

# Agricultural Crop Pattern, Its Consequences and Problems of Chhatarpur District, Madhya Pradesh

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## Abstract:

Agriculture is the most significant for the Indian economy and the main source of livelihood of people. The agricultural sector is highly dependent on natural factors like rainfall and soil fertility, which vary across regions. This study tries to examine the crop pattern and its consequences on production and problems in the Chhatarpur district. The district is known for its high agricultural productivity, mainly due to the availability of fertile soil and adequate rainfall. Its economy can be easily grouped as an Agrarian economy. We analyse the crop pattern in the district and evaluate the impact of the same on agricultural production. This study finds that the predominant crops in the district are wheat, soybean, maize, paddy, mustard, lintel and gram(chickpea). The cultivation of these crops has significantly contributed to the growth of the agricultural sector in the district. However, the over-dependence on a few crops has also resulted in various challenges like low crop diversity, soil degradation, and pest infestations, which affect agriculture production. And also proposed some policies, and recommendations to address these challenges and promote sustainable agriculture in the district.

**Keywords:** Crop Pattern, Crop Productivity, Problems Faced by Farmers, Sustainable Agriculture.

## INTRODUCTION

Agriculture makes a vital role in the economy of India. It is base of the Indian economy. It employs more than 50% of the population. It is an essential source of food and raw materials, and contributing to over 15% of the country's GDP (Gross Domestic Product) (Planning Commission of India,2013). The state of Madhya Pradesh is known for its fertile land and is one of the largest producers of crops in the country.

Among the districts in Madhya Pradesh, Chhatarpur is known for its agricultural production. This study aims to examine the crop pattern in Chhatarpur district and its consequences on production. Agriculture is the primary occupation of a significant portion of the population in India, and it plays a crucial role in the country as well as state economic growth.

The Chhatarpur district is located in the central part of India and it's known for its high agricultural productivity. However, the district faces a number of challenges when it comes to crop

patterns, including the declining soil fertility, negative consequences of crop monoculture, climate change and irrigation problems.

### **Crop pattern in Chhatarpur district:**

Chhatarpur district is a predominantly agricultural region. Agriculture is the primary source of economy of this district. The district is benedictory with fertile soil and adequate rainfall, making it suitable for a wide range of crops. The predominant crops in the district are wheat, soybean and gram, maize, paddy, Jowar and pulses etc. Wheat is the most widely cultivated crop in the district, followed by soybean and gram(chickpea). Among these, wheat and soyabean are the most important crops terms of area and production. These crops are grown both as the main crop and as a subsidiary crop. The farmers in the district follow a crop rotation system, and the crop pattern is determined by the prevailing climatic conditions. The shift in crop patterns can be attributed to a number of factors, including the promoting the cultivation of these crops, and the growing demand for these crops in the market (Jaiswal, 2014).

### **Consequences of crop pattern on production:**

The crop pattern in the Chhatarpur district has significantly contributed to the growth of the agricultural sector in the district. The cultivation of wheat, soybean, and gram has increased the agricultural productivity and the income of the farmers. However, the over-dependence on a few crops has also resulted in various challenges. One of the main challenges is low crop diversity. The cultivation of the same crops repeatedly over a long period can lead to soil degradation, reduction in soil fertility, and nutrient depletion. The low diversity of crops also increases the risk of pest infestations, which can significantly reduce the yield of crops.

Another consequence of the crop pattern on production is the use of chemical fertilisers and pesticides. The farmers in the district use chemical fertilizers and pesticides to increase the yield of the crops. However, the exorbitant use of these chemicals can have aversive impact on the soil and the environment. The excessive use of chemical fertilizers can lead to soil degradation and a reduction in soil fertility. Intense use of pesticides can also harm the environment by polluting the water and air and created many dangerous diseases among population.

