AGRICULTURAL PRODUCTIVITY IN KALAHANDI DISTRICT OF ORISSA OVER THE DECADES: A TEMPORAL ASSESSMENT

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Abstract:

Agriculture supports a large segment of population by providing opportunities for employment and earning a livelihood. The undivided Kalahandi district of Orissa is one of the poorest regions of the state with about 70 per cent of families living below the poverty line (1997 BPL list of Govt. of Orissa) and out of the total working population 30.60 per cent are cultivators and 48.75 are agricultural labourers(Census of India, 2001). Furthermore, frequent recurrence of drought and flood has created situation like starvation, epidemics and mass migration in the district. Therefore, the present study has attempted to measure the agricultural productivity in the district.

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Introduction:

The undivided Kalahandi district belonging to KBK districts of Orissa is one of the poorest regions of the state with a large sized tribal population. The level of literacy (45.09 per cent) is found to be much lower that the state average (63.61 per cent). The female literacy is less than 30 per cent (2001 census). Health status is quite poor on account of under nutrition, endemic malaria and other diseases. The district of Kalahandi has been in the lime light due to various man and nature made problems. Recurrence of drought, epidemics, starvation deaths and mass migration has become a way of life for a large segment of population of this district. The region, therefore, has acquired a distinct place of its own in the World development map for its distress situation.

The district, Kalahandi and Nuapada taken together have 865524 numbers of working population, which constitute 6.00 per cent of total working population of the state. Out of the total working population, 30.60, 48.75, 2.86 and 17.79 per cent constituted cultivators, agricultural labourers, labourers engaged in household industries and other-specified workers, respectively. (Table1 & Table 2). The backwardness of the region is multifaceted such as tribal backwardness, hilly and inaccessible terrain, and recurrence of natural calamities and increasing depletion of natural resources. Furthermore, lack of adequate irrigation facilities and insignificant consumption of fertilizer have worsened the food situations of the region. Another constraining factor to agricultural development in the district is the large sized tribal population dominating the region. In the trbal areas not only traditional methods of cultivation is still practiced but also large part of the land is virtually under superficial cultivation. Therefore, development of agriculture in this area is hindered by several constraints-social, psychological, institutional, administrative and technical.

Table 1

Administrative Set-up of Kalahandi District

District	Sub Div.	Tahasil	CD Blocks	GP	Assembly Constituencies	Villages

Kalahandi	2	7	13	273	6	2205
Nuapada	1	2	5	109	2	659
Total Kalahandi (Undivided)	3	9	18	382	8	2864

Source: Govt. of Orissa, District Statistical Handbooks, Directorate of Economics and Statistics, Orissa, Bhubaneswar

Table 2

Social and Demographic Profile of the Kalahandi District

Parameters	Kalahandi	Orissa
Area (Sq. km)	11772 (7.56)	155707 (100.00)
Population (No)	1866184 (5.0)	36804660 (100.00)
Male	931922 (5.0)	18660570 (100.00)
Female	934262 (5.15)	18144090 (100.00)
SC	308315 (5.0)	6082063 (100.00)
ST	566794 (7.0)	8145081 (100.00)
Pop. Density	158	236
Sex Ratio	1002	972
Literacy (%)	45.09	63.61

Male	61.72	75.35
Female	28.25	50.51
Total Worker (in number)	865524 (6.06)	14272764 (100.00)
Cultivators	264879 (6.25)	4238347 (100.00)
Agri. Labourers	421949 (8.44)	5001075 (100.00)
Household industry	24710 (3.59)	689173 (100.00)
Other Workers	153986	4344169

Source: Census of India: 2001
Figures in the parentheses show the percentage to all Orissa total

Objective:

The study is aimed at measuring the agricultural productivity of Kalahandi district, Orissa during the period 1980-81 to 2006-07.

Methodology:

The present study is based on secondary sources and the data have been collected from the Directorate of Economics and Statistics, Department of Planning, Directorate of Agriculture and Food Production, Government of Orissa, Bhubaneswar. Data pertaining to area, yield and production (AYP) of crops, landholding pattern, irrigation, fertilizer consumption, rainfall etc. were collected for undivided district of Kalahandi and for the state as a whole. Crops/crop groups selected for the study were rice, wheat, cereals, pulses, foodgrains, oilseeds, vegetables, condiments and spices, sugarcane and tobacco. Crop group such as cereals, pulses and oil seeds were treated as single crops (crop groups) for all purposes of analysis. The study covers a period of 27 years 1980-81 to 2006-2007.

