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## Trend in area under major crops of Odisha

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### Abstract

The study was undertaken in Cuttack and Sundargarh district of Odisha to analyse the trend in area under major crops of the state. The study was based on secondary data. The secondary data was collected from Odisha Agriculture Statistics. To analyse the trend in area under major crops, compound growth rate was calculated.

**Keywords:** Diversification, trend, compound growth rate

### Introduction

India has achieved record food grain production from 51 million tonnes in 1950-51 to 316.06 million tonnes in 2020-21. However, this is primarily restricted to cereals. Although cereal production has increased substantially, the production of pulses and oilseeds has not made a dent. As a result, there is a chronic shortage of edible oils and pulses in the country (Chand & Pal 2003) <sup>[5]</sup>. Consequently, a perceptible change in consumer preferences away from cereals towards high value non-cereal nutrient-rich diets including fruits and vegetables is visible (Joshi *et al.* 2007) <sup>[2]</sup>. The question arises whether farmers respond to changes in consumer preferences by altering their crop portfolio. In the context of Indian agriculture, diversification has occurred both across and within crops, from one enterprise to another, an addition of complementary enterprise to main enterprises in the form of increasing income by increased and diverse use of resources and finally producing increased variety of commodities. Diversification is also viewed as uncertain precaution so as to reduce unemployment and variability in income, minimum level such as customary family living plus repayment of loans etc.

In the context of Odisha, some recent studies have emphasised the importance of infrastructure in enhancing the pace of crop diversification. Nayak & Kumar (2018) <sup>[6]</sup> have found that infrastructure motivates farmers to adopt yield-enhancing practices. Nayak & Kumar (2018) <sup>[6]</sup> find a higher level of diversification associated with backwardness of agriculture in Odisha (higher in KBK region than in the relatively advanced coastal districts). The availability of infrastructure including irrigation and electricity, and the use of inputs such as HYV seeds and fertilisers are higher in coastal Odisha, but not the crop diversification. Nayak (2016) <sup>[7]</sup> had also revealed that most of the districts in coastal Odisha are undergoing crop specialization, whereas the tribal dominated and technologically less-developed districts are experiencing crop diversification.

### Materials and Methods

This study is based on secondary data of Odisha, for the period 2000-01 to 2017-18. Initially, with a view to assess the trend of crop diversification, an attempt is made to calculate compound growth rate by considering area under four major crops. The secondary data were collected from various sources like different block offices, Directorate of Economics and Statistics, Odisha Agriculture Statistics, different publications etc. Data, thus collected were scrutinized, coded and tabulated on the excel sheets for further analysis. Compound Growth Rate was used to accomplish the specified objectives.

### Analytical framework and analytical tools

Both tabular and functional analysis was carried out in the study for getting insights.

### Compound growth rate

Compound growth rates were worked out. The growth rates were computed by employing the formula as given below:

$$Y = ab^t$$

where,

Y = Area of selected crops

a = Constant

b = (1 + r)

r = Compound Growth Rate (CGR)

t = Time variable in years (1, 2, 3.... n)

The value of antilog of "log b" was estimated by using LOGEST functions in MS- Excel. Then, the percent Compound Growth Rates were calculated as below:

$$CGR = [\text{Antilog}(\log b) - 1] \times 100$$

### Results and Discussion

**Table 1:** Trend in area under major crops of Cuttack district (in '000 ha)

Year	Paddy	Pulses	Oilseeds	Vegetables
2002	150.96	104.46	13.01	28.23
2005	147.28	103.04	15.43	24.42
2008	140.85	108.03	15.60	24.63
2011	138.52	108.01	15.88	26.29
2014	124.56	107.86	15.41	24.95
2017	116.59	106.00	13.72	23.72
CA GR (% pa)	-1.68*	0.2*	0.13*	-0.69

In table 1 data on area under major crops of Cuttack district have been taken. The years mentioned over here are the tri-annum end years. The values mentioned are the tri-annum average values. The area under paddy has decreased from an average of 150.96 thousand hectares in the year 2000-2002 to 116.59 thousand hectares in 2015-17. The area under paddy has registered a significant negative growth rate of 1.68 percent per annum during the period 2000 to 2017. The area under pulses registered a significant growth rate of 0.2 percent as the area increased from 104.46 thousand hectares in the year 2000-02 to 106 thousand hectares in the year 2015-17. The area under oilseeds registered a significant growth rate of 0.13 during the same time period while the area under vegetables witnessed a negative growth rate of 0.69 percent. The gross cropped area in Cuttack has decreased over these years. This decrease can be attributed to the fact that these areas have been used for infrastructural development and also the labour of agriculture is shifting to other fields because of low income from agriculture and because of its seasonal nature. The youth is more interested in service sector rather than in agriculture. Therefore, the gross cropped area is decreasing over the period of time. It can be concluded that over these 17 years farmers have diverted the area under paddy for cultivation of pulses and oilseeds.