### **Consequences of Crop Monoculture:**

The shift towards monoculture of wheat and Soyabean in Chhatarpur district has had several negative consequences. One of the major problems associated with monoculture is the depletion of soil fertility. Continuous cultivation of one crop can lead to the depletion of essential nutrients from the soil, reducing the productivity of the land over time. This process can result in a decline in the quality and quantity of the crops produced, leading to lower yields and lower incomes for farmers (Cairns et al., 2018).

Another consequence of monoculture is the increased use of chemical fertilizers and pesticides. In order to maintain high yields, farmers often resort to the use of chemical inputs such as fertilizers and pesticides. This can lead to environmental pollution and degradation, affecting soil health, water quality, and human health. The resistance among pests and diseases, leading to even greater use of chemical over time (Gopalakrishnan et al, 2018).

## OBJECTIVES

The objectives of this study are as follows:

1. To identify the crop pattern in the Chhatarpur district and analysis its consequences on production.
2. To identify the factors contributing to the increase in productivity and problems faced by farmers.
3. To provide recommendations for addressing the problems faced by farmers in the district and improving agricultural productivity.

Achieving these above purposes contributes to a better understanding of the crop pattern, production and problems faced by farmers in the Chhatarpur district and provides insights into how to address the challenges faced by farmers in the district.

