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To measures absolute change in area, production and productivity of rice crop in different agro-climatic zone of Chhattisgarh state

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Abstract

An attempt has been made to measure absolute change in area, production and productivity of Rice crop in different Agro-Climatic Zone of Chhattisgarh State viz Chhattisgarh plain, Bastar plateau and northern hills were considered for detailed investigation. After considering zone, from each zone, all the covered districts were selected for analysis purpose. For the analysis purpose, used the secondary data from 2009-10 to 2018-19 were used to analyse absolute change. The study concludes Overall it could be concluded that For Absolute Change for 80 Percent district under Chhattisgarh plains agro climatic zone for area, production and productivity of rice crop was found positive which shows an increasing trend. For Bastar Plateau over all absolute change in area production and productivity of rice crop was 56.64 thousand ha, 274.71 metric tons and 0.43 ton/ha in area, production and productivity respectively. And For Northern Hills zone negative change in production and productivity of rice crop was found in only Jashpur district while negative change in area was in Korea district which showed a downfall in area, production and productivity in selected district.

Keywords: Absolute change, rice, production, productivity

Introduction

Rice is a staple food for more than half of the world population and in Asia alone more than 2000 million people obtain 60-70 percent of their calories from rice and its products. More than 80 per cent of the people in Asia consume rice. India is the second largest producer as well as the consumer of rice in the world. Rice is the principal food crop in India. Rice is grown in an area of 43.79 M ha with a production of 116.42 Mt and productivity of 2659 kg/ha in the country occupying 22 per cent of gross cropped area of the country. Rice contributes 41 per cent of total food grain production occupying 35 per cent of food grain area of the country (2018-19). With the growing population, by the year 2050, the projected demand for rice would be 137.3 Mt in the country and the demand and supply gap would be 25.8 Mt with the growth rate of 0.36 percents.

Chhattisgarh is a state in central India; with a geographical area of 137.90 lakh hectares. It is known for rice cultivation and called "rice bowl of India" and is necessary to examine its absolute change and have an estimate of likely supply of this crop as well as other cereal crops such as maize and wheat in the state. In Chhattisgarh, rice occupies average of 3.6 million hectare with the productivity of the state ranging between 1.2 to 1.6 tonne per hectare depending upon the rainfall (Status Paper on Rice for Chhattisgarh). With the consideration of importance of rice crop in Chhattisgarh state and its present status, it is very necessary to know the absolute change in area, production and productivity of Rice crop.

Materials and Methods

Selection of area

Chhattisgarh state from India was considered purposely for study purpose and all the 3 agro-climatic zones viz Chhattisgarh plain, Bastar plateau and northern hills were considered for detailed investigation. And from each zone, all the districts were selected for analysis purpose.

Selection of Crop

In Chhattisgarh, Rice is the foremost crop grown in about 36 lakh ha area in kharif season which accounts for about 77% of net sown area. Only 27% of this area is irrigated and the rest is rainfed. The rice crop was selected for the Present study in the all three agro climate region and all 27 district of Chhattisgarh state.

Nature and sources of data

This Present study is based on secondary data which is obtained from the website of Government of Chhattisgarh Agriculture Development and Farmer Welfare and Bio – Technology Department (agriportal.cg.nic.in)

Period of Study

The time series data from 2009-10 to 2018-19 were used to analyse absolute change.

Analytical tools

Absolute change = Current years (P_0)– Base year (P_n)

Results and Discussion

Absolute changes in area, production and productivity of Rice crop

The change in area, production and productivity of rice crop of different agro climate zone of Chhattisgarh state have been analyzed in terms of absolute change in current year over the base year during the study period i.e. 2009-2010 to 2018-19 and these have been presented in the Table 1,2 & 3.

Chhattisgarh plains

The absolute change in area, production and productivity of rice crop in Chhattisgarh plains agro climatic zone have been given in Table 1. It revealed from the table that the absolute change in area for rice was found positive in Balod, Balodabazar, Bemetara, Bilaspur, Dhamtari, Durg, Gariyaband, Kabirdham, Kanker, Korba, Mahasamund, Mungeli and Rajnandgaon districts, which shows an increase in the area under the rice crop by 19.11, 10.34, 72.85, 3.08, 31.93, 45.79, 39.37, 38.07, 33.5, 0.07, 62.05, 35.05 and 75.25 thousand hectare, respectively. The absolute change in area for rice was also found negative in Janjgir-Champa, Raigarh and Raipur districts, which shows a decrease in the area of rice crop by 18.20, 10.51, 14.99 thousand hectares, respectively.

The absolute change in production for rice was found positive in Balodabazar, Bilaspur, Dhamtari, Durg, Gariyaband, Janjgir-Champa, Kanker, Korba, Mahasamund, Mungeli, Raigarh, Raipur and Rajnandgaon districts which shows an increase in the production under the rice crop by 55.64, 106.33, 286.89, 310.26, 260.68, 160.68, 91.04, 65.72, 125.55, 9.85, 417, 563.17 and 167.32 metric tons, respectively. But absolute change in production for rice was also found negative in Balod, Bemetara and Kabirdham districts which show a down fall in the production under the rice crop and it was observed 22.37, 72.25, and 15.58 metric tons changes in this district, respectively.

