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Research Paper

Trend in Growth of Area, Production and Productivity of Selected Crops in Chhattisgarh with Special Reference to Raigarh District

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ABSTRACT

The study was conducted to examine the growth pattern of major crops in the Raigarh district of Chhattisgarh state. The specific objective was to analyse the linear growth rate (LGR) and compound growth rate (CGR) of major crops. The study was completely based on secondary data. The unpublished and public sources from which the secondary data were gathered. Data was taken into consideration for the years 2002-03 through 2016-17. In the Raigarh district, the LGR and CGR in the area of paddy were observed negative while production and productivity were observed positive. In the case of wheat growth rate in the area, production as well as productivity was observed positive in Raigarh district. However, the growth rate of groundnut depicted as same as paddy where the area was observed negative while production and productivity were found positive in the district, respectively.

HIGHLIGHTS

- The growth rate in the area of paddy and groundnut were observed negative while production and productivity were found positive.
- The growth rate in the area, production and productivity of wheat was observed positive.

Keywords: Linear growth rate, compound growth rate, area, production, productivity, Raigarh

India's economy is heavily reliant on agriculture. A represents 17.8% of the nation's Gross Value Added (GVA) for the fiscal year 2019–20 (At current prices). Given the significance of the agriculture industry, the Indian government has adopted a number of measures to ensure its sustainable growth (Annual Report, 2020-21). Agriculture also works as a link to provide raw material to boost up other sectors. Production of food and non-food crops is a major role-playing growing Indian economy. The total food grain production in India is further increased during the period of 2015-16 to 2019-20 it was increased 251.54 million tonnes to 297.5 million tonnes (Agricultural Statistics at a Glance, 2021). The area of total cereals cultivation is decreases in the previous few years. The decline in rice area is due to a variety of factors such as farmers sifting their farming to other crops, rising cultivation costs, and decreasing net returns, among others, and the CGR of production and yield is positive, implying future production increases, whereas, the CGR of area for coarse cereals is negative, which is not a good sign for India because coarse cereal is cultivated in drought-prone areas and unproductive land. If we want to extend the area of coarse cereals, we must employ a good package and practice in cultivating, as well as proclaim a high price for coarse cereals crops (Vandana *et al.* 2021).

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The total oilseeds production during the period of 2015-16 to 2019-20 was also increased from 25.25 million tonnes to 33.42 million tonnes, respectively (Pocket Book of Agricultural Statistics, 2020). In India Rajasthan, Gujarat and Madhya Pradesh are the leading oilseeds producer among all states. State like Haryana, Rajasthan, and Madhya Pradesh, where rapeseed and mustard production and productivity increased at a highly significant yearly growth rate, whereas the area in Uttar Pradesh dropped at a highly significant annual growth rate (-2.93 percent), (Kolar *et al.* 2020).

Chhattisgarh is one of the prosperous agricultural state in India. Where, more than 70 percent population is purely engaged in agriculture. The total food grains productivity during 2015-16 to 2019-20 is increased 1334 kg per hectare to 1584 kg per hectare in the state (DES, 2020). Paddy and wheat are the most growing cereals in the state. In case of oilseeds groundnut, soybean, rapeseed and mustard are major crops in the state. During 2015-16 to 2019-20, the productivity of oilseeds rises 501 kg per hectare to 720 kg per hectare in the state (DES, 2020).

Raigarh is the prominent district of Chhattisgarh, because of the holding of many decades of agricultural background, the district has a playing major role in the economic growth and development of the state. Paddy and wheat are major cereals and groundnut is the leading oilseed crop in the district. The trend in production of cereals further rises every year in the district. However, the trend in the area of paddy and groundnut are decreasing every year the main reason for this can be farmers shifting their cultivation of more profitable crops and it is not good for future aspects. The study was the focus of analysing the trend in the area, production, and productivity of three major crops of the Raigarh district of Chhattisgarh.

