A Geographical View On The Stages Of Agricultural Growth In Haryana (2020)

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Abstract
Haryana is a state renowned for its robust agricultural heritage, located in the northwestern region of India. This region was instrumental in the "Green Revolution" of India, serving as a significant launching pad for this transformative movement. The implementation of advanced seeds, increased use of fertilisers, and improved irrigation methods has resulted in a consistent rise in agricultural production and productivity throughout the state. In spite of the steady increase in agricultural production and productivity over the years, noticeable regional disparities have arisen throughout the state, as well as among various groups of farmers. In order to assess the regional differences in agricultural development, we have analysed district-level indicators and collected data on agricultural production and productivity from the statistical abstracts of Haryana. Through the utilisation of a composite index that incorporates both quantitative and qualitative parameters, we have derived multiple conclusions in order to meet the objectives of the study and attain the desired outcomes.

Key Words: Agricultural production, agricultural productivity, agricultural inputs, composite index, regional disparity.

INTRODUCTION:
Development is a complex and multifaceted phenomenon. It also covers ecological, socio-economic, and political aspects. Development is a crucial aspect of living organisms and the environment. Looking at the physical structure, development can be seen as a significant transformation that has occurred over time. India has an agrarian economy with a significant workforce engaged in agriculture and allied activities, distinguishing it from many other developing countries. Haryana is known for its significant progress in the agricultural sector. Since its formation in 1966, the state has witnessed steady growth and development. The green revolution in the state began with the implementation of advanced farming techniques, including the use of high-yielding seeds, increased application of composts and fertilisers, and reliable irrigation from multiple sources. These measures have significantly boosted agricultural production throughout the state. Despite the consistent growth and development in the agriculture sector over time, it has unfortunately resulted in significant regional disparities. The regional disparity is influenced by various physiographic, socio-economic, and institutional factors, which have had an impact over time. In addition to these factors, various social, economic, and institutional factors have contributed to significant variations in income among large, small, and marginal farmers, as well as regional disparities in agricultural production and productivity across the state.
To assess the agricultural development in the Haryana state, various qualitative and quantitative techniques were employed in certain areas of Haryana and Punjab states. There is a noticeable regional disparity in the levels of agricultural development in Punjab and Haryana, as indicated by the post-green revolution study. An attempt was made to establish a "cause-effect relationship" between certain parameters that were selected to delineate the different levels of agricultural development. In a similar vein, Hussain (1996) has considered nine qualitative and quantitative parameters to analyse the agricultural regionalization in specific areas of central India. Hussain utilised the "Weaver and Doi methods" to illustrate the crop combination and livestock regions, which helped to assess the agricultural level of the development. In addition, the "ranking coefficient method" was utilised to assess agricultural productivity and achieve the study's objectives. In this approach, the component areal units have been ranked and the arithmetic mean has been calculated. This is done based on the per hectare crop yield, which is used to measure the agricultural productivity of different regions in the country.
To emphasise the important role of agriculture in the Indian economy and its contribution to the Gross National Product, scholars from different fields have extensively discussed the subject to achieve their objectives. Other factors are related to the marketable surplus of food grains in a country, which is dependent on the demand and supply of agricultural produce. According to a reliable secondary source, the authors have thoroughly analysed the current state of agriculture in India and made predictions about its future. In this context, Sonia and Sarika have made an attempt to establish a cause-effect relationship for the areas of the country with low agricultural productivity. The agricultural scientists have proposed sustainable strategies to promote agricultural production and address food security, despite the increasing environmental degradation in promising agricultural areas. Based on data from FAO, there has been a significant increase in per capita agricultural output from 1960 to 2020. This growth can be attributed to the doubling of the world population during this period. The current challenge of achieving food security in less developed countries has become a pressing issue. For the

past 50 years, farmers from different backgrounds have significantly boosted their agricultural productivity worldwide through the implementation of both financial and non-financial resources, commonly known as the 'Green revolution'. The excessive use of chemical fertilisers and pesticides has rendered the cultivable land ecologically unviable, transforming it into a wasteland. All the areas of concern in agricultural practices need to be addressed based on the prevailing local physiographic conditions.

STATEMENT OF THE PROBLEM:

Haryana state is predominantly focused on agriculture, with a majority of its population directly involved in agricultural and allied activities. The agriculture sector alone makes a substantial contribution to the state's economy. The level of agriculture in the state has demonstrated consistent growth since its establishment, although there has been noticeable regional variation throughout the state. The agricultural production and productivity are influenced by various socio-economic, physiographical, and institutional factors. The regional variability in agricultural development in the state has been measured using the ranking method. A composite index of parameters such as cropping intensity, infrastructure, total yield, and productivity in monetary value has been used to indicate this variability.

THE OBJECTIVES OF THE STUDY:

1. The study focuses on examining the relationship between regional disparity and agricultural development levels in Haryana.

