



Quick Response Code:



Website: <https://wgges.us>



**Creative Commons (CC BY-NC-SA 4.0):**

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License, which allows others to remix, tweak, and build upon the work noncommercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Manuscript ID:  
IJWGAFES-2025-020905

DOI: 10.5281/zenodo.17759089

DOI Link:  
<https://doi.org/10.5281/zenodo.17759089>

Volume: 2

Issue: 9

September

Year: 2025

E-ISSN: 3066-1552

Submitted: 05 Aug. 2025

Revised: 10 Aug. 2025

Accepted: 06 Sept. 2025

Published: 30 Sept. 2025

<sup>1</sup>Associate Professor, Shri. Raosaheb Ramrao Patil Mahavidyalaya, Savlaj, Tal. Tasgaon Dist. Sangli (MH)  
Email: [lagad1980@gmail.com](mailto:lagad1980@gmail.com)

<sup>2</sup>Ph.D., Research Student, K.J. Sommayya College, Kopergaon

**Address for correspondence:**

Dr. Santosh Jabaji Lagad  
Associate Professor, Shri. Raosaheb Ramrao Patil Mahavidyalaya, Savlaj, Tal. Tasgaon Dist. Sangli (MH)  
Email: [lagad1980@gmail.com](mailto:lagad1980@gmail.com)

**How to cite this article:**

Lagad, S. J., & Sathe, B. B. (2025). Changing Land use and cropping pattern of Ahilyanagar District (M.S.): A Geographical Analysis. *International Journal of World Geology, Geography, Agriculture, Forestry and Environment Sciences*, 2(9), 22–26.  
<https://doi.org/10.5281/zenodo.17759089>

# Changing Land use and cropping pattern of Ahilyanagar District (M.S.): A Geographical Analysis

Dr. Santosh Jabaji Lagad<sup>1</sup>, Sathe Babasaheb Bhaskar<sup>2</sup>

## Abstract

Farming is a foundation of all economic activity in a developing world. Farming in India transforming from time to time as advancement in technical aspects. This transformation took place in land use and cropping pattern. Transformation in land use and cropping pattern is the result of factors which affect the same. Present study area is Ahilyanagar district, which receive less rainfall due to rain shadow zone. so it affect the land use and cropping pattern. According to available information, common land uses i.e. agricultural and non-agricultural shows that area under forest and fallow land decreasing, and increasing in net sown area. The transformation in cropping pattern is shows that the tendency of farmers changing towards profitable farming. Agriculture forms the backbone of economic activity in developing nations like India, where transformations in land use and cropping patterns reflect changing socio-economic and environmental conditions. The present study analyzes the spatial and temporal changes in the land use and cropping pattern of Ahilyanagar District (Maharashtra) during the period 1990–91 to 2023–24, based on secondary data extracted from district socio-economic abstracts. The findings reveal a decline in forest cover and cultivable waste land, accompanied by a steady increase in net sown area and non-agricultural land, indicating pressure from population growth and industrial expansion.

**Keywords:** Land