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SPATIAL VARIATION IN AGRICULTURAL TECHNOLOGY IN SOLAPUR DISTRICT

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ABSTRACT

In India technological variable have made a significant impact and both agriculture pattern productivity. Farmers in such areas prefer the modern technology to maximum agricultural production. Modern farm mechanization of agriculture refer here to modern farm machinery used for different farm operation. Attempt has been made here to understand the levels of agricultural technology in Solapur district.

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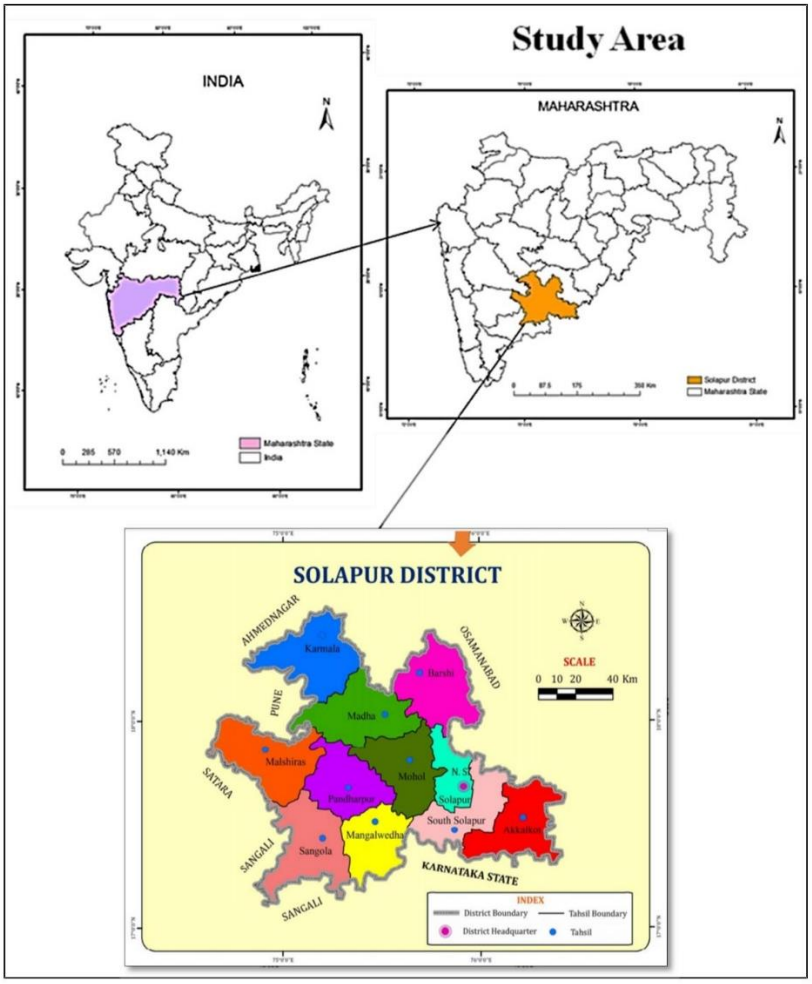
Introduction:

Agricultural technology refers to the application of modern inputs, techniques and management practices in farming to enhance productivity and efficiency. In drought-prone regions like Solapur District of Maharashtra, the level of agricultural technology plays a decisive role in determining agricultural development, cropping intensity and farmers' income. Due to uneven rainfall, limited irrigation facilities and socio-economic constraints, the adoption of agricultural technology varies significantly across the talukas of Solapur district.

Study Region:-

Solapur district is one of the districts in Maharashtra state of India. The district covers geographical area of 14844.6 sq. kms. which is 4.82% of the total area of Maharashtra State. Out of the total area of the district 338.8 sq.kms (2.28%) is urban area whereas remaining 14505.8 sq.kms. (97.72%) is rural area. It is located between 17°10′ N and 18°32' N and 74°42' E and 76°15' E. The district is situated on the south east fringe of Maharashtra State and lies entirely in the Bhima and Seena basins. Whole of the district is drain either by Bhimariver or its tributaries. The district is bounded on the north by Ahmednagar and Osmanabad districts, on the east by Osmanabad and Gulbarga (Karnataka State) districts, on the south by Sangli and Bijapur (Karnataka State) and on the west by Satara and Pune districts. In 2011, Solapur had population of 4,317,756 of which male and female were 2,227,852 and 2,089,904 respectively.