STUDY AREA:

The study area is Haryana state, which was established in November 1966. Haryana has witnessed a consistent increase in agricultural production and productivity across different areas. The green revolution in Haryana has led to steady growth, thanks to the implementation of HYV, irrigation, and increased use of compost and chemical fertilisers. Haryana, known for its strong agricultural industry, holds the top position in milk production nationwide. Haryana has achieved the top position in per capita milk consumption as well. The study of agriculture's growth and development is a result of the dedicated efforts made by the Agriculture University, Haryana government's department of agriculture, and CCCS HAU-sponsored Krishi Vigyana Kendera operating at the district levels. In addition to these factors, there are institutional factors that have contributed to the steady increase in agricultural production and productivity in different districts of Haryana. These include tenancy laws, the reverse tenancy system, land reforms, the PM Fasal Bima Yojana, and the presence of rural, regional, and commercial banks. Additionally, there is a notable range of physiographic conditions and variations in both monetary and non-monetary inputs that contribute to a significant regional disparity in agricultural production and productivity across Haryana. The calculated numerical values of agricultural productivity are determined by the following factors:

1. Intensity of cropping; 2. Infrastructure development; 3. Overall output; 4. Efficiency in terms of financial worth; 5. Mean ranking score.

Based on the parameters mentioned above, there are five categories that are classified according to the level of agricultural development. The five categories are: Very High, below 7, high 7-9, Medium 9-11, Low 11-13, and Very Low, above 13 composite score. Here is the tabulated distribution of levels of agricultural development by district.

DISTRICT WISE DISTRIBUTION OF LEVELS OF AGRICULTURAL DEVELOPMENT, HARYANA (2020)

Sr.No	Name of the Districts	District wise Cropping Intensity	No of the Infrastructural Development	Total yield	Productivity in terms of monetary value	Total	Average Score of Ranking
1.	Ambala	13	62	118	6	199	9.72
2.	Panchkula	18	118	122	13	271	13.33
3.	Yamunanagar	19	53	124	2	198	9.55
4.	Kurukshetra	8	44	89	4	145	7.42
5.	Kaithal	4	52	98	9	163	7.67
6.	Karnal	3	45	87	5	137	6.65
7.	Panipat	1	42	94	7	144	6.92
8.	Sonipat	12	53	88	11	164	7.87
9.	Rohtak	16	69	121	16	222	10.96
10.	Jhajjar	19	82	105	17	223	10.95
11.	Faridabad	13	62	107	11	193	9.32
12.	Gurugram	14	99	119	19	251	12.33
13.	Rewari	13	83	83	75	254	18.21
14.	Mahendergarh	8	103	108	20	239	11.82
15.	Bhiwani	20	108	124	21	273	13.42
16.	Charkhi Dadri	21	79	114	17	231	11.69
17.	Jind	5	76	79	12	172	8.42
18.	Hissar	6	68	76	87	237	8.87
19.	Fatehabad	5	67	56	8	136	6.55
20.	Sirsa	9	69	78	10	166	7.77
21.	Palwal	10	68	57	6	141	6.76
22.	Nuh (Mewat)	22	37	46	5	110	5.95

Source: Statistical Abstract of Haryana, 2020.

Keeping in view various determined factors; various agricultural level of development pattern which has categorized as follows:

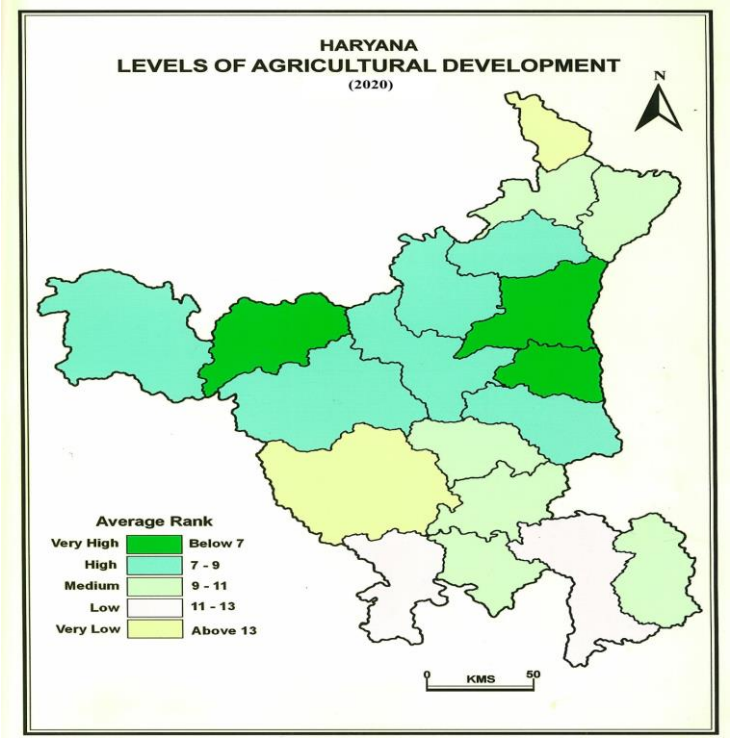
1. **Very High Level of Agricultural Development Districts** (**Below 7 average ranks**): These districts, including Panipat, Karnal, and Fatehabad, have achieved remarkable levels of agricultural development. These districts have a high cropping intensity and well-developed agricultural infrastructure. Assured irrigation, whether through groundwater or canals, is readily available in the rural areas. In addition to the various facilities and extension services provided by Krishi Yigyan Kendera, as well as periodic land reforms and other institutional factors, the agricultural productivity in the mentioned districts of Haryana has significantly increased.