The study has made an attempt for a temporal assessment of agricultural productivity in the district of Kalahandi. A Composite Productivity Index (CAPI) – the statistical technique as

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formulated by Bhatia, S. S. (1967) has been used for the said purpose. According to Bhatia per hectare yield expresses all the physical and human factors connected with the production of crops and the distribution of area under cultivation among various crops. Thus, a weighted average of yield productivity of all crops, would give a measure of composite agricultural productivity. The method followed to estimate CAPI for the district of Kalahandi is as follows:

$$I_{ya} = \frac{Y_c}{Y_r} \times 100$$
(1)

Where, I_{ya} is the yield index of crop 'a'

Y_c is the acre yield of crop 'a' in a particular district. (Kalahandi)

Y_r is the acre yield of crop 'a' in the entire state.

Then, the Composite Agricultural Productivity Index (CAPI) is estimated as follows:

$$CAPI = \frac{I_{ya} \times C_a + I_{yb} \times C_b + \cdots\cdots\cdots\cdots + I_{yn} \times C_n}{C_a + C_b + \cdots\cdots\cdots\cdots + C_n}$$
(2)

Where I_{ya}, I_{yb} .... I_{yn} are the yield indicators of various crops and C_a, C_b, ... C_n are the percentage share of crop and under different crops.

Analysis and Interpretation:

Measurement of agricultural productivity is very much complicated since it needs to consider a host of factors such as soil, climate, landholding pattern, land utilization, cropping pattern, irrigation facilities, use of fertilizer, high yielding variety programme, flow of credit to agriculture and the extent of mechanization. Looking into the above aspect in details an attempt

has been made in this section to measure the agricultural productivity of Kalahandi district on the basis of a composite agricultural productivity index (CAPI).

Crops and crop groups such as rice, wheat , other cereals, pulses, oilseed, vegetables, condiments and spices, sugarcane and tobacco were taken into consideration for measuring the level of agricultural productivity in the district of Kalahandi for the years from 1980-81 to 2006-07.

It is observed from the Table 3 that composite agricultural productivity index (CAPI) for Kalahandi remained below 100 for 23 years, crossed 100 mark only for 4 years during the whole period under study.

Table 3

Composite Indices of Agricultural Productivity (CAPI) in Kalahandi District

Year (t)	Indices (U_t)
1980-81	80.69
1981-82	85.44
1982-83	91.46
1983-84	80.90
1984-85	90.42
1985-86	87.49
1986-87	73.39
1987-88	83.50
1988-89	81.56
1989-90	88.52
1990-91	93.73
1991-92	83.07
1992-93	78.73
1993-94	82.68
1994-95	80.67
1995-96	86.49
1996-97	77.33
1997-98	91.75
1998-99	74.84

1999-2000	105.18
2000-2001	106.60
2001-2002	106.23
2002-2003	102.45
2003-2004	98.24
2004-2005	100.64
2005-2006	97.32
2006-2007	92.65

Further to make a gradation of this district on the basis of CAPI values a frequency distribution table was prepared. Frequency of years as per the class interval of index values has been depicted in Table 4. It is revealed from the table that the district Kalahandi experiences low and very low productivity level for more years(i.e. 16 years).

Table 4

Level of Agricultural Productivity in Kalahandi District

Sl. No	Degree of Agri. Productivity	Index Values	Number of Years Kalahandi
I	Very High	Above 110	_
II	High	101-110	4
III	Medium	91-100	7
IV	Low	81-90	4
V	Very Low	Less than 80	12

Source: Table 3

Data on agricultural productivity for Kalahandi district for the period 1980-81 to 2006-07 were grouped under the period 1980-81 to 1989-90, 1990-91 to 1999-2000 and 2000-01 to 2006-07. Fitting of linear trends for these three periods show that there have been no significant change in the productivity during the first two periods. For the period from 2000-01 to 2006-07 the regression is shown to be significant, but indicates declining trend, which seems to be a disturbing feature

Table 5
Linear Trends of CAPI ($U_t = a + bt$)

Period	Intercept constant a	Regression coefficient b
1980-81 to 1989-90	85.069	-0.133 (not significant)
1990-91 to 1999-2000	82.103	0.608 (not significant)
2000-01 to 2006-07	109.373	-2.196 (significant)

Conclusion:

The scenario of agricultural productivity in Kalahandi district during the last 27 years was not found to be encouraging. It was noticed that the district has low- very low productivity. There have been no significant changes in the productivity during the period 1980-81 to 1989-90 and 1990-91 to 1999-2000, whereas there is significant declining trend for the period 2000-01 to 2006-07, which seems to be a disturbing feature for the development efforts by the planners. To increase the agricultural productivity in Kalahandi region, the emphasis should be laid on land reform measures (consolidation), technological change, infrastructure development (mainly irrigation) and adequate flow of funds to agriculture. Above all, priority will have to given to agricultural resources and education to evolve how varieties and breeds of crops to suit the geo-climatic conditions of the Kalahandi district. At the same time, it is necessary to bring about changes in the attitude of farmers and aware them about selection of crops and new firming methods.

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