

Growth Performance of Fish Production in Jharkhand

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Abstract

This study is based on the secondary data collected from department of fishery, Government of Jharkhand. The growth rate of fish production from 2001-02 to 2014-15 was estimated through linear equation, which reveals that the annual production of fish was near about 19 % per annum as compound rate. The projection of fish production by 2020 in the state is also estimated on the basis of production of fish over periods and by 2020 the state would be able to produce nearby 1.6 lakh tons, which would be nearer to per capita requirement in the state. This enterprise will certainly improve the nutritional status of state as well as income of fish producers.

Keyword: Fish production.

Fish culture is a traditional practice in Jharkhand and its importance in the state's economy is the most significant, contributing near about 3 per cent in Gross State Domestic products (G.S.D.P.). Jharkhand's progress might be lackluster in most of the fields, but it has been moving ahead with the Blue Revolution pertaining to fish farming. Fishery has emerged as the most reliable sector for the farmers in recent years as chances of losses are very low as far as return is concerned. Area expansion and increasing people's participation have been major reasons for raising fish production in the state. From 14,000 metric tons in 2001-02, annual fish production of the state has reached 1,06,430 metric tons in 2014-15. However, the state has been lagging behind of annual demand of fish nearly 48 per cent. It was seen that per capita availability in the state was 15 gram per day against 25 gram per day as per Nutrition Advisory Committee set up by the government of India. Fishery enterprise being a subsidiary occupation would diversify agriculture and supplement the income in agricultural sector. Therefore, fishery enterprise fits best in the National Development Programme for increasing overall nutritional

level food production and rural employment. The department of fishery in the state has been working on three strategies area expansion, new technology and cage culture to increase fish production in the rural area of Jharkhand. This calls for a probe to examine the growth of fish production in the Jharkhand state and projected its production in 2020.

MATERIALS AND METHODS

This study was undertaken in the Jharkhand to meet the stipulated objective pertaining to production of fish. The study was based on secondary data on fish production, which was collected from Fishery Department, Government of Jharkhand. To examine the trend of fish production in Jharkhand linear regression equation of the following form was fitted.

$$Y = ab^t$$

$$\text{where, } b = 1 + r$$

$$\text{Log } Y = \text{Log } a + t \text{ Log } b$$

$$\text{Log } b = \frac{(\text{Log } Y - \text{Log } a)}{t}$$

Substitution (1+r) for 'b' we get

$$\text{Log } (1 + R) = \frac{(\text{Log } Y - \text{Log } a)}{t}$$

$$\text{Say } \frac{(\text{Log } Y - \text{Log } a)}{t} = \text{some quantity of 'x'}$$

$$\text{Therefore, } (1 + r) = \text{antilog 'X' - 1}$$

$$\text{Compound Annual Growth Rate} = (\text{Antilog 'x' - 1}) \times 100$$

$$\text{Since 'X' = Log b}$$

$$r = (\text{antilog 'b' - 1}) \times 100$$

The significance of the estimated compound growth rate was lasted with the help of student 't' test.

Trend value: The straight line equation was carried out by using linear mathematical equation of the first degree of probability. i.e. $Y = a + bx$. Since time series data contains even number of years, however the 'x' origin is to be placed midway between the two middle years, also the time deviation may be multiplied by the 2 in order to make them integral values.

Other statistical tools such as percentage, compound growth rate were also used to interpret the analysis data, as done by Singh and Chahal, 1997. The results were interpreted with the help of simple tabular form.

RESULTS AND DISCUSSION

The analysis of data resulted into many ameliorating inference, which are discussed as under:

Trend in Fish production

Trend is that component of variation which reveals general direction of change over a period of time. The estimation of trend is essential to study the general behavior of time series data and to work out period indices. The trend in the fish production in the Jharkhand was obtained by using time series data from 2001-02 to 2014-15 and the result is presented in Table 1.

It is evident from the Table 1 that there appeared a continuous increasing trend in the fish production except in 2009-10. The index of fish production taking as 2001-02 as base year was 389.29 in 2006-07, 513.47 in 2010-11 and further as high as 760.21 in 2014-15, respectively over the base year. The compound growth rate of fish production was 18.80 per cent which was significantly at one per cent level of significance.

