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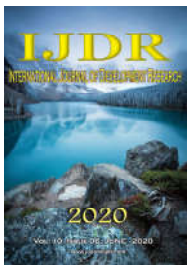

RESEARCH ARTICLE OPEN ACCESS

TRENDS OF PRODUCTION OF FISH IN ASSAM

***Pratibha Mohan and Dr. D.C Kalita**

Department of Rural Development and Agricultural Production, North-Eastern Hill University, Tura Campus, Meghalaya -- 794002, India

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****Corresponding author:***
Marcos Cesar Danhoni Neves

ABSTRACT

India is the 2nd largest producer of fish in the world, it produces 90.40 lakh tonnes of fish in 2012-13.Fishery resource generate employment for about 14 million people either directly or indirectly involved in the agricultural and industrial sectors of fish production, processing, ornaments and related activities. In India the production of fish is done in the oceans, rivers, tributaries, ponds tanks and derelict water bodies of Assam, Orissa, Tripura, Meghalaya and Uttar Pradesh. The present study is an attempt to study the trend of fish production in terms of production in the state of Assam. In order to study the trends of fish production, the secondary data regarding production of fish for the period 1980-81to 20013-14 were collected from various publications. To analyze the trend of production of fish, the linear, quadratic and exponential functional forms were selected. Finally linear function was used in the study to estimate the trend of fish production based on highest R^2 value. The results reveal growth of production of fish in the state was found to be increasing which were statistically significant at 5% probability level. This assumption seemed to be positive from the estimated significant positive compound growth rates of production of fish. This implies the acceleration of growth of production of fish in the state. However, the coefficient of variation (CV) of production of fish was more than 49 per cent. The results of the instability indices depicted that the instability indices for production for fish in the state were positive and thereby indicating less riskiness.

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INTRODUCTION

From the ancient time, fish is one of the most important economic activities of the people living in coastal region and river banks of India. 'But nowadays fish farming has been accorded high priority along with agricultural practices as well as income generating aspect and it has been predominantly incorporated under agriculture and allied activities as a primary sector of development' (Sen, 2009). 'India has 8,118 kilometers of marine coastline, 3,827 fishing villages, and 1,914 traditional fish landing centers. India's fresh water resources consists of 195,210 kilometers of rivers and canals, 2.9 million hectares of minor and major reservoirs, 2.4 million hectares ofponds and lakes, and about 0.8 million hectares of flood plain wetlands and water bodies' (Anonymous, 2013). Nearly 1.8 million fishermen of our country are earning livelihood basically from the fishery outputand it occupies the second largest producer of fish production in the world next to China. 'It produces 86.66 lakh tones (5.28%) of fish and contributes 0.87 per cent to GDP. Moreover it exports 862.021 tonnes of fish to the world by 2011-12' (Anonymous, 2013). Followed by, Assam is predominantly an agrarian economy with more than 85 per cent of the population living in rural areas. The state is blessed with vast and varied water resources which is suitable for the inland fisheries. There are about 3.91 lakh hectare of water area in the forms of rivers, beels, derelict water bodies, ponds and tanks. 'A total of 488696 hectare of water area is covered under fishery resource. It contributes 2 per cent of the Gross Domestic Product to the state economy and plays an important role in providing livelihood to a significant proportion of population in the state. The growth anticipated in fishing sector is 7.14 per cent in 2011-12' (Anonymous, 2012). The production of fish in Assam as a percentage to the national production is less than the national level. Although the yield level is quite low due to various reasons but the per capita availability of fish in the state is lower than the national level. In Assam, the demand for fish is very high but the production is very low, in spite of having suitable resources.

The fish in Assam is imported from Andhra Pradesh to meet the current demand. Hence, in this paper an attempt is made to study the trend of fish in terms of, production in the state of Assam**.**

RESEARCH METHODOLOGY

Data Base: The present study is based entirely on secondary sources. The secondary data regarding production of fish for the period 1980-81 to 2013-14 were collected from various publications. The study entails a temporal as well as spatial analysis of the growth of production of fish in Assam (Sharma and Kalita, 2008). In the present study, an attempt has been made to find the production of fish in the state of Assam.

Analytical Framework: To analyze the trend of production fish, the following different functional forms were selected.

1. Linear function $Y = a + bx$
2. Quadratic function $Y = a + bx + cx^2$
3. Exponential function $Y = a. b^x$

Where, Y =production of fish.
x = Time variable

The functional form having the highest Co-efficient of Multiple Determination (R^2) is selected for fitting the trend. Along with this, growth rates of production of the fish were computed. Accordingly, in the present study also Compound Growth Rates (CGR) were computed for production of fishbased on the linear function for the periods. The compound growth rate was computed as follows:

Linear function $Y = a + bx$

Where, x is the time variable, y is the variable for which growth rate is calculated and b is the regression co-efficient of Y on x. Now, Compound Growth percentage

(CGR %) = (antilog 'b'-1) x 100

The significant of growth rates was tested by applying student 't' test where t = g / SE (r), with (N-2) d. f. where r is the growth and N is the total number of years considered under study. SE (r) = 100 b / 0.4329 $\sqrt{[}$ (Σ log r^2) – (Σ log Y) ^{2} / N – (log b)^2 Σ x^2] / (N-2) Σx2. To measure the magnitude of variability in production for the total period, the co-efficient of variation (%) was computed. Further, the instability index (Sharma and Kalita, 2004) was also calculated to examine the instability in production of fish in the state of Assam by using the following formula:

Instability Index (I) = (I-R^2) x CV^2

RESULTS AND DISCUSSION

For the different functional forms viz; linear, quadratic and exponential coefficients of determination (R^2) were computed and are presented in the table 1. The table 1 shows that the R^2 values of quadratic function for production of fish which was higher than linear and exponential functions. Hence the quadratic functional form was selected for fitting the trend of production of fish based on the fitted trend of production.

Table 1: R^2 value of Linear, Quadratic and Exponential function for Fish in Assam

Aspects	Linear	Quadratic	Exponential
Production	0.9363	0.9367	0.7824

Table 2: Results of the Fitted Trend for (Quadratic function) Fish in Assam

Aspects	a	b	c
Production	19.60259	7.26492	-0.01581

Table 3. C. G. R. (%) of Production forFish in Assam

Aspects	Fish
Production	5.96*

Note: * - Significant at 5% probability level

Table 4: Co-efficient of Variation (%) in Production for Fish in Assam

Aspects	Fish	Instability Index
Production	49.21	153.29

Table 2 reveals that the 'c' value in the quadratic functional form for production of fish, which were negative and significant. The negative sign of value of 'c' indicates the decreasing of production of the fish.

Variation and instability in Production: Co-efficient of variation (%) of production of the fish were worked out for the period 1980-81 to 2013-14. These are presented in table 4. It is revealed from the table that growing fish in the state of Assam was more riskiness as revealed by the higher coefficient of variation, wherecoefficients of variation was more than 49 per cent implies the more riskiness. Growing of fish in the state was found to be less riskiness in the state as revealed by the lower coefficients of variation. The results of the instability indices also depicted that the instability indices for production of fish in the state were positive and thereby indicating less riskiness of growing fish in the state.

Conclusion

The above discussion highlighted the fact that the growth of production of fish in the state was positive and statistically significant. The coefficient of variation for of fish was more than 49 percent and thereby indicating the more riskiness for cultivation of fish in the state.

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