Objectives:

To study the regional imbalance in study region

To study the levels of agricultural performance

To study the levels of agricultural technology in the study region

Database & Methodology:

The method accepted to determine the levels of development involves two stages: first, the determination of levels of development of each tahsil in terms of discreet variables and second the imegration of values obtained to give a composite index of development. The co-efficient of development of a tahsils in terms of a single variable is calculated by the following equation.

CDI = Pi/PI x 100

Where,

CDI = the co-efficient of development for variable 'i'

Pi = percentage of variables 'i' in the unit,

PI = mean percentage of variable 'l'in the study region.

In order to develop a composite index, which reflects the composite effects of indicators enumerated above, the following equation is adopted:

$$CDI = \frac{CDi^1 + CDi^2 + CDi^3 \ldots\ldots Cdi + n}{N}$$

Where.

CID = Composite index of development

N= Number of variables

The levels of development have been calculated for all tahsils on the basis of the above formula. The composite indices so obtained are summarized in table No. 1

Table 1: Solapur District: Composite Index of Development

Sr.No.	Tahsil	Composite Index	Indices	Devlopment
1	Karmala	48.44	94.6	LOW
2	Madha	54.64	107.27	HIGH
3	Barshi	50.89	99	MODERATE
4	North Solapur	51.98	101.22	MODERATE
5	Mohol	52.47	102.9	MODERATE
6	Pandharpur	55.97	110.1	HIGH
7	Malshiras	56.77	111.57	HIGH
8	Sangola	48.33	94.56	LOW
9	Mangalwedha	46.35	90.44	LOW
10	South Solapur	45.63	88.9	LOW
11	Akkalkot	46.46	90.58	LOW
Average		**50.72**	**100**	

