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# Crop productivity an indicator of rural development: A case study of Sonipat district, Haryana

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### Abstract
In recent years the strategy of rural development planning is attaining greater importance. The present work has been brought out to draw the attention of policy makers and concerned authorities for help in future planning of rural areas of the district. In present study main attention is focused on crop productivity as an indicator of rural development. Rural development may be defined as a process of enabling the villagers to fulfill their needs especially, physical, economic, social and intellectual. For the present study to assess the temporal differences in the level of crop productivity, the statistical technique formulated by Bhatia, has been used in the study area with regard to nine crops and also for calculating percentile change during 1970-71 to 2000-01. For the proper measurement of overall crop productivity, the composite crop productivity index value has been calculated. Composite crop productivity index noted in 2000-01 was 95.47 percent, which has increased by 1.02 percent since 1970-71. Thus we can say that yield indices and composite productivity index of maximum crops has increased from 1970-71 to 2000-01.

**Keywords:** Rural development, approach, crop, fertility, composite productivity

### Introduction
Rural development has recently become a fashionable slogan for national as well as state government. The emphasis on rural development in India is understandable. There is a need of change and transformation in rural areas and can be achieved by rural development. The policy makers and planner are emphasizing on it since independence. The government, voluntary organization and financial institution have implemented a large number of rural development programme for the uplift of rural masses e.g. Community Development Programme, Intensive Agricultural District Programme, Intensive Agricultural Area Programme, H. Y. V. Programme, Special Development Programme for Weaker Sections, Drought Prone Area Programme, Crash Scheme for Rural employment, Minimum Need Programme, Command Area Development Scheme, Desert Development Programme, Food for Work Programme, I. R. D. P/ and Jawahar Rozgar Yozna etc.

### Study area
The Sonipat district is a part of Upper Yamuna Plain. It lies from 28°48' 30" to 29°17' 54" North Latitudes and from 76°28' 30" to 77°13' 40" East of Longitudes (Figure. 1). Sonipat district boundries are marked by Yamuna River in east. National Capital Territory, Delhi and Jhajjar district in the south. It is connected with Panipat district in the north. To its north-west and west is Jind district, and in the south-west Rohtak district is situated. The Sonipat district has a geographical area of 2122 square Kilometers. As per the 2011 Census data, Sonipat district is having a population of 1450001 out of this 68.73 per cent inhabiting the rural regions. The district has a 323 inhabitant and 13 uninhabited villages.

### Objective and Hypotheses
The present study has been brought out with a view to draw the attention of the authorities concerned and help in future planning of rural areas of the district. In the present study the impact of crop productivity on rural development in the area has been analysed. In order to fulfill the above said objective, it is proposed to analyse crop productivity as indicator of rural development in the study area during 1970-71 to 2000-01.