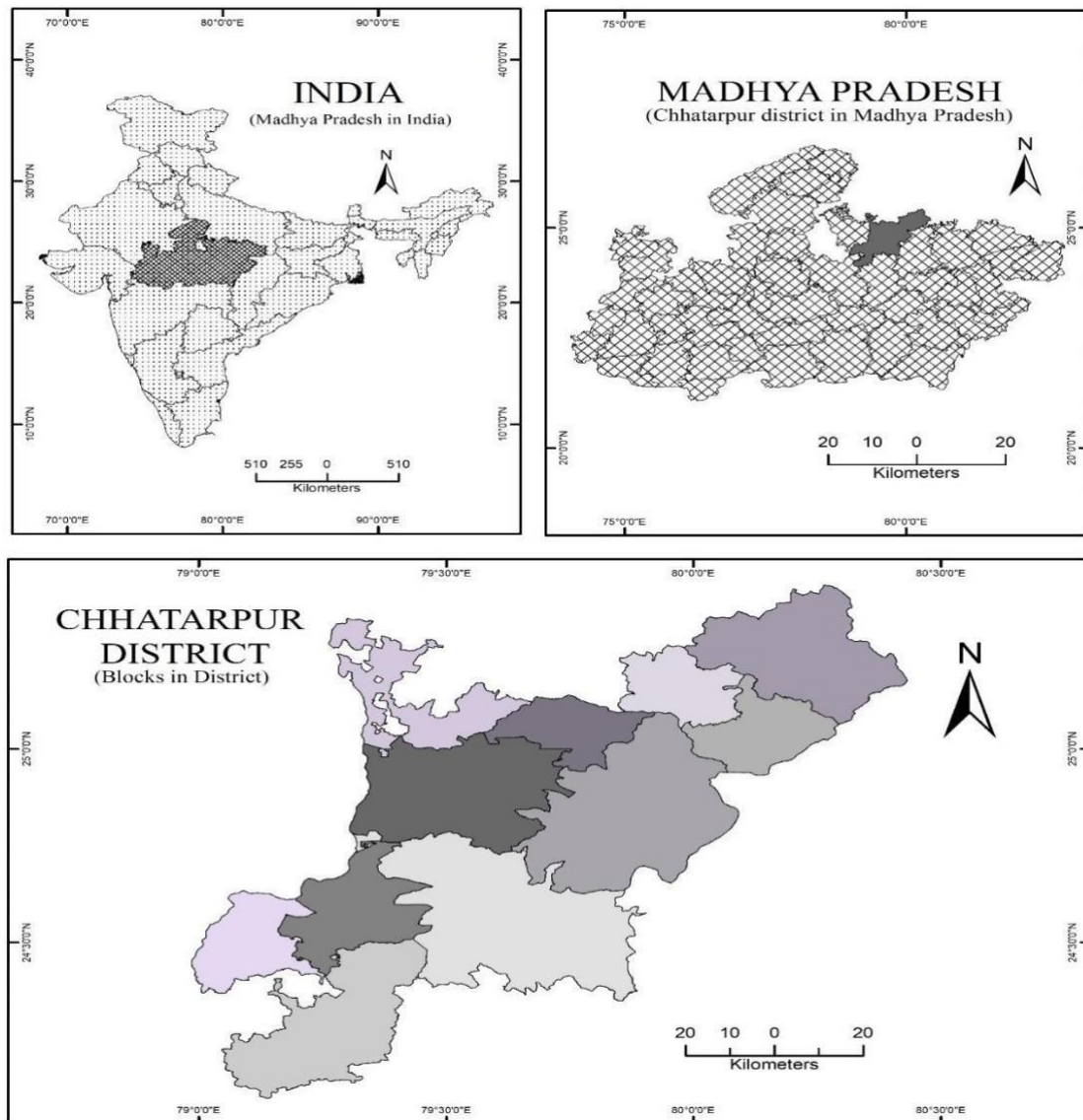
## STUDY AREA

Chhatarpur district is located in the northern part of the Indian state of Madhya Pradesh. It is the administrative headquarters of Chhatarpur district. This is spread over an area of 8687 square km. And it is situated in 24°06` to 20°20` north longitudes and 78°59` to 80°26` on east latitudes respectively. Chhatarpur district is bordered by the districts of Tikamgarh to the east, Damoh and Sagar to the west, Panna to the south, and Lalitpur district of Uttar Pradesh to the north.

The district as a whole lie in the upper part of Bundelkhand plateau. The most prominent parts of the district are those which are transverse by the Panna Hill range through the southern parts. From the plateau lowers down and covers into the alluvial plains in the north, particularly along the Ken and Dhasan. The district is primarily rural, with agriculture being the main source of livelihood for the majority of the population. This Chhatarpur district is characterised by black soil, which is considered ideal for the cultivation of crops such as wheat, soyabean, and the maize.

The district is also known for its several waterbodies, including the Ken River, which provides irrigation facilities to the farmers in this district. Main sources of irrigation are tube wells, canals, wells, ponds and stop dams. Ken, Urmil and Dhasan rivers are the three major river sources of irrigation in the district.

The district is divided into 11 tehsils and 8 development blocks, with Chhatarpur City being the district headquarters. The district has a population of approximately 1.8 million people, with a sex ratio of 899 females per 1000 males. The literacy rate in the district is 64.9 per cent.



**Fig.- Locational map of Chhatarpur district of Madhya Pradesh (Map is made by using QGIS)**

## DATA AND METHODOLOGY

In this study data is collected through both primary and secondary data sources. The primary data is collected through interviews with farmers and agricultural experts in this study area. The secondary data is collected from government reports and published research articles, journals and papers etc.

The study applied a descriptive research design to analyse the crop pattern and its consequences on production and identify the problems faced by farmers in this district. The data is analysed using statistical tools such as table to present the crop wise area and production.

**Methodology:** To collecting primary data sample of 30 farmers has been taken. After that taken interview of all farmers to ask some questions which is prepared before in a form of structured questionnaire. Focus group discussion method is also applied here in this area to collecting information about crop pattern, production and problems which is facing by farmers of this region during the farming or engaging in agricultural practices.

In this study qualitative analysis is also used to identify the problems faced by farmers in the district. The interviews with farmers and agricultural experts are transcribed, and the data analyse by using content analysis and given responses of selected farmers.

