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An Economic Analysis of Fish Production of SHG's and Fishermen Cooperative Groups in Mungeli District of Chhattisgarh

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ABSTRACT

Fisheries sector has an important role in Indian economy, as it provide more than 2.8 crores job directly or indirectly to the primary level fishers and fish farmers. Globally the aquaculture production raised by triple in weight which was 34 MT to 112 MT form 1997 to 2017. In India this sector contributing 7.8% of agriculture's GDP. In Chhattisgarh about 2.20 lakh of persons are employed in fisheries sector and most of them are belongs to the under privileged section of society. Fish production in Chhattisgarh has increased by the average of 315% from the base year (2007-08) to current year (2020-21). The study was conducted in the Mungeli district of Chhattisgarh. Mungeli and Pathariya blocks was selected for the study. Based on the performance, 4 SHG's and 4 Fishermen cooperative groups were identified and total of 40 & 112 respondents were interviewed by pre-tested questionnaire respectively. It was found that the total cost incurred by SHG's and Fishermen cooperative groups per hectare was ₹ 47658.73 and ₹ 60354.00 respectively. The average production of fish was found to be 18.15 and 27.90 quintals with a net return of ₹ 151991.27 and ₹ 260496.00 per hectare, having a B:C ratio of 1:3.18 and 1:4.31 in SHG's and Fishermen cooperative groups respectively.

**Keywords:** SHG's, Fishermen cooperative groups, Fish, Total cost, Net return. B:C ratio

Fisheries sector plays as an important role in the Indian economy. Exports, food and nutritional security, national income, and job creation are all boosted by it. More than 2.8 crores primary-level fishers and fish farmers depend on the fisheries sector for their livelihood, and many more people further down the fisheries value chain. For a sizable portion of the economically underprivileged population of the country, particularly in the coastal districts, this sector also serves as a significant source of income (Handbook of fisheries statistics, 2020).

Between 1997 and 2017, the live-weight volume of the world's aquaculture production more than tripled, from 34 MT to 112 MT. In 2017, the top seventy-five percent of aquaculture production was primarily made up of seaweed, carps, tilapia, and catfish species groups. Today, there are 40% more fish, shellfish, aquatic plant, and algal species being cultivated worldwide in a variety of marine, brackish, and freshwater systems, it has increases the diversity of aquaculture (Rosamond L. Naylor *et al.* 2021).
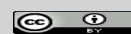
India, a maritime nation, has extensive water resources located in both the inland and marine sectors that are used for fisheries capture and culture. Aquaculture has experienced an average annual growth rate of more than 10%, contributing to the sector's overall strong growth of about 8%. The sector's overall gross value added has been increasing steadily, making up about 7.8% of agriculture's GDP. During 2019–20, the export of maritime goods totaled 12.9 lakh metric tonnes and was worth ₹ 46662.85 crores. Fish and fish products make up about 17 percent of the agriculture exports of our nation (Handbook of fisheries statistics, 2020).

By fostering self-employment among rural women fishermen through SHGs, the Chhattisgarh State is also playing a significant role in improving the lives of these people. The state has abundant water resources, including 1649 irrigation reservoirs and 59175 rural pond areas totaling 0.772 million square meters. These water bodies may be used to develop fisheries through SHGs (Department of Fisheries, Chhattisgarh, Devi *et al.* 2019).

The State is actively contributing by fostering rural self-employment in the fishing industry, which in turn enables rural residents to access wholesome food. Fisheries sector has employed for about 2.20 Lakh persons and majority of them belong to under privileged section of the society. A total of 1.920 lakh ha of water area in the state, including 91,928 rural ponds covering 1.094 lakh ha and 1770 irrigation reservoirs covering 0.826 lakh ha, is available for the development of fisheries up to 2020–21. In 2018-19 the total fish production of Chhattisgarh was 4, 88,618.98 Metric ton and in the year 2019- 20 it was 5, 37,889.57 Metric ton, which is 10.08% more than previous year. At present, the production of fish is near about 2, 82,790.29 Metric ton till September 2020-21 (Chhattisgarh Economic Survey, 2020-21).

MATERIALS AND METHODS

Sampling Framework

Chhattisgarh comprises 32 district out of that Mungeli district was selected purposively. Mungeli district consists three blocks out of that two blocks i.e., Mungeli and Pathariya was selected based on the availability of data. In Mungeli district there are 44 SHG's and 18 Fishermen cooperative groups are registered under fish production practices, where in Mungeli and Pathariya blocks the number of SHG's and Fishermen cooperative groups constitutes 33 and 8 respectively, out of which 4 SHG's and 4 Fishermen cooperative groups were selected based on the performance. From the selected SHG's and Fishermen cooperative groups total of 40 & 112 members respectively selected for the study purpose. 10 wholesalers and 12 retailers were identified in the study area out of that 5 wholesalers and 6 retailers were selected based on the nature of respond.

Collection of Data

Primary data were collected from members of sample SHG's and Fishermen cooperative group through personal interview using pre-tested interview schedule. The secondary data were collected from the Directorate of Fisheries, Mungeli and also collected from official website of government.

