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Trends analysis of area, production and productivity of fish in Raipur district of Chhattisgarh state

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Abstract
The compound growth rate of area, production and productivity of from 2013-14 to 2022-23 was calculated for Chhattisgarh states well as for Raipur District. In Raipur, there has been a moderate growth in the area (3.45%), a substantial rise in production (13.65%), and a notable increase in productivity (9.19%). This reflects a trend of more efficient use of land and resources, resulting in higher output over time.

Keywords: Compound growth rate, production and productivity, area

Introduction

India is the third largest fish producing country and the second largest aquaculture fish producer in the world. India contributes about 7% to the global fish production. The country is also home to more than 10% of the global fish biodiversity and is one of the 17-mega biodiversity rich countries. Around 14 million people are engaged in fisheries and its allied activities. Andhra Pradesh is the largest fish producer in the country followed by West Bengal and Gujarat. The total fish production during 2017-18 is estimated to be 12.60 million metric tonnes, of which nearly 70% is from inland sector and about 50% of the total production is from culture fisheries. More than 50 different types of fish and shellfish products are being exported to 75 countries around the world. Fish and fish products have presently emerged as the largest group in agricultural exports from India, with 13.77 lakh tonnes in terms of quantity and Rs. 45,106.89 crore in value. 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.

Methodology

Chhattisgarh state consists of three purposively agro-climatic sub zones. Namely Chhattisgarh plains, Northern hills and Baster plateau, Out of these Chhattisgarh plains sub zones, was selected for the present study out of 21 districts in Chhattisgarh plains namely Raipur district, was selected purposively from the Chhattisgarh plains., Looking to the highest area and production of fish in this districts of Chhattisgarh Plains. The secondary data will be collected through different Government offices such as Department of Fisheries and Agriculture, Directorate of Statistics, Government of Chhattisgarh and through other sources for the year 2013-2014 to 2022-2023.

Tools and techniques applied for analysis of data.

The secondary data was analysed for the compound growth rate using following formula.

Analytical Tools

Compound growth rate

$Y = \alpha\ \beta t$

$\log Y = \log \alpha + t \log \beta$

Where, Y= Area/ production /productivity of fish
α= Constant
β= Regression coefficient
t= time in year
Compound growth rate (%) = (Antilog β-1)100

Results and Discussion

Growth rate in area, production and productivity of fish

Compound growth rate of area production and productivity of fish has been presented in (table 1) and figure 1 to 6. Chhattisgarh state shows a steady increase with a CAGR of 3.26 percent in area, 9.93 percent in production and 3.58 percent in productivity Raipur district exhibits strong growth rates, particularly at 3.45% for area, 13.65% for production, and 9.19% for productivity, It was concluded that the positive and significant growth was found in Chhattisgarh state and Raipur district. These figures highlight diverse regional agricultural dynamics to influenced by factors such as land management practices, technological advancements, and economic conditions, which shaping their respective growth in area, production and productivity in fish farming.

This implied that the increased in Production of fish in the state has come from the increased in area and Productivity of fish.

Table 1: Compound growth rate of area, production and productivity of fish in sampled district and Chhattisgarh State.

Particular	Compound growth rate		
	Area	Production	Productivity
Chhattisgarh	3.26***	9.93***	3.58***
Raipur	3.45**	13.65***	9.19***

Note:- * Significant 10% level probability of 't' distribution
** Significant 5% level probability of 't' distribution
*** Significant 1% level probability of 't' distribution

