access to quality inputs, affordable credit, technical training, and stable markets is essential to enhance productivity, profitability, and sustainability in the sector.

Conflict of Interest

Not available

Financial Support

Not available

Reference

1. Bhuyan S, Bezborah P, Borthakur A. Study on constraints faced by fish farmers and aquaculture input dealers in the state of Assam. Indian J Fish Econ Dev. 2022;14(2):45-52.
2. Devinongmaithem B, Ngangbam AK. Socioeconomic conditions and cultural profile of the fishers in India: A review. Indian J Fish Soc Sci. 2021;8(1):1-10.
3. Food and Agriculture Organization of the United Nations (FAO). The state of world fisheries and aquaculture 2020: sustainability in action. Rome: FAO; 2020.
4. Government of India (GoI). GST reforms: boosting growth and competitiveness for Andhra Pradesh. New Delhi: Government of India; 2025. Accessed 2025 Sep 30.
5. Directorate of Economics and Statistics, Government of Andhra Pradesh. District statistical glance 2020. Amaravati: DES, Govt. of Andhra Pradesh; 2020. Available from: https://des.ap.gov.in/jsp/social/distatglance_2020.pdf
6. Department of Fisheries, Government of India. Annual report 2022-23. New Delhi: Ministry of Fisheries, Animal Husbandry and Dairying; 2023. Available from: https://www.dof.gov.in/sites/default/files/2023-04/Final_Annual_Report_2022-23_English.pdf
7. Statista. Fishery and aquaculture statistics. Hamburg: Statista GmbH; 2024. Available from: https://www.statista.com/
8. Kumar D, Singh PK, Gautam Y. Socioeconomic status of cage, pen and pond culture freshwater fish farmers in Seraikela Kharswan District, Jharkhand. Asian J Agric Ext Econ Soc. 2023;41(9):212-219.
9. Dubany U, Sailaja A, Savitha B, Sagar VGE, Ch MA, Rajani V. Socio-economic profile of inland fishermen and fish farmers of Telangana State. Int J Agric Ext Soc Dev. 2024;7(5):17-24.
10. Ogunmefun SO, Achike AI. Socioeconomic characteristics and constraints of pond fish farmers in Lagos State, Nigeria. Agric Sci Res J. 2017;7(10):304-317.

11. Raj BMU, Teggi MY, Ashok K, Sri CR. Constraints of inland fish production and marketing in northern dry zone of Karnataka: A descriptive study. Indian J Ext Educ. 2022;58(3):98-102.
12. Rohila AK, Mukteshawar R, Arulmanikandan B, Kumar R. Constraints perceived by farmers in fish farming: A review analysis. Int J Environ Clim Change. 2023;13(11):1546-1550.
13. Rout SK, Kant S, Trivedi RK, Das BK, Mukherjee S, Anupama RR, et al. A study on socio-economic profile of fisher community of Madhubani district in Bihar, India. J Exp Zool India. 2016;19(Suppl 1):1419-1426.
14. Samal B, Kumar S, Singh V. Constraints related to production and marketing of freshwater fish Rohu (*Labeo rohita*) in Cuttack district of Odisha. Asian J Agric Ext Econ Sociol. 2022;40(8):81-85.
15. Selamoglu Z, Naeem MY. Fish as a significant source of nutrients. J Public Health Nutr. 2023;6(4):1-14.
16. Vaumik S, Sarker SK, Uddin MS, Alam MT, Satter A. Constraints and prospects of fish farming in Lalmonirhat district. Bus Soc Sci Res J. 2017;5(2):55-63.

How to Cite This Article
Pavani M, Paul KSR, Durga PK, Sitarambabu V, Sreenivasulu KN. Socio-economic profile and production constraints of inland fish farmers in West Godavari District, Andhra Pradesh. International Journal of Veterinary Sciences and Animal Husbandry. 2025;SP-10(12):70-76.