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**Data Collection:** The research work is based on the secondary data. District level data has been utilised to interrogate in the study area which have been collected from District Statistical Office Sonipat, District Rural development Authority, Sonipat and Office of Deputy Director of Agriculture Sonipat. Data analysis has been done both with the help of statistical tabulation and cartographic methods.
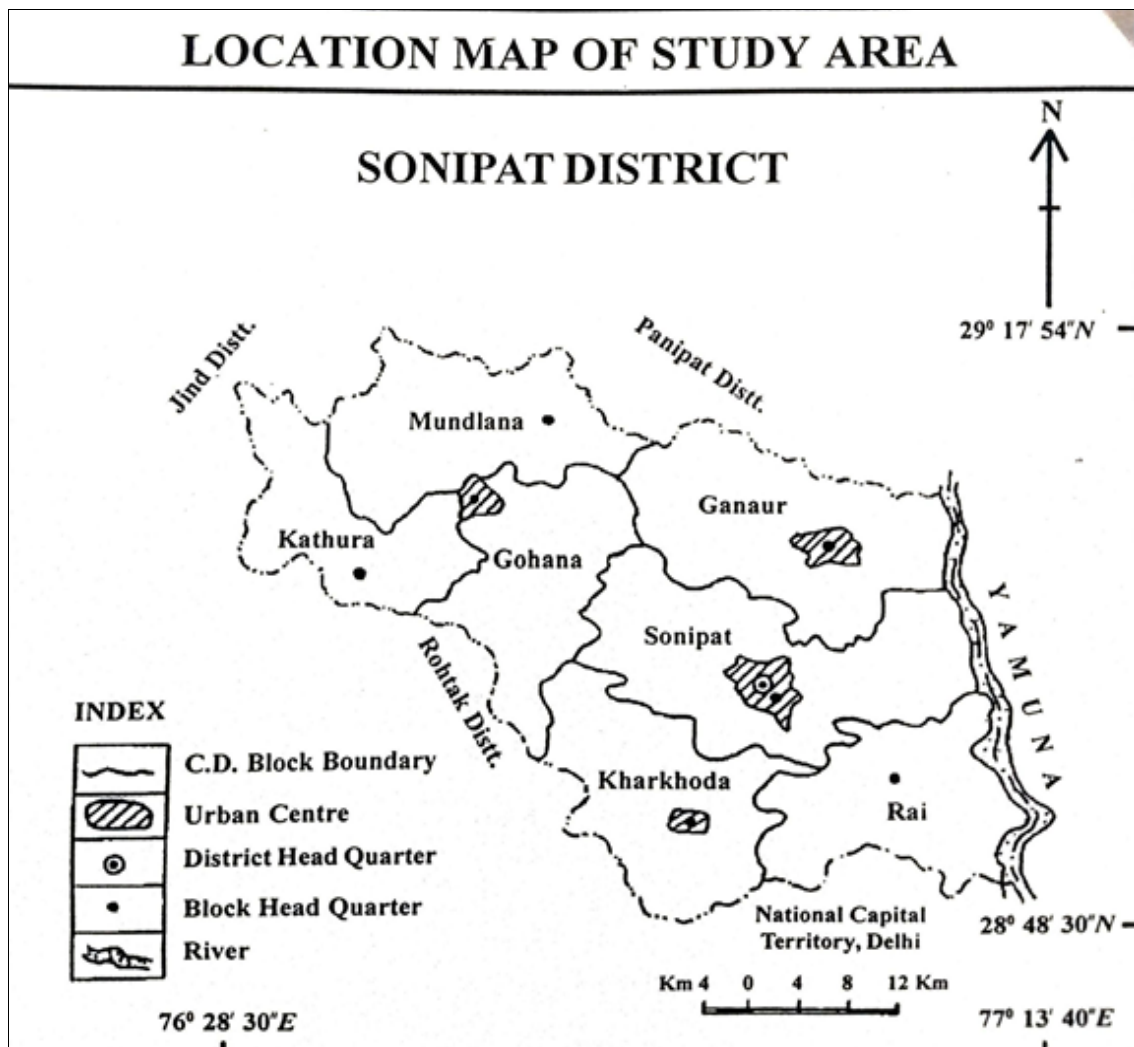


**Fig 1:** Map of The Study Area

**Materials and Methods**
The problem of rural areas becomes more serious and complex when viewed in the light of an increasing population pressure on agricultural land. The rural area is defined as area characterized by non-urban style of living, occupational structure, social organisation and settlements pattern (Bose and Vashist 1980) [1]. Whereas rural development may be defined as a process of enabling the villagers to fulfill their needs especially, physical, economical, social and intellectual (Garg and Jindal, 1989) [2].

The improvement in living standard which includes employment, health and education and social services, inequality in distribution of rural income and opportunites along with capacity of rural sector to sustain and accelerate the pace of these improvements are various aspects of ryral development (Todaro, (1977) [3].

Rural development is multidisciplinary in nature. As far as operation of rural development is considered it is multi sectoral and fulfill many objectives like production, employment, distribution of income. It has broad participation in development process by increasing access to services, inputs, self reliance and awareness (C. I. D. A. (1976) [4].

The main purposes of rural development to achieve an enhanced production and productivity in the rural area. Despite the divergent views about the rural development it is obvious that a wide range of indicators can be used in the contribution of the level of rural development. However World Bank (1989) [5] has shown the measuring rural development in terms of access to basic socio-economic infrastructure. Many scholars believe that sectoral approach to rural development is inevitable and as such, they treat the development of agriculture sector, is essence, not only as heart but also as almost the whole of rural development. However now a days agriculture is being viewed as major component of rural development and strategy of rural development is designed to improve the economic and social well being of defined group of people like in present study the rural people.

Therefore, rural development is a comprehensive and interdisciplinary concept and it requires multi dimensional activities for enrichment of the quality of life and it's availability at minimum level to all sections of rural areas.

The importance of agriculture in rural development is of utmost importance in developing countries like India. In developing countries majority of population lives in rural areas and is dependent on agriculture for its livelihood. Singh (1985) [6], presented a synoptic view of strategies for agricultural development in India outlining a framework for formulation of future development plan of agriculture. Where as Sharma, *et al.*, (1985) [7] attempted to demonstrate how agricultural intensity and diversity could be instrumental in desired development of a rural area.

**Results and Discussion**

Development becomes more meaningful when it is viewed as a temporal perspective. The present context of study is used for certain percentile changes during 1970-71 to 2000-01, mainly because the Green Revolution though started in mid 1960's in the country, and its wave comes to the study area in the early seventies and during the post-green revolution period (particularly after 1970). Crop productivity is taken as the most important indicator to show the agricultural development. Productivity is something different from fertility and tells us about the power of agriculture to produce crops in that particular region and does not depend on nature effect or efforts of human beings (Shafi, 1984) [8]. It is also a qualitative term, which provides an estimate of the power of agriculture to produce crops. The nature of productivity refers to the efficiency with which inputs are utilized in agricultural production.