The absolute change in productivity for rice was found positive in Balodabazar, Bilaspur, Dhamtari, Durg, Gariyaband, Janjgir-Champa, Kanker, Korba, Mahasamund, Raigarh, Raipur and Rajnandgaon districts. Which shows an increase the productivity under the rice crop by 0.19, 0.46,

0.21, 1.82, 1.49, 0.83, 0.21, 0.60, 0.14, 1.81, 3.38 and 0.24 tons/ha, respectively. While the absolute change in productivity for rice was also found negative in Balod, Bemetara, Kabirdham and Mungeli districts, which shows a decrease the productivity under the rice crop by 0.36, 1.18, 0.61 and 0.55 tons/ha, respectively.

Overall it could be concluded that about 80 Percent district under Chhattisgarh plains agro climatic zone for area, production and productivity of rice crop was found positive which shows an increasing trend. Although the same district were not covered in Chhattisgarh plains zone for all the variables.

Table 1: Absolute change in area, production and productivity of rice crop in Chhattisgarh plains zone of Chhattisgarh State

District	Absolute change		
	Area (000ha)	Production (MT)	Productivity (tone/ha)
Balod	19.11	-22.37	-0.36
Balodabazar	10.34	55.64	0.19
Bemetara	72.85	-72.25	-1.18
Bilaspur	3.08	106.33	0.46
Dhamtari	31.93	286.89	1.21
Durg	45.79	310.26	1.82
Gariyaband	39.37	260.68	1.49
Janjgir-Champa	-18.20	160.68	0.83
Kabirdham	38.07	-15.58	-0.61
Kanker	33.5	91.04	0.21
Korba	0.07	65.72	0.60
Mahasamund	62.05	125.55	0.14
Mungeli	35.05	9.85	-0.55
Raigarh	-10.51	417	1.81
Raipur	-14.99	563.17	3.38
Rajnandgaon	75.25	167.32	0.24
Chhattisgarh plains	377.17	3097.89	0.84

Bastar Plateau zone

The absolute changes in area, production and productivity for rice crop of Bastar Plateau zone have been given in Table 2. It revealed from the Table that the absolute change in area for rice was found positive in Bijapur, Dantewada, Kondagaon and Sukma districts which shows an increase in the area under the rice crop by 13.12, 15.71, 24.96 and 39.74 thousand hectares, respectively. The absolute change in area for rice was also found negative in only two districts i.e. Bastar and Narayanpur which shows a decrease in the area under the rice crop by 14.06 and 5.04 thousand hectares, respectively.

The absolute change in production for rice was found positive in all the districts of zone except Narayanpur which show a down fall in the production of rice crop and it was 17.64 metric tons.

It was observed that the absolute change in productivity for rice was found positive in only two districts viz Bastar and Sukma which shows an increase in the productivity under the rice crop. The absolute change in productivity for rice was also found negative in the Bijapur, Dantewada, Kondagaon and Narayanpur districts which show a decrease in the productivity under the rice crop but it was not very high.

The overall absolute change in area production and productivity of rice crop in Bastar Plateau was 56.64 thousand hectares, 274.71 metric tons and 0.43 ton/ha in area production and productivity respectively.

Table 2: Absolute change in area, production and productivity of rice in Bastar Plateau zone of Chhattisgarh State

District	Absolute change		
	Area (000 ha)	Production (MT)	Productivity (tone/ha)
Bastar	-14.06	152.17	1.29
Bijapur	13.12	3.10	-0.25
Dantewada	15.71	8.04	-0.017
Kondagaon	24.96	30.17	-0.06
Narayanpur	-5.04	-17.64	-0.035
Sukma	39.74	90.69	0.44
Bastar Plateau	56.64	274.71	0.43

Northern hills zone

The absolute changes in area, production and productivity of Northern hills zone have been given in Table 3. It is revealed from table that the absolute change in area for rice was found positive in all the districts of zone except Korea in the northern hill zone which show an increase in the area under the rice crop. The changes were observed 18.26, 9.21, 8.54 and 22.32 thousand hectare, in Balrampur, Jashpur Surajpur and Sarguja, respectively. The absolute change in area for rice was found negative in Korea district which shows a downfall in the area under the rice crop by 1.93 thousand hectares.

The absolute change in production of rice was observed positive in all the district in the zone except Jashpur district, which show an increase in the production under the rice crop by 40.31, 55.25, 44.88 and 107.46 metric tons, in Balrampur, Korea, Surajpur and Sarguja districts, respectively. But 128.80 metric tonnes negative change in production of rice crop in which show a downfall in the production in the district.

Regarding absolute change in productivity of rice crop was found same pattern as in case of production in Northern hills zone of Chhattisgarh state.

It could be concluded that negative change in production and productivity of rice crop was found in only Jashpur district while negative change in area was in Korea district which showed a downfall in area, production and productivity in selected district.

Table 3: Absolute change in area, production and productivity of rice crop in Northern Hills zone of Chhattisgarh State

District	Absolute change		
	Area (000 ha)	Production (MT)	Productivity (tone/ha)
1. Balrampur	18.26	40.31	0.14
2. Jashpur	9.21	-128.80	-0.77
3. Korea	-1.93	55.25	0.85
4. Surajpur	8.54	44.88	0.30
5. Sarguja	22.32	107.46	0.96
Northern Hills	21.55	393.27	0.66

Conclusion

It could be concluded that For Absolute Change for 80 Percent district under Chhattisgarh plains agro climatic zone for area, production and productivity of rice crop was found positive which shows an increasing trend. For Bastar Plateau over all absolute change in area production and productivity of rice crop was 56.64 thousand ha, 274.71 metric tons and 0.43 ton/ha in area, production and productivity respectively. And For Northern Hills zone negative change in production and productivity of rice crop was found in only Jashpur district while negative change in

area was in Korea district which showed a downfall in area, production and productivity in selected district.

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