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Cost and returns of fish farming in Raipur, Balodabazar and Mahasamund districts of Chhattisgarh state

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Abstract

This study assesses fish farming performance in Raipur, Balodabazar, and Mahasamund districts of Chhattisgarh. Raipur showed the highest average production at 14.087 q/ha, while Mahasamund had the lowest at 10.31 q/ha. Although Raipur had the highest fish production cost (₹77,524.70/ha), it also achieved the highest net return (₹1,47,867/ha) and the most favourable benefit-cost ratio of 1:1.90, indicating strong profitability and efficiency. Balodabazar performed moderately, where as Mahasamund showed the lowest overall economic returns. The findings suggest that higher investment in inputs, when managed effectively, results in greater productivity and profitability in fish farming.

Keywords: Cost and Production, Fish, Cost and Return

Introduction

The state Chhattisgarh is the most water resourceful state in the central India and it is estimated that 2.027 lakh ha. water area is available for fish culture and have 6,51,910 metric tone Fish production in 2022-23. Fish as a food in India preferred by many have made the industry to expand and large number of farmers to enter into aquaculture for their livelihood and as a business enterprise. India is the world's second largest producer of farmed fish, with production totalling 10.43 million ton from inland water bodies in Chhattisgarh state.

The State is playing an important role by generating self-employment through fisheries in rural areas which in turn provides nutritious food to rural folks. Fisheries business has generated an employment potential for about 2.20 Lakh persons; most of them belong to weaker section of the society.

The water area available for fish farming, starting from 1.630 lakh hectares in 2010-11 to 2.027 lakh hectares in 2022-23. Fish production has generally increased over the years, from 228,207 metric tons in 2010-11 to 651,910 metric tons in 2022-23. The productivity has increased steadily over the years, from 2,650 kg/ha/year in 2010-11 to 4,021 kg/ha/year in 2022-23

Methodology

Chhattisgarh state consists of three purposively agro-climatic sub zones. namely Chhattisgarh plains, Northern hills and Bester plateau Out of these Chhattisgarh plains sub zones was selected for the present study out of 21 districts in

Chhattisgarh., namely Raipur, Balodabazar and Mahasamund were selected purposively from the Chhattisgarh plains., Looking to the highest area and production of fish in these districts of Chhattisgarh Plains. Out of total Individual Fish farmers, from three district fifty percent fish farmers in Raipur (120 fishfarm), Balodabazar (100 fish farm), Mahasamund (50 fish farm) district. Fifty percent fish farmer 60, 50, and 25 were selected randomly thus 135 fish farmer were chosen for the present study. Data will be collected through personal interview method with the help of pre-tested questionnaires. The collected data was analyzed using a variety of statistical techniques. In addition to averages and percentages, appropriate statistical techniques were employed wherever necessary. The cost of production in producing a unity quantity of output is referred as cost of the production. The cost of production is a summation of total variable cost and total fixed cost.

Cost of production= Total variable + Total fixed cost

- A.) Variable cost = The Variable cost includes raw materials, Labour charges, electricity charges, water charges, maintenance charges of etc. and the summation of all the variable cost is called as total cost.
- B.) Fixed cost = The fixed cost includes cost like taxes, Insurance, land rent, infrastructure etc. and the summation of all the fixed cost is called as total fixed cost.

Profitability concept

Gross return: Multiplied the total Fish production by the realized prices was gross return. Gross return= Total Fish production × Realized price

- A. Net Return: Net return was calculated by subtracting of gross expenses from gross return Net Return=Gross return-Gross expenses
- B. Input-Output Ratio: It is ratio between input and output, which indicate the efficiency of input Input-output ratio= Output/Input

Results and Discussion**Cost of fish production in Raipur, Balodabazar and Mahasamund District**

Cost of Fish Production is Presented in Table 1. It reveals that the per hectare cost of Fish Production Raipur, Balodabazar, and Mahasamund was found to be Rs. 77524.68 About 83.44 percent, Rs. 69472.4 About 84.59 percent and Rs. 54993.36 About 85.09 percent cost was associated with variable cost and remaining was fixed cost. Mustard cake likely a feed for the fish, rental value of pond fingerlings and watching cost were the major cost of fish production in the study area.

Table 1: Cost of Production of Fish in Raipur district. (Rs./ha.)