Economist defined productivity as output per unit of input or per unit of area (Singh and Dhillon, 1994) [9].

Now a days study and assessment of agriculture production is gaining attention of workers of different fields which includes Economics, Geography and agricultural engineering. Attention is being paid to increase, measure and quantify agricultural productivity in India and other countries of world also.

The measurement of agricultural productivity is a complicated concept as it is presented as the ratio of output to input. During consideration of agricultural productivity land labour, capital and overall resources employed in agriculture are also taken into consideration. Kandall, (1939) [10] expressed the productivity as output per unit area by using yields of crops per acre. The agricultural productivity evaluation technique of Singh (1972) [11] is more accurate by taking the harvested area in place of cropped area.

In the present work the temporal differences in the level of crop productivity was calculated using the technique of Bhatia, (1976) [12]. The per hectare yield demonstrates all physical and human factors which are linked to the production of crops and the sharing of the cropland among various crops.

Weighted average of the yield productivity of all crops, in a component regional unit where the weights are proportionate to the share of cropland devoted to each crop would give a measure of composite crop productivity to the entire region. This may be expressed as:

$$Iy_a = yc \,/\, yr \times 100$$

Where
$Iy_a$ - yield index of crop 'a',
yc - acre yield of crop 'a' in the component unit.
yr - acre yield of crop 'a' in the entire region.

$$CPi = \frac{Iya \times Ca + Iyb \times Cb + \dots\dots + Iyn \times Cn}{Ca + Cb + \text{-------} + Cn}$$

Where
CPi - composite productivity index
Iya, Iyb ……, Iyn - yield indicators of various crops and
Ca, Cb,....+ Cn - percentage crop land under the different crops.

An attempt has been made (Table 1) to measure the crops indices and composite crop productivity of the entire area. The formula initiated by Bhatia has been used in the study area with regard to nine crops and also for calculating percentile change during 1970-71 to 2000-01.

**Table 1:** Productivity index during 1970-71 and 2000-01 and its Change

| S No. | Crop | Productivity Index (1970-71) % | Productivity Index (2000-01) % | Percentile change 1970-71 to 2000-01 |
|---|---|---|---|---|
| 1 | Wheat | 91.93 | 97.08 | 5.60 |
| 2 | Rice | 60.42 | 69.89 | 15.67 |
| 3 | Jawar | 101.69 | 113.46 | 11.57 |
| 4 | Sugar cane (Gur) | 104.68 | 103.89 | -0.76 |
| 5 | Bajra | 96.60 | 136.70 | 41.71 |
| 6 | Fruits and Vegetables | 127.54 | 211.23 | 65.62 |
| 7 | Rape Seeds and Mustard | 85.18 | 81.37 | -4.47 |
| 8 | Pulses | 89.72 | 207.23 | 130.97 |
| 9 | Cotton | 101.92 | 75.24 | -26.18 |
| | Composite Productivity Index | 93.70 | 95.47 | 1.02 |

The indices of different crops and composite crop productivity index provides a good measure of temporal variation in agricultural productivity. The productivity index of pulses shows maximum increase during 1970-71 to 2000-01 followed by fruits & vegetables, bajra, rice, jawar and wheat where as cotton shows maximum decrease followed by rape seeds, mustard and sugar cane.

The fruits & vegetables registered maximum productivity index 211.23% in 2000-01, which increased by 65.62% since 1970-71. The productivity index of pulses is 207.23%, in 2000-01 which has registered an increase of 130.97% since 1970-71. Bajra's productivity index is 136.70% (2000-01), which has registered an increase of 41.71% since 1970-71. Jawar recorded 113.46% productivity index in 2000-01, which has increased by 11.57% since 1970-71. Sugarcane productivity index is 103.89% in 2000-01, which is 0.76%, lower than 1970-71. Wheat recorded 97.08% productivity index, which has increased by 5.60% since 1970-71. Rape

seeds and mustard productivity index is 81.37% in 2000-01, which is 4.47%, lower than 1970-71. Cotton productivity index is 75.24% in 2000-01, which is 26.18%, lower than 1970-71. Rice productivity index is 69.89% in 2000-01, which has registered an increase of 15.67% since 1970-71.

For the proper measurement of overall crop productivity, the composite crop productivity index value has been calculated. Composite productivity index noted in 2000-01 is 95.47%, which has increased by 1.02% since 1970-71. Thus we can say that yield indices and composite productivity index of maximum crops has increased from 1970-71 to 2000-01. It is an indication of rural development in the area.

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