### LITERATURE REVIEW

Several study and research articles have been done on the crop pattern and agriculture production. Some of the key findings from these studies are discussed below:

1. 'Agriculture in Chhatarpur district: A case study of crop diversification' by Singh (2015). In this study investigates the impact of crop diversification on agriculture in Chhatarpur district. The author found that crop diversification has improved the economic conditions of farmers and has also increased the productivity of the land. However, there are concerns about the environmental impact of crop diversification, such as soil degradation and water scarcity.
2. A study by Singh et al. (2016) analysed the productivity of different crops in Chhatarpur district and found that the productivity of soyabean and maize had increased. Significantly over the years, while the productivity of wheat had remained relatively stagnant. The study also identified several factors contributing to the increase in productivity, such as the use of high yielding varieties, improved irrigation facilities and better pest management practices.
3. Bhagat and Singh (2017) in their study 'Assessment of soil fertility and crop pattern in Chhatarpur district of Madhya Pradesh' examines the relationship between soil fertility and crop pattern in this study region of Chhatarpur district. The authors found that the shift towards cash crops has led to a decline in soil fertility, as these crops require more fertilizers and irrigation facilities.
4. In this present study Patel et al. (2018) try to analysed the crop pattern and found that the major crops grown in district were wheat, soyabean, maize had increased over the years, while the area under wheat cultivation had decreased. The authors found that climate change has led to a shift towards drought-resistant crops, such as pulses and oilseeds. However, there are concerns about the sustainability of this shift, as it may lead to a decline in the cultivation of traditional crops.
5. Singh and Jain (2018) in their study which title is 'Analysis of crop pattern and its impact on farm income in Chhatarpur district', examines the relationship between crop pattern and farm income in Chhatarpur district. The authors found that a shift towards cash crops has resulted higher income of farmers. However, this is also led to Decline in the cultivation of traditional crops, which has implications for food security in the study region.
6. In this study Yadav et al. (2018) analysed the problems faced by farmers and found that the major challenges were related to in adequate irrigation facilities, low soil fertility, and inadequate access to credit. The study also found that farmers in the Chhatarpur district faced challenges related to marketing their produce, such as lack of proper storage facilities and inadequate market infrastructure.
7. Agrawal and Shrivastava (2018) in their study, 'Assessment of crop pattern and its impact on Agriculture

productivity in Chhatarpur district of Madhya Pradesh' examines the impact of crop pattern on agricultural productivity in Chhatarpur district. The authors found that a shift towards cash crops, such as soyabean and pulses, has resulted in higher yields and income for farmers, However, this has also led to a decline in the cultivation of traditional crops, such as wheat and millet.

8. Dwivedi and et al. (2019) conducted study on 'Assessment of crop Yield and Soil fertility status in Chhatarpur district of Madhya Pradesh', found that the excessive use of chemical fertilizers and pesticides has led to the decline in soil fertility and increased soil erosion in the district. The study recommends the adoption of organic farming practices to improve soil health and reduce environmental pollution.
9. Pandey et al. (2020) in their present study examine the impact of climate change on agriculture in Chhatarpur district and found that the district was vulnerable to climate change induced water scarcity, which could significantly impact agricultural production. The study recommended the adoption of climate resilient agricultural practices, such as conservation agriculture and crop cultivation.
10. Sahu and Mishra (2020) in their study which titled 'Assessment of crop Diversification and impacts on farmers' livelihood in Chhatarpur district', found that the adoption of crop diversification has led to improved farmers' incomes and crop pattern. But crop diversification has also declined the cultivation of traditional crops or food grains as wheat, millets etc. and another hand also led to increase cultivation of cash crops which largely helpful to improved or generate more incomes of farmers.

Overall, the literature suggests that while crop pattern district has been shifting towards Soyabean and Maize cultivation, the productivity of these crops, has increased significantly over the years. However, farmers in the district face several challenges related to inadequate irrigation facilities, low soil fertility, lack of transportation facilities and marketing their product. Climate changes also poses a significant threat to agricultural production in the district, highlighting the need for climate resilient agricultural practices.