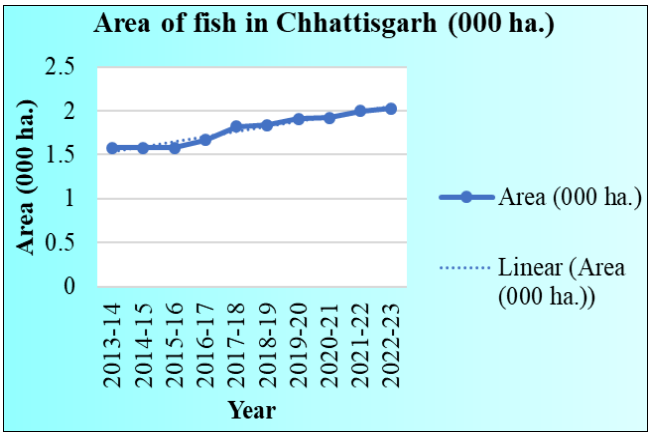

Fig 1: Area of Chhattisgarh

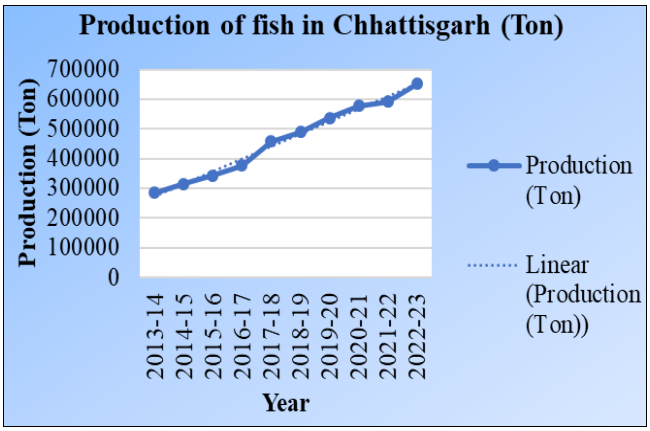

Fig 2: Production of Chhattisgarh

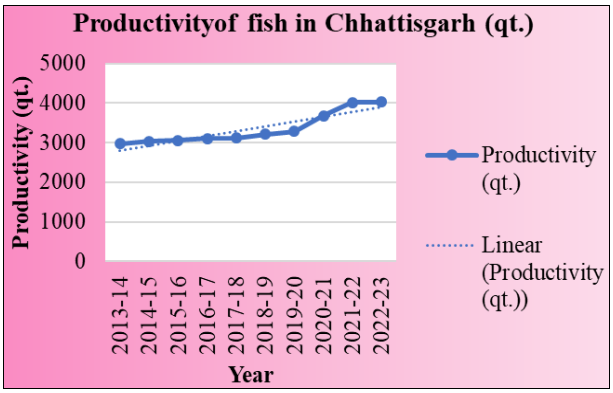

Fig 3: Productivity of Chhattisgarh

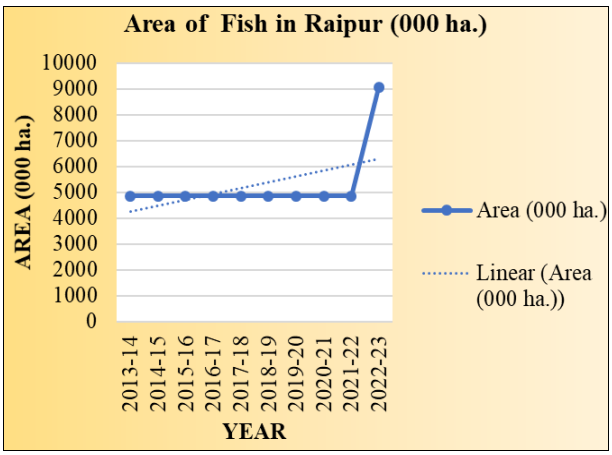

Fig 4: Area of Fish in Raipur

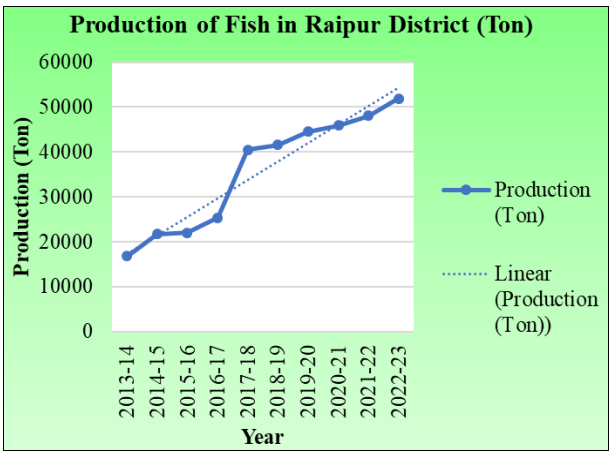

Fig 5: Production of Fish in Raipur

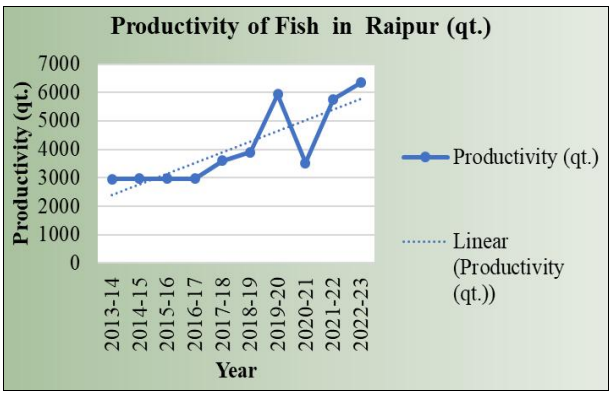

Fig 6: Productivity of Fish in Raipur

Conclusion

The trend of production of Fish in Raipur, district and Chhattisgarh state was found to be increasing trend during period from 2013-14 to 2022-23. The growth in area of Chhattisgarh state, Raipur, district was registered at 3.26 percent, 3.45 percent, per cent and was found positively significant at the rate of 1% of probability of 't' distribution. The growth in production was 9.93 percent, 13.65 percent, percent which has been found positively significant in Chhattisgarh state, Raipur, district, respectively. The growth in productivity 3.58 percent, 9.19 percent, which has been found in significant in case of Chhattisgarh state, Raipur, districts, respectively.

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