ANALYTICAL TOOLS

The data collected from the SHG's and Fishermen cooperative group are used for estimating cost and returns structure by using fixed and variable cost. The formula used to find cost and return are as follows:

(a) Total cost = Total fixed cost + Total variable cost

(b) Gross income (₹) = Total Yield (kg) × Market Price of the fish (₹/kg)

(c) Net income (₹) = Gross income – Total cost

(d) Benefit - Cost Ratio = Net return /Total Cost

RESULTS AND DISCUSSION

Cost and return of fish production

Cost of fish production by SHG's and Fishermen cooperative groups

Economics of cost of fish production carried out separately for SHG's and Fishermen cooperative groups is presented in the table 1. The total cost of fish production were categorized into variable cost and fixed cost per hectare. For SHG's per hectare cost of fish production was found to be ₹ 47658.73 perusal of this table reveals that fish production

require labour in varying magnitude. Though, the labour present in the group is the major part of total human labour requirements, however some hired labour for catching is also required to complete or finish the operations in stipulated time.

Table 1: Cost of fish production by SHG's and Fishermen cooperative groups (₹/ha)

Sl. No.	Particular's	SHG's	Fishermen cooperative groups
(A)	**Variables**		
	(a) Labour cost		
	Group labour	1949.87 (4.09)	2005.02 (3.32)
	Hired labour	0.00 (0.00)	0.00 (0.00)
	Total	1949.87 (4.09)	2005.02 (3.32)
	(b) Material cost		
	Lime	2625.00 (5.50)	4625.00 (7.67)
	Seed Fingerlings	3962.50 (8.31)	6377.50 (10.56)
	Oil cake	1945.00 (4.08)	3362.50 (5.58)
	Fertilizer	0.00 (0.00)	1962.50 (3.25)
	Catching	10143.75 (21.28)	10250.00 (16.99)
	Medicine	1712.50 (3.60)	2126.25 (3.53)
	Watching	18000.00 (37.77)	20550.00 (34.04)
	(c) Miscellaneous expenses	237.50 (0.50)	482.50 (0.80)
	(d) Interest rate on working capital @10% P.A.	4057.61 (8.52)	5174.13 (8.57)
	Total	44633.73 (93.65)	56915.40 (94.31)
(B)	**Fixed cost**		
	(a) Lease rent	2750.00 (5.78)	3126.00 (5.17)
	(b) Interest rate on fixed capital @10% P.A.	275.00 (0.57)	312.60 (0.52)
	Total	3025.00 (6.35)	3437.60 (5.69)
(C)	**Total cost (A+B)**	**47658.73 (100)**	**60354.00 (100)**

The average human labour cost for the production was found to be ₹ 1949.87 per hectare. The major cost item in fish production were watching cost ₹ 18000.00 per hectare, followed by the catching cost ₹ 10143.75 per hectare, seed fingerlings ₹ 3962.50 per hectare, liming cost ₹ 2625.00 per hectare,

oilcake cost ₹ 1945.00 per hectare, medicine cost ₹ 1712.50 per hectare and ₹ 237.50 per hectare for miscellaneous items. The cost incurred on fixed capital are cost on lease rent ₹ 2750.00 per hectare. For Fishermen cooperative groups per hectare cost of fish production was found to be ₹ 60354.00 perusal of this table reveals that fish production require labour in varying magnitude. The average human labour cost for fish production was ₹ 2005.02 per hectare, the major cost items in fish production were watching cost ₹ 20550.00 per hectare, followed by catching ₹ 10250.00 per hectare, seed fingerlings cost ₹ 6377.50 per hectare, liming cost ₹ 4625.00 per hectare, oilcake cost ₹ 3362.50 per hectare, medicine cost ₹ 2126.25 per hectare, fertilizer cost ₹ 1962.50 per hectare and miscellaneous expenses was ₹ 482.50 per hectare. Per hectare cost of production of fish by SHG's and Fishermen cooperative groups was found ₹ 47658.73 & ₹ 60354.00 respectively.

Gross return, net return and B:C ratio of fish production by SHG's and Fishermen cooperative group

Gross return, total cost, net return, B:C ratio and cost of production were shown in the table 2.

Table 2: Gross return, net return and B:C ratio of fish production

Sl. No.	Particular's	SHG's	Fishermen cooperative groups
1	Average production of fish (q/ha)	18.15	27.90
2	Average selling price (₹/q)	11000.00	11500.00
3	Total cost (₹/ha)	47658.73	60354.00
4	Gross Return (₹/ha)	199650.00	320850.00
5	Net Return (₹/ha)	151991.27	260496.00
6	Cost of Production (₹/q)	2625.82	2163.22
7	B:C ratio	1:3.18	1:4.31

For SHG's per hectare total cost of fish production was calculated at ₹ 47658.73 per hectare, gross return was ₹ 199650.00 per hectare, net return ₹ 151991.27 per hectare and B:C ratio was calculated 1:3.18. Similarly for Fishermen cooperative groups, per hectare total cost of fish production was calculated at ₹ 60354.00 per hectare, gross return was ₹ 320850.00

per hectare, net return was at ₹ 260496.00 per hectare and B:C ratio was found 1:4.31. Maximum gross and net return was obtained by Fishermen cooperative groups which indicates that the overall management practices in fish production is better as compared to SHG's.

CONCLUSION

A study was conducted in the Mungeli district of Chhattisgarh. Mainly two district Mungeli and Pathariya blocks were selected for the study on the basis of availability of data. It was found that the total cost incurred in the production of fish by SHG's and Fishermen cooperative groups was ₹ 47658.73 & ₹ 60354.00 quintal respectively. Gross return was found to be ₹ 199650.00 & ₹ 320850.00 per hectare, net return was found to be ₹ 151991.27 & ₹ 260496.00 per hectare and B:C ratio was found to be 1:3.18 & 1:4.31 in SHG's and Fishermen cooperative groups respectively. From the B:C ratio it was concluded that the practicing of fish production in the selected blocks was found profitable.

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