2. High Level of Agricultural Development (**7- 9 average rank**): This category includes districts such as Sonipat, Kurukshetra, Kaithal, Hisar, and Sirsa, which have achieved significant agricultural development. The reason behind this is the well-developed infrastructure, reliable irrigation, and the farmers in Haryana who apply a high dose of bio and chemical fertilisers, resulting in high cropping intensity. In addition to the various facilities available, the Krishi Vigyan Kendera located in several areas of Haryana provides extension services. The region also benefits from good quality ground water, larger land holdings, and excellent transport connectivity. These factors have contributed to the high level of agricultural development in this area of the State. The implementation of new technology in dry-land areas, despite uncertain irrigation, has significantly increased agricultural production and productivity in promising pockets of the state (Hanumanta Rao, 1988).

3. Medium Level of Development of the Agriculture (**9-11 average rank**): The agricultural development districts of Rewari, Ambala, Yamuna Nagar, Rohtak, and Jhajjar are categorised as having a medium level of development. These districts have a well-developed agricultural infrastructure and a moderate level of cropping intensity. The irrigation system, whether through canals or groundwater, is adequately available in these areas. In addition to these factors, the Krishi Vigyan Kendera provides agricultural extension services to address the challenges of water logging and saline sub-surface water in the Jhajjar district. These efforts aim to maintain the agricultural development in this region at a medium range level, alongside the facilities available in these districts.

4. The districts which are having Low Level of Agricultural Development (11-13 average rank): This category focuses on areas such as Charkhi Dadri, Mahendergarh, and Gurugram districts, which have experienced limited agricultural development. The agricultural system in these districts of Southern Haryana faces several challenges that hinder its development. These include inadequate infrastructural facilities, insufficient irrigation facilities, low cropping intensity, and ineffective dry land farming practices by the farmers. As a result, the level of agricultural development in these districts remains low.

The districts which are having Very Low Agricultural Development (Above 13 average rank): Within this category, there are only three districts - Bhiwani, Nuh, and Panchkula - that have experienced limited agricultural development. The Panchkula district faces challenges such as inadequate infrastructural facilities, low cropping intensity, and limited irrigation. The undulating topography and reliance on dry land farming further contribute to the low level of agricultural development in these districts, which are located in Southern Haryana. In Mewat, a significant portion of the groundwater is saline and the soil is predominantly poor and sandy. Consequently, agricultural productivity in these districts has remained quite low. The study reveals that the diverse agricultural level in Haryana is influenced by various socio-economic, physiographic, and institutional factors. This has resulted in significant regional disparities, as depicted in the map below:



FINDINGS AND CONCLUSION:

Haryana is known for its advancements in agriculture, making it a leading state in India. The Haryana state has witnessed consistent growth in agricultural production and productivity over the years. The formation of Haryana played a significant role in initiating the 'green revolution'. The green revolution has been brought about by the use of HYV seeds, the application of high doses of bio and chemical fertilisers, and the implementation of assured irrigation from various sources. As a result, there has been a significant disparity in the agricultural development across the state. Despite the consistent growth in agriculture over different periods, farmers from various categories have faced significant income variability. To understand the diverse agricultural development in Haryana, specific qualitative and quantitative parameters have been chosen to highlight the regional differences. To achieve the desired outcome, extensive data on agricultural production and productivity has been gathered from multiple agricultural censuses and used to calculate the composite index. In addition, the study reveals that Haryana has been divided into five different categories based on the level of agricultural development: very high, high, medium, low, and very low. Considering all these categories, there is a noticeable regional disparity in the agricultural level of development across all the districts of Haryana. Therefore, it can be inferred that the differences in agricultural production and productivity across different areas of Haryana are influenced by a combination of socio-economic, physiographic, and institutional factors. All these areas of concern need to be addressed by implementing preventive and curative measures with the right strategies in an efficient manner, in order to minimise the increasing variability in the future years of the Haryana state. The increasing regional variability in agricultural production and productivity in Haryana state is a result of various institutional reforms and research & development efforts.

Introducing new high-yield and drought-resistant seed varieties to enhance agricultural productivity in the low-yielding areas of southern Haryana, especially under dry land conditions.

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