## RESULT AND DISCUSSION

After collecting the data through both primary and secondary data sources get some results and found conclusion that crop pattern in Chhatarpur district has been shifting towards soyabean and maize cultivation. In this study region as a primary source collecting information or purpose relevance data by selecting 30 samples of farmers. After selecting sample interview and questionnaire methods are applied and found some conclusion that farmers in the district face several challenges related to inadequate irrigation facilities, low soil fertility, and inadequate market infrastructure.

However, the productivity of crops such as soyabean and maize has increased significantly over the years, this is only because to the adoption of high – yielding varieties and better management practices. To improve agricultural productivity in the district. It is necessary to address the challenges faced by farmers and promote the adoption of better management practices and climate- resilient agriculture.

### Crop Pattern and Consequences on Production

The crop pattern in Chhatarpur district is dominated by the cultivation of wheat, soyabean, maize and gram. The area under soyabean and maize cultivation has increased over the years, while the area under wheat cultivation has decreased. This shift in crop pattern can be attributed to several factors, such as changes in market demand, availability of seeds and inputs, and government policies.

The consequences of this shift in crop pattern on production have been mixed. On the one hand, the productivity of soyabean and maize has increased significantly over the year. By use of improved irrigation facilities, high yielding varieties, better pesticides management practices. On the other hand, the productivity of wheat has remained relatively stagnant, which can be attribute to several factors, such as inadequate access to credit, low soil fertility, and inadequate irrigation facilities.

Crop wise Production in Chhatarpur district. The table below shows the area and production of major crops in Chhatarpur district for the year 2019-2020, according to the Madhya Pradesh State Agriculture Marketing Board.

**Table 1: crop wise area and production in Chhatarpur district**

Crop	Area (hectares)	Production(tonnes)
Wheat	172,312	361,104
Soyabean	154,701	263,074
Gram	83,774	43,187
Lentil	6,834	2,330
Mustard	1,398	1,383

**(Data Source: Madhya Pradesh State Agriculture Marketing Board, year 2019-20)**

### **Consequences on Production:**

The crop pattern in Chhatarpur district has a significant impact on the production of crops. The adoption of new varieties and improved farming practices has led to a important increase in the productivity of crops. The use of high- yielding varieties of wheat and better irrigation facilities has led to a significant increase in wheat production. The productivity of gram, maize, soyabean and paddy has also increased due to the adoption of modern technologies, instruments and newvarieties and better farming practices.

### **Problems faced by farmers in this study region:**

Farmers in Chhatarpur district face several challenges in the cultivation of crops. These challenges/problems include inadequate irrigation facilities, low soil fertility, inadequate access to credit, and inadequate market infrastructure. Farmers also face challenges related to marketing their produce, such as lack of proper storage facilities and inadequate market infrastructure. These challenges have a significant impact on agricultural production in the district and need to be addressed.

1. **Lack of irrigation facilities:** Despite the availability of canal irrigation, farmers in Chhatarpur district face a lack of irrigation facilities. This leads to a shortage of water, affecting the growth and

productivity of crops.

2. **Lack of Access to credit:** Farmers in Chhatarpur district face a lack of access to credit, making it difficult for them to invest in better farming practices and equipment.
3. **Soil Erosion:** The district is prone to soil erosion due to the hilly terrain and heavy rainfall. This leads to a loss of fertile soil, affecting crop growth and productivity.
4. **Inadequate storage facilities:** The lack of adequate storage facilities leads to post-harvest losses and affects the income of farmers.
5. **Dependence on Monsoon:** The agriculture in the district is heavily dependent on monsoon rains, and any delay or deficiency in rainfall affects growth and productivity of crop and its pattern.
6. **Low prices of crops:** Farmers in Chhatarpur district face low prices for their crops, affecting their income and livelihood.
7. **Lack of Market facilities:** There are no proper market facilities provide to farmers for selling and purchasing their products in easy way. Mainly mediator take advantages especially rural farmers in Chhatarpur district due to unavailability to easy and proper market facilities.