Source:- Compiled by Researcher

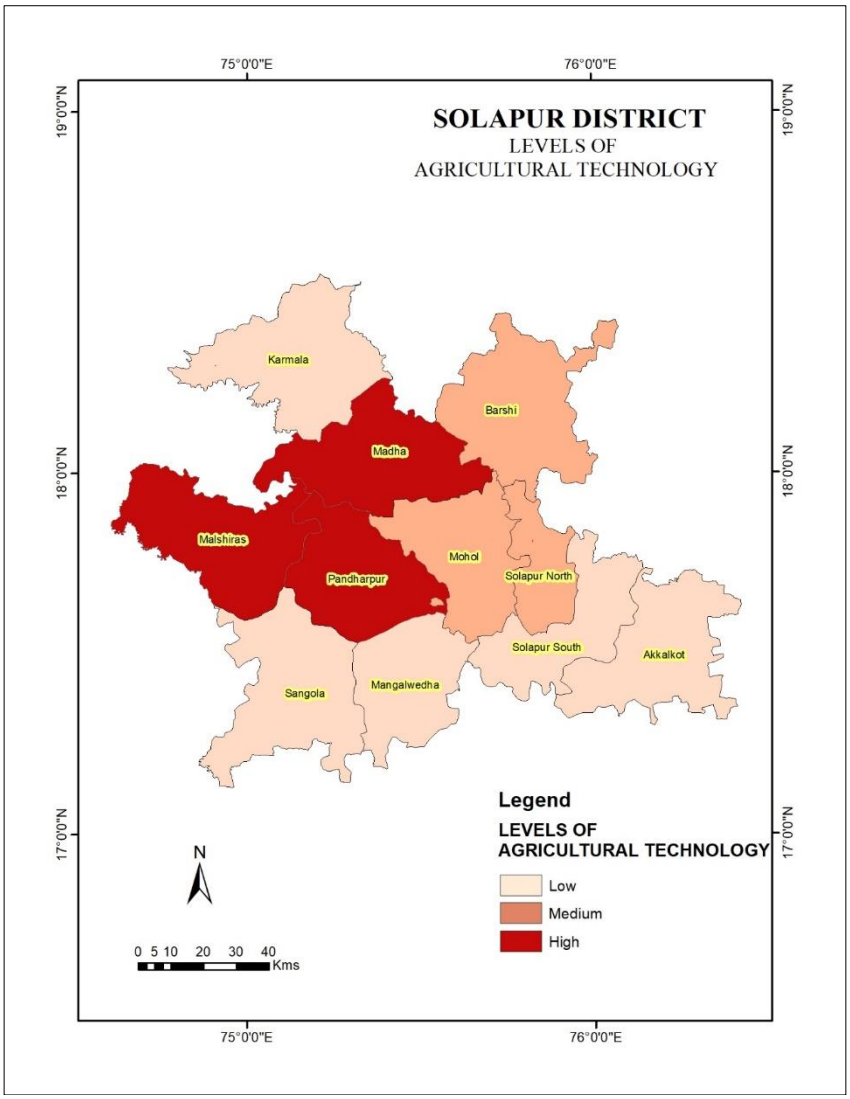


Fig.No.1 Levels of Agricultural Technology in Solapur district

Taluka-wise Levels of Agricultural Technology

Based on the composite index values (2010–11), the talukas of Solapur district can be broadly classified into three categories:

1. High Level of Agricultural Technology

Talukas such as **Malshiras (111.57), Pandharpur (110.1), Madha (107.27)** exhibit a relatively high level of agricultural technology. These talukas have better irrigation facilities, higher use of HYV seeds and fertilizers, greater mechanization and better access to institutional credit. Sugarcane cultivation and canal irrigation have significantly contributed to technological advancement in these areas.

2. Moderate Level of Agricultural Technology

Talukas like **Mohol (102.9), Barshi (99.00) and Solapur North (101.22**) fall under the moderate category. These areas show partial adoption of modern technology, limited irrigation coverage and moderate use of fertilizers and machinery. Agricultural development in these talukas largely depends on rainfall and well irrigation.

3. Low Level of Agricultural Technology

Talukas such as **Mangalwedha (90.44), South Solapur (88.90), Sangola (94.56) Karmala (94.60)** represent a low level of agricultural technology. Scarcity of water resources, frequent droughts, low capital investment and inadequate credit facilities restrict the adoption of modern agricultural practices in these regions.

Indicators of Agricultural Technology:

The level of agricultural technology in Solapur district can be assessed with the help of the following indicators:

1. **Irrigation Facilities** – Area under irrigation through canals, wells, tube wells and tanks.
2. **Use of High Yielding Variety (HYV) Seeds** – Adoption of improved seeds for major crops.
3. **Consumption of Chemical Fertilizers** – Use of nitrogen, phosphorus and potash fertilizers.
4. **Agricultural Implements and Machinery** – Availability and use of tractors, pump sets, harvesters and modern tools.
5. **Credit Facilities** – Access to institutional credit through banks and cooperative societies.

On the basis of these indicators, a composite index is generally prepared to classify talukas into different levels of agricultural technology.

Factors Affecting Technological Levels:

The spatial variation in agricultural technology within Solapur district is influenced by:

- Uneven distribution of irrigation facilities
- Rainfall variability and drought conditions
- Size of landholdings
- Economic condition of farmers
- Availability of institutional support and extension services

Conclusion:

The study reveals significant inter-taluka disparities in the level of agricultural technology in Solapur district. While a few talukas have achieved relatively higher technological advancement due to irrigation and commercial crops, a large part of the district still suffers from low technology adoption. To reduce regional imbalance, emphasis should be given on expanding irrigation facilities, strengthening credit institutions, promoting farm mechanization and encouraging the use of modern agricultural inputs in backward talukas. The spatial analysis of agricultural technology reveals that fact that there is an extensive tract of weaker zone located in the eastern part of the district. This problematic area has reduced of the advantages of agricultural technology. The attention has to be paid to overcome the problems by adopting favourable measures in planning during the years to come especially irrigation facilities.

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