According to study of Agashe *et al.* (2018) observed that groundnut production and productivity are improving positively and significantly in various districts, including Raigarh, Raipur, Bilaspur, Durg, Rajnandgaon, and Surguja, as a result of increased fertilizer and pesticide use by farmers and the introduction of high yielding varieties (HYV) and due to increased irrigation facilities and pushing farmers to employ low-cost input technology for groundnut crop under Entisol soil in different districts in CG, the area of groundnut has been positively and significantly rising in all districts. Rao *et al.* (2017) found that compound growth rate of groundnut in area is 3.29, production is 9.84 and productivity is 7.87. This show is an increasing pattern of growth rate. Raut (2016) reported that the growth rate of wheat was found to be 0.61 percent in the area followed by 0.88 percent in production and 0.34 percent in productivity per annum in the overall period. Verma (2006) revealed that there was a major break-through in the annually compound growth rates of area and productivity of oilseeds at 2.35 percent and 1.68 percent respectively, result found in higher growth of production at 4.03 percent per annum.

MATERIALS AND METHODS

The Raigarh district was selected for study because maximum areas of paddy, wheat and groundnut were covered for cultivation in the state.

The study was based on secondary data. Which where collected from publish and unpublished sources, District statistical office and directorate of agriculture, Chhattisgarh. The data was categorised with time-series during the period of 2002-03 to 2016-17.

Analytical tools

For the calculation of growth rate of given time series data both LGR and CGR was utilized systematically. To calculating the linear growth rate of area, production and productivity computed the formula of the same as given as follow:

$$Y = a + bX$$

Where,

a = Constant; b = Linear coefficient

$$LGR = b/\overline{Y} \times 100$$

Where,

Y = area/production/productivity of crops.

To calculate the annually compound growth rates in the area, production, and productivity of major crops were worked out for the Chhattisgarh state by fitting the exponential function of the following form:

$$Y = AB^t$$

Taking logarithmic on both sides:

$$Log\ Y = log\ A + t\ log\ B$$

Assuming $log\ Y = y$

$Log\ A = a$

$Log\ B = b$

We get,

$$Y = a + bt$$

After the regression between y and t, we have the value of a and b

Where,

a = constant; b = regression coefficient as ($b = 1 + r$)

Hence, $r = b - 1$

r = compound growth rate

(*antilog* of b –1) × 100

t = time variable ($t = 1, 2 \ldots n$)

y = area/production/productivity of crops

Thus, the compound growth rate (r) was calculated as under:

$$CGR\ (r) = (Antilog\ of\ log\ b - 1) \times 100$$

Where,

r = Compound growth rate in percent/ annum.

RESULTS AND DISCUSSION

Linear and compound growth rate of paddy crop:-

The linear and compound growth rate in the area of paddy crop in Chhattisgarh was positive and non-significant, while growth rate in production and productivity was positive and significant. In the Raigarh district, the linear and compound growth rate in area of paddy crop was observed to be negative and non-significant while growth rate in production and productivity was derived positively significant. The linear and compound growth rate in area, production and productivity of paddy crop is presented in Table 1.

Linear and compound growth rate of wheat crop

The linear and compound growth rate in area, production and productivity of wheat crop is presented in Table 2. The linear and compound growth rate in area of wheat crop in Chhattisgarh was found positive and non-significant, while growth rate in production and productivity was

Table 1: Linear and Compound growth rate in area, production and productivity of paddy

Sl. No.	Region	CGR/ LGR	Area	Production	Productivity
			2002-03 to 2016-17	2002-03 to 2016-17	2002-03 to 2016-17
1	Raigarh	LGR	-0.20	3.69**	3.86***
		CGR	-0.21	3.62**	3.84***
2	Chhattisgarh	LGR	0.10	4.13***	4.01***
		CGR	0.10	4.53***	4.43***

Note: *** Indicates significance level at 5%, *** Indicates significance level at 1%.*

Table 2: Linear and Compound growth rate in area, production and productivity of wheat