	Particulars	Cost of Fish Production		
		Raipur	Balodabazar	Mahasamund
A	Variable cost			
1	Fingerlings	10790.00 (13.91)	9400.00 (13.53)	8920.00 (13.80)
2	Labor cost	6000.00 (7.73)	6000.00 (8.63)	6000.00 (9.28)
3	Lime	2038.58 (2.62)	1875.00 (2.69)	1572.47 (2.43)
4	Mustard cake	15545.40 (20.05)	13892.60 (19.99)	11857.29 (18.34)
B	Manure and fertilizer			
	cow dung	6983.70 (8.96)	6081.30 (8.75)	5581.80 (8.63)
	DAP	6084.00 (7.84)	5378.85 (7.74)	4946.85 (7.65)
6	Net cost	2024.29 (2.61)	1306.62 (1.88)	1518.21 (2.34)
7	Medicine	487.00 (0.62)	487.00 (0.70)	487.00 (0.74)
8	watching cost	10000.00 (12.89)	10000.00 (14.39)	10000.00 (15.47)
9	Miscellaneous expenses	500.00 (0.644)	506.07 (0.72)	512.14 (0.79)
10	Interest on working capital@7%	4231.708 (5.45)	3844.92 (5.53)	3597.697 (5.56)
	Total Variable cost	64684.68 (83.44)	58772.00 (84.59)	54993.36 (85.09)
C	Fixed cost			
11	Rental value of pond	12000.00 (15.47)	10000.00 (14.39)	9000.00 (13.92)
12	Interest rate on fixed cost@7%	840.00 (1.08)	700 (1.00)	630.00 (0.97)
	fixed cost	12840.00 (16.56)	10700.00 (15.40)	9630 (14.90)
	Total cost A+B	77524.68 (100)	69472.40 (100)	64623.36 (100)

Note: Figures in parentheses indicates percentages to total cost.

Measures of farm profit in fish in the selected districts.

The average production Raipur, Balodabazar, and Mahasamund per hectare is 14.087 quintals, 12.043 q/ha in Balodabazar and 10.31 q/ha in Mahasamund. Rohu production was highest in Raipur (11.08 q/ha) and lowest in Mahasamund (8.44 q/ha). Raipur had the highest cost per hectare at 77,524.70, followed by Balodabazar 69,472.40) and Mahasamund 64,623.40). Raipur generated the highest

income per hectare at 2,25,392, while Balodabazar earned 1,92,688 and Mahasamund 1,64,960. Raipur achieved the highest profit at 1,47,867/ha, Followed by Balodabazar with 1,23,216/ha, And Mahasamund with 1,00,337/ha. Raipur: 1:1.90 - highest efficiency, Balodabazar: 1:1.77 Mahasamund: 1:1.55 - lowest profitability.in presented in (table.2)

Table 2: Economics of Fish Production under the pond area.

S. No.	Particular's	Raipur	Balodabazar	Mahasamund
1	Average production of fish (q/ha)			
	Rohu (q/ha)	11.08	10	8.44
	Catla (q/ha)	3	2.04	1.87
	Total	14.087	12.043	10.31
2	Total cost (Rs/ha)	77524.7	69472.4	64623.4
3	Gross Return (Rs/ha)	225392	192688	164960
4	Net Return (Rs/ha)	147867	123216	100337
5	B:C ratio	1:1.90	1:1.77	1:1.55

Conclusion

The state Chhattisgarh is the most water resourceful state in the central India and it is estimated that 2.02 7 lakh ha. water area is available for fish culture and have 6,51,910 metric tone Fish production in 2022-23. Fish as a food in India preferred by many have made the industry to expand and large number of farmers to enter into aquaculture for their livelihood and as a business enterprise. India is the world's second largest producer of farmed fish, with production totalling 10.43 million ton from inland water bodies in Chhattisgarh state. The State is playing an important role by generating self-employment through fisheries in rural areas which in turn provides nutritious food to rural folks. Fisheries business has generated an employment potential for about 2.20 Lakh persons; most of them belong to weaker section of the society. Based on these considerations, the research was undertaken with the following specific objectives:- To workout the cost and returns of fish production in Raipur, Balodabazar and Mahasamund District. In Raipur, Balodabazar and Mahasamund District the overall cost of fish production was calculated to be Rs 77524.68, 69472.4, 64623.4 per hectare, average fish production was found 14.08, 12.043, 10.31 quintals per hectare, gross return was Rs. 225392, 192688, 164960 per hectare, net return was observed Rs 147867 123216, 100337 per hectare and Benefit cost ratio was observed 1:1.90, 1:1.77, 1:1.55 which shows the profitability of fish production.

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