**Table 2:** Trend in area under major crops of Sundargarh district (in '000 ha)

Year	Paddy	Pulses	Oilseeds	Vegetables
2000-02	234.91	54.66	29.34	29.30
2003-05	229.24	56.66	29.44	28.29
2006-08	219.76	57.57	31.55	28.57
2009-11	206.16	60.93	36.96	30.00
2012-14	203.76	65.38	35.73	31.90
2015-17	200.45	70.99	36.11	30.61
CAGR (% pa)	-1.19*	1.72*	0.3*	0.2*

The area under paddy has decreased from 234.91 thousand hectares in 2000-02 to 200.45 thousand hectares in 2015-17. A significant negative growth rate of 1.19 percent has been registered in Sundargarh district for the area under paddy and the area under pulses has increased from 54.66 thousand hectares in the year 2000-02 to 70.99 thousand hectares in 2017. A significant growth rate of 1.72 percent was witnessed in case of area under pulses from 2000 to 2017. The area under oilseeds increased from 29.34 thousand hectares to 36.11 thousand hectares witnessing a growth rate of 0.3 percent over these years. The area under vegetables was observed to increase from 29.30 thousand hectares in the year 2000-02 to 30.61 thousand hectares in the year 2017 hence marking for a significant growth rate of 0.2 percent.

**Table 3:** Trend in area under major crops of Odisha (in '000 ha)

Years	Paddy	Pulses	Oilseeds	Vegetables
2000	4400.00	1482.67	709.66	541.57
2003	4489.67	1723.33	820.33	649.66
2006	4452.33	1976.67	836.66	662.10
2009	4198.33	2058.33	777.66	694.29
2012	4123.00	2070.33	748.33	677.97
2015	3890.33	1966.33	621.66	651.22
CAGR (% pa)	-0.8*	0.38*	0.33*	0.38*

The study showed that the area under paddy has decreased from 4400 thousand hectares in 2000-02 to 3890.33 thousand hectares in 2015-17 witnessing a significant negative growth rate of 0.8 percent. In case of pulses and oilseeds, a significant growth of 0.38 and 0.33 percent was observed. Area under vegetables also witnessed a positive growth rate of 0.38 percent per annum. It can be concluded that diversification has taken place from paddy to non-paddy crops in Odisha. Odisha still remains a paddy dominated state but farmers have started diversifying the area under paddy towards pulses and oilseeds.

### Conclusion

**On the basis of the analysis, the paper offers the following conclusion**

There has been a sluggish rise in crop diversification in Odisha. Diversification has taken place from paddy to non-paddy crops in Odisha. Odisha still remains a paddy dominated state but farmers have started diversifying the area under paddy towards pulses and oilseeds. The gross cropped area in most parts of the study area is decreasing because area under agriculture is now being diverted for infrastructure development. Youths are more interested in service sector than in agriculture sector as the latter is less remunerative. Since the dependence on crop agriculture is not very high in the area due to the overwhelming contribution of service sector, agricultural activities need to be made more productive and lucrative, more so from the view point of young generation through incentivizing them in all possible ways.

### References

- Acharya SP, Basavaraja H, Kunal LB, Mahajanashetti SB, Bhat A. Crop Diversification in Karnataka: An Economic Analysis, Agricultural Economics Research Review. 2011;24(2):351-358.
- Birthal PS, Joshi PK, Gulati Ashok. Vertical coordination in high value commodities: Implications for smallholders, MTID Discussion Paper No. 85, International Food

- Policy Research Institute, Washington, D.C.; 2007.
3. Joshi PK, Ashok Gulati, BIRTHAL PS, Laxmi Tiwari. Agricultural diversification in South Asia: patterns, determinants and policy implications, *Economics and Political Weekly*. 2004;39(24):2457-2467.
  4. Sajjad, Prasad. Analyzing Spatio-temporal Pattern of Crop Diversification in Jalandhar District of Punjab, India, *Asian Journal of Agriculture and Rural Development*. 2014;4(3):242-256.
  5. Chand R, Pal S. Policy and technological options to deal with India's food surpluses and shortages. *Current science*. 2003 Feb 10;84(3):388-98.
  6. Nayak PK, Yang L, Brehm W, Adelhelm P. From lithium-ion to sodium-ion batteries: advantages, challenges, and surprises. *Angewandte Chemie International Edition*. 2018 Jan 2;57(1):102-20.
  7. Nayak A. Race, place and globalization: Youth cultures in a changing world. Bloomsbury Publishing; 2016 Sep 8.