Estimation of fish production

On the basis of data (Table 1) of fish production in the Jharkhand an effort has been made to estimate the trend value of fish production for the corresponding years. For the purpose linear regression analysis, being the best, fit was applied and result worked out in the following equation:

$$\hat{Y} = a + bx$$

The results based on the equation represented in Table 2, projection for 2015 to 2020 has also been made on the basis of trend values.

The analysis reveals that the actual fish production was much higher than estimated fish production in 2001-02, 2006-07, 2007-08, 2008-08 and 2011-12 and much lesser during 2002-03, 2003-04, 2004-05 and 2005-06 and again less in 2010-11. But for the remaining periods, the actual production was found to be almost the same level as that of estimated fish production. The fish production was increased at 1,59,161.92 tons in 2020-21. Figure 1 gives an obvious idea of the trend.

Table 1: Fish production in Jharkhand (2001-02 to 2014-15)

			(Metric tons)
Year	Production	Index	Percentage over base year
2001-02	14000	100.00	-
2002-03	15430	110.21	10.21
2003-04	18000	128.57	28.57
2004-05	27125	193.75	93.75
2005-06	34920	249.43	149.43
2006-07	54080	386.29	286.29
2007-08	67890	484.93	384.93
2008-09	75850	541.78	441.78
2009-10	70517	503.70	403.70
2010-11	71886	513.47	413.47
2011-12	91600	654.29	554.29
2012-13	96600	690.00	590.00
2013-14	104820	748.71	648.71
2014-15	106430	760.21	660.21
CCR = 18.80*** (t' = 52.24)			

*** Significance at one percent level of significance

Source: Department of Fishery, Jharkhand

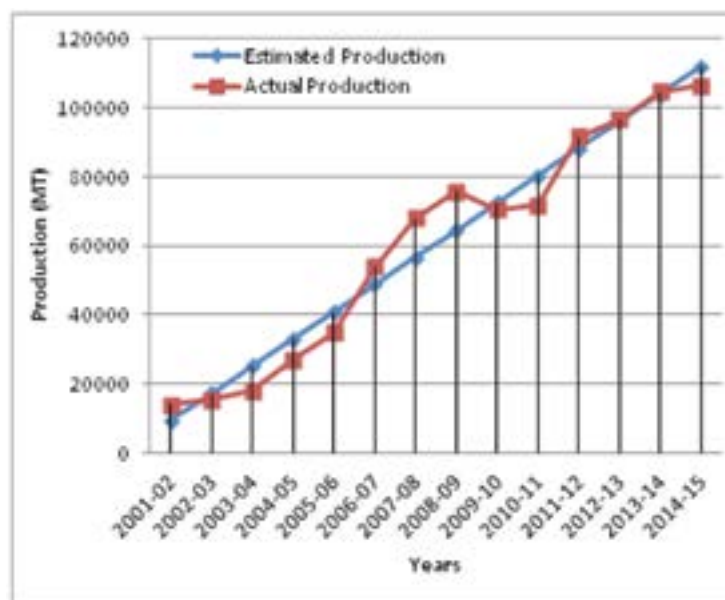


Fig. 1: Trends of actual and estimated production

Table 2: Trend equation ($= a + b x$) for fish production

Year	Actual Production	Estimated trend value ($= 60653.42 + 3940.34 x$)			
2001-02	14000	60653.40	+	-51224.42	9429.00
2002-03	15480	60653.40	+	-43343.74	17309.68
2003-04	18000	60653.40	+	-35463.06	25190.36
2004-05	27125	60653.40	+	-27582.38	33071.04
2005-06	34920	60653.40	+	-19701.70	40951.72
2006-07	54030	60653.40	+	-11821.02	48832.40
2007-08	67890	60653.40	+	-3940.34	56713.08
2008-09	75850	60653.40	+	3940.34	64593.76
2009-10	70517	60653.40	+	11821.02	72474.44
2010-11	71886	60653.40	+	19701.70	80355.12
2011-12	91600	60653.40	+	27582.38	88235.78
2012-13	96600	60653.40	+	35463.06	96116.46
2013-14	104820	60653.40	+	43343.74	103997.14
2014-15	106430	60653.40	+	51224.42	111877.82
2020-21	-	60653.40	+	98588.50	159161.90

CONCLUSION

The foregoing analysis reveals that fish production in the state has been increased over time. It was projected that fish production would raise about 1.60 lakh tons in 2020 from 14 thousand tons in 2001. This indicates that fish production can improve the nutritional status of the state as well as income of the fish producers.

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