Sl. No.	Region	CGR/ LGR	Area	Production	Productivity
			2002-03 to 2016-17	2002-03 to 2016-17	2002-03 to 2016-17
1	Raigarh	LGR	4.55**	7.60***	3.22***
		CGR	4.32***	7.67***	3.22***
2	Chhattisgarh	LGR	0.88	3.97***	3.09***
		CGR	0.89	4.06***	3.14***

Note: *** Indicates significance level at 5%, *** Indicates significance level at 1%.*

Table 3: Linear and Compound growth rate in area, production and productivity of groundnut

Sl. No.	Region	CGR/ LGR	Area	Production	Productivity
			2002-03 to 2016-17	2002-03 to 2016-17	2002-03 to 2016-17
1	Raigarh	LGR	-2.52***	0.12	2.52**
		CGR	-2.37**	0.13	2.56**
2	Chhattisgarh	LGR	-1.95***	0.76	2.68***
		CGR	-1.87***	0.73	2.65***

Note: *** Indicates significance level at 5%, *** Indicates significance level at 1%.*

positive and significant. In the Raigarh district the linear and compound growth rate in area, production and productivity of wheat crop was observed positive and significant.

Linear and compound growth rate of groundnut crop

Table 3 is represent the linear and compound growth rate in area, production and productivity of groundnut crop. The linear and compound growth rate in area of groundnut crop in Chhattisgarh and Raigarh district was observed negative and significant, while growth rate in production was observed to be positive and non-significant. The growth rate in productivity of groundnut crop in Chhattisgarh state and Raigarh district was found to be positively significant.

CONCLUSION

The study was conclude the area of paddy and groundnut is represented negative and significant while the production of both crops was given positive in the Raigarh district. The main reason for decreases in the area of paddy and groundnut that was farmers shifted their cultivation for more profitable crops. The trend was also described as positive growth of production for both crops, the main reason of because farmers get more aware about the adoption of HYV, better farming practices and nutrient management in the area. In the case of wheat, the area, production and productivity were observed as positive and significant.

In comparison with the whole of Chhattisgarh the growth trend of paddy and wheat were represented the positive trend for the area and both significantly positive for production and productivity. While in case of groundnut the area was represented decreasing pattern but the production and productivity were depicted increasing trend in the state.

REFERENCES

Agashe, D.R., Sastri, Aras, Bobade, Pandurang and Agashe, Rajni. 2018. Trends of area, production, and productivity of groundnut in different districts of Chhattisgarh. *J. Pharmacognosy and Phytochem.*, **7**(4): 1254-1259.

Agricultural Statistics at a Glance. 2021. Ministry of Agriculture & Farmers Welfare, Government of India. p. 18.

Annual Report. 2020-21. Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Government of India, Krishi Bhawan, New Delhi, pp. 1.

Directorate of Economics & Statistics (DES). 2020. https://eands.dacnet.nic.in/APY_96_To_06.htm. (Last Accessed on 10th Feb. 2022).

Kolar, P., Awasthi, P.K. and Sahu, A. 2020. Growth Performance of Oilseeds Among Leading States in India. *Econ. Aff.*, **65**(2): 219-224.

Pocket Book of Agricultural Statistics. 2020. Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Government of India (GoI). New Delhi, pp. 18.

Rao, B., Shruthi, G., Latika Devi, Y. and Masih, J. 2017. Analysis of Area, Production and Productivity of Groundnut Crop in Telangana. *Agric. Sci. Digest.*, **37**: 10.

Raut, Y. 2016. A component analysis of trend in area, production and productivity of wheat in Malwa Plateau of Madhya Pradesh. Thesis M.Sc. (Ag.), Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya, Gwalior, Madhya Pradesh, pp. 40-58.

Vandana, K., Srivastava, S.C., Jaulkar, A.M. and Kumar, M. 2021. An analysis growth rate of area, production and productivity of major crops in India. *The Pharma Innovation J.*, **10**(11): 2019-2028.

Verma, A.R. 2006. Growth in production and productivity of principal crops and constraints in food security in M.P. *Indian J. Agric. Econ.*, **63**(3): 442-444.