# LEVELS OF AGRICULTURAL DEVELOPMENT IN HAVERI DISTRICT

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***Abstract***
*Haveri district needs agricultural and industrial development in the years. The seven taluks in the district are basically of agricultural economy oriented. There are no mineral resources in the district. Due to the available roads and railway facilities, the region needs economic development through medium agro-based industries and the development of information technology. The social development through education institution has brought significance development in the service sector, trade and commerce. This study forces the stepwise development of seven taluks in the selected 16 factors in the next decade.*

***Key words:*** *Agriculture, Social development.*

## Introduction

The term of agricultural development refers to the growth and overall changes of agriculture resulting in vertical expansion. The development of agriculture should be assessed not only by productivity levels but also with reference by inputs such as fertilizers, improved varieties of seeds and irrigation (Sharma,1970). Agriculture development shows the quality of agricultural system of a region. Agriculture is one of the most important activities of man. It gives not only the food but also it provides huge amount of industrial raw material. In India nearly 64% of the total population is even now dependent upon the agriculture that's why this is back bone of our country. The development of national output depends upon the agricultural development. Agriculture plays important role in economic development, such as provision of food to the nation, enlarging exports, transfer of manpower to the non-agricultural sectors, contribution to capital information and securing markets for industrialization.

## Study area

The Haveri district was formed in the year 1997 by dividing the earlier Dharwad district into Dharwad, Haveri and Gadag districts. The districts encompasses an area 485156 hectares lying between the latitudinal parallels of 14°19′ North to 15° 09′ North and the longitudes of 75° 01′ East to 75° 50′ East. The district is divided into two sub-division with seven taluks. Shiggaon, Hangal, Savanur coming under Savanur sub-division and HaveriHaveri, Hirekerur, Byadagi and Ranibennur coming under Haveri sub-division. The district is bounded on the North by the districts of Dharwad and Gadag, on South by the districts of Davanagere and Shimoga and West by the district of Uttar Kannada. Varada River flows west to east direction about 128km on the north-east and south, the Tungabhadra river flows in between Haveri, Gadag and Shimoga. The total population in the district is 1597668 (as per 2011 census).

## Objectives

To assess the regional variation of levels of agricultural development for different time periods. To analyse the factors responsible for the unequal levels of agriculture development. determine the levels of agriculture development and thereby identify the high and low patches in the study region.

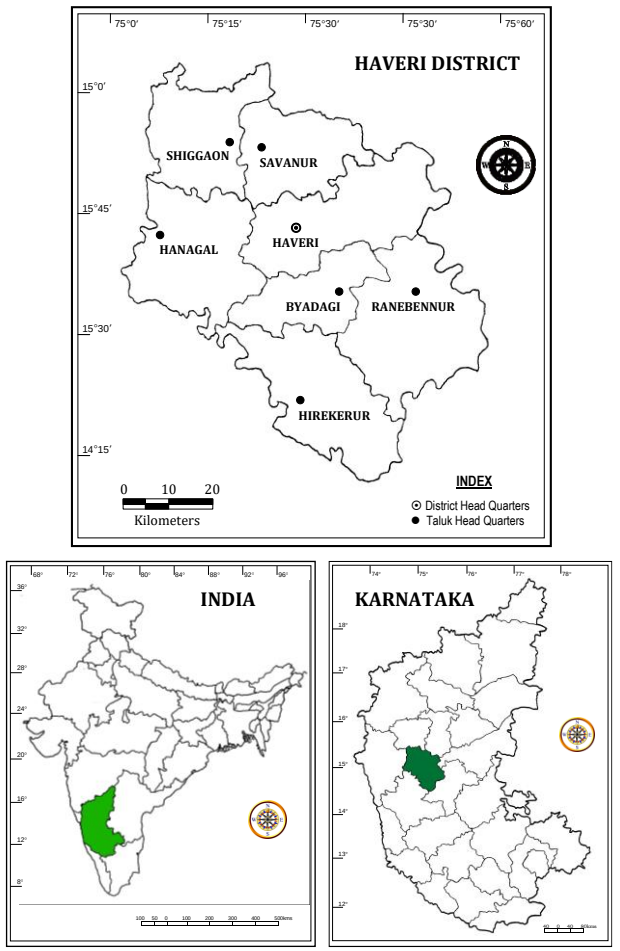



Figure 1. Study area.