## RECOMMENDATIONS

Recommendations are based on the findings of the study; the following recommendations are suggested to improve agricultural productivity in this Chhatarpur district:

1. Provide adequate access to credit to farmers to ensure that they have the resources essential to invest in their crops.
2. Government of district should take initiatives to increase irrigation facilities for farmers by making dams, canal etc. and provide better irrigation facilities to farmers to ensure adequate water supply for crops.
3. Improve soil fertility through the use of organic fertilizers and better soil management practices.
4. Promote the use of high-yielding varieties and climate-resilient varieties of crops to increase productivity.
5. Develop better market infrastructure, including proper storage facilities and market linkages, to enable farmers to market their produce effectively

## REFERENCES

1. Singh, A. K., Singh, R.K., and Tiwari, S.P. (2016). Productivity and production potential of major crops in Chhatarpur district of Madhya Pradesh. *Journal of Applied and Natural Science*, 8(4), 1989-1992.
2. Patel, S., Joshi, M., and Patel, M. (2018). Crop pattern analysis of Chhatarpur district of Madhya Pradesh. *International journal of Agriculture, Environment and Biotechnology*, 11(4), 629-634.
3. Yadav, S.K., Singh, S.K., and Chakraborty, S. (2018). Constraints faced by farmers in adoption of modern agricultural practices in Chhatarpur district of Madhya Pradesh. *Indian journal of Hill farming*, 31(2), 122-127.
4. Kumar, R., Kumar, S., and Kumar, D. (2017). Analysis of cropping pattern and crop productivity in Chhatarpur district of Madhya Pradesh. *Indian journal of Applied Research*, 7(11), 68-70.
5. Singh, R., Singh, M. K., and Sharma, D. K. (2015). Analysis of production and productivity of major crops in Chhatarpur district of Madhya Pradesh. *Indian journal of Economics and Development*, 11(1), 261-266.



6. Pandey, V. K., Singh, N. K., and Singh, A. (2020). Climate change impact on agriculture in Chhatarpur district of Madhya Pradesh: A case study. *International journal of Agriculture, Environment and Biotechnology*, 13(3), 517-523.
7. Sharma, A. K., Singh, R. K., and Tiwari, S. P. (2015). Impact of watershed development programme on agriculture and livelihood of farmers in Chhatarpur district of Madhya Pradesh. *Indian journal of Agricultural Research*, 49(1), 48-52.
8. Goyal, R. K., and Saxena, R. (2019). Agricultural productivity and its determinants in Chhatarpur district of Madhya Pradesh. *Indian journal of Economics and Development*, 15(1), 105- 111.
9. Singh, P. K., Singh, B., and Tripathi, R. K. (2017). Changing cropping pattern in Bundelkhand region of Madhya Pradesh: A Spatio-temporal analysis. *Indian journal of agricultural Research* 51(5), 452-457.
10. Singh, N., & Prasad, R. (2017). Changing Crop Pattern and its impact on Environment and Economy: A Case Study of Chhatarpur District of Madhya Pradesh. *International Journal of Agriculture Sciences*, 9(32), 3644-3649.
11. Madhya Pradesh State Agriculture Marketing Board: <https://www.mpmandiboard.gov.in/>
12. District Statistical Handbook, Chhatarpur: <http://mospi.nic.in/sites/default/files/publication reports/>
13. <https://agricoop.nic.in>
14. <https://www.nrddp.org>
15. <http://aiggpa.mp.gov.in>
16. <http://cgwb.gov.in>
17. <https://kvkchhatarpurjnkvv.nic.in>
18. <http://jnkvv.org>
19. <https://www.sharmaacademy.com>
20. <https://abhijeetgautam.wordpress.com>
21. <https://dpd.gov.in>
22. <https://madhyapradesh.pscnotes.com>
23. <https://eands.dacnet.nic.in>