## Database and Methodology

The study is based on the secondary sources of data. The taluka has considered as the smallest unit of analysis. The data has been collected from department of Economics and Statistics, Haveri. Haveri district 2001 and 2011 census obtained from Directorate of census operations, Bangalore Karnataka state. The agriculture development has been calculated by using the composite z-score technique for two points of time i.e. 2006-07 and 2016-17. In order to assess the levels of agricultural development 16 indicators has been taken. They are given in table 1.

In the present study all the indicators of agricultural development are analysed with the help of z-score technique for the 'z' score smith 1979 has given a formula;

$$Z_{ij} = \frac{X_{ij} - X_i}{\delta X_i}$$

[Where: $Z_{ij}$= Standardize value of the variable *i* in taluka*j*, $X_{ij}$ = Actual value of variable *i* in taluka*j*, $X_i$ = Means value of variable *i* in all the taluks, $\delta X_i$ =Standard deviation of variables *i* in all taluks.]

In order to assess overall levels of agricultural development the result of standard score obtained for all indicators are added taluka wise and the average is taken out for these indicators which is known as composite standard score (CSS) for each taluka and algebraically expressed as;

$$C.S = \frac{\sum Z_{ij}}{N}$$

[Where: $C.S$= Composite Score, $\sum Z_{ij}$='z' score of all variables *i* in district *j*, and $N$= No. of variables.]

**Table No. 1**

| Indicators | Definition |
|---|---|
| $X_1$ | Total cropped area (In Sq.km) |
| $X_2$ | Total arable land (In Sq.km) |
| $X_3$ | Percentage of net sown area to total geographical area. |
| $X_4$ | Cropping intensity. |
| $X_5$ | Percentage of net irrigated area to net sown area |
| $X_6$ | Average size of agriculture land holdings. |
| $X_7$ | Fertilizers consumption in kg per hectare. |
| $X_8$ | Percentage of cultivators to total workers. |
| $X_9$ | Percentage of agriculture labours to total workers. |
| $X_{10}$ | Percentage of growth rate of population. |
| $X_{11}$ | Density of population. |
| $X_{12}$ | Sex ratio. |
| $X_{13}$ | Literacy rate. |
| $X_{14}$ | Male literacy rate. |
| $X_{15}$ | Female literacy rate. |
| $X_{16}$ | Percentage non-agricultural workers to total workers. |

All data has been arranged and standardized to zero mean for interpretation. The positive values show high level of agricultural development and the negative values shown low level of agricultural development. In order to measure the levels of agricultural development the composite score value of the concerned districts are grouped into the three categories high, medium and low.

## Results and Discussion

The agricultural development indicates optimum use of existing land resources with the help of scientific agricultural practices and the applications of modern inputs. The final results are outcome from table no.2 and table no.3 is that agricultural development in the taluks of Haveri district. The primary objective of agricultural development is usually to increase the output per hectare. The composite Z score values of the indicators have a wide range of variations among the Haveritaluks.

Table 2. Developmental Indices of Haveri District, Karnataka State during 2006-07 and 2016-17

| **Indices of Z Score** | | |
|---|---|---|
| **Taluks** | **Indices (2006-07)** | **Indices (2016-17)** |
| Byadagi | **-0.2118** | **-0.2629** |
| Hangal | **0.0067** | **0.2958** |
| Haveri | **0.3763** | **0.5121** |
| Hirekerur | **0.0978** | **0.2536** |
| Ranebennur | **0.2529** | **0.0861** |
| Savanur | **-0.1512** | **-0.4880** |
| Shiggaon | **-0.3707** | **-0.3968** |

**Source:** Derived after the calculation of Z scores indices by researcher on the bases of the taluka wise selected indicators for each period of the study.

## Levels of agricultural development

The levels of agricultural development has considered the function of 16 indicators, they have been grouped into three categories. The composite standard score of levels of agricultural development is based on the aggregation of these the categorise (Table No.3).

Table 3. Classification of Taluks on the Levels of Agricultural Development in Haveri District in 2006-07 and 2016-17 (According to Z score method)

| **Category** | **C.S.S Range** | **2006-07** | | **2016-17** | |
|---|---|---|---|---|---|
| | | **No. of Taluks& Area(%)** | **Name of the Taluks** | **No. of Taluks& Area(%)** | **No. of Taluks& Area(%)** |
| High | More then +0.15 | 2 (35.12%) | Haveri, Ranebennur | 3 (49.08%) | Hangal, Haveri, Hirekerur |
| Medium | +0.15 to-0.15 | 2 (32.6%) | Hangal, Hirekerur | 1 (18.64%) | Ranebennur |
| Low | Less then-0.15 | 3 (32.24%) | Byadagi, Savanur, Shiggaon | 3 (32.24%) | Byadagi, Savanur, Shiggaon |

**Source:**Classification after Composite Standard Score of the taluks.

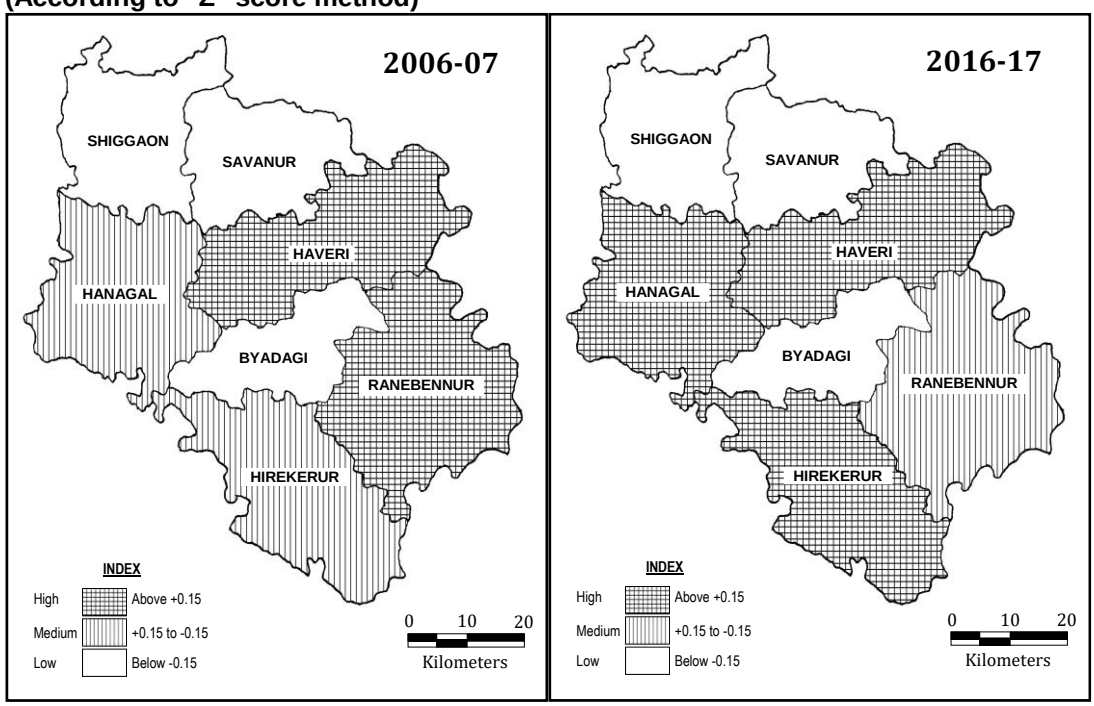
Map No.2 shows the different levels of agricultural development. The taluks are coming under the high category (More then +0.15) constitute two regions in the North East and South East part of the study area in 2006-07(32.12%). This region includesHaveri and Ranebennurtaluks. The number of taluks has been increased to three, such as, Hangal, Haveri and Hirekerur under the category of high levels of agricultural development in 2016-17. These are located in central, North West and South part of the study area (49.08%). The

study implies that these taluks have experienced high level of agricultural efficiency. This is mainly because of irrigation, fertilizer consumption, more cropped area, good socio-economic conditions and methods of cultivation and others.

Hangal and Hirekerurtaluks coming under the medium category (+0.15 to -0.15) in 2006-07 and these are located central and south part of the study area (32.6%). The number of taluks has been decreased to one, such as, Ranebennur in 2016-17 (18.64%). This taluka decrease their agriculture efficiency due to less cropped area, arable land, irrigation and others.

Low levels of agriculture development (less than -0.15) is recorded in the taluks is the study area in 2006-07 (32.24%), such as, Byadagi, Savanur and Shiggaon. These are distributed central, North West and North East part of the Haveri District. And again these taluks are observed in the same category in 2016-17. This is mainly because due to small land size, low socio-economic conditions, less fertilizers consumption and other.

**Map No.2: Levels of Agricultural Development**
**(According to "Z" score method)**




## Conclusion

The agricultural development confirms that, it is not homogeneous among the all taluks of Haveri district. The majority of central west and North West part of the district is high. Central East and South East part is moderate and finally North West and North East is very low agricultural development was found. The main concept of this article is to find out the high and low levels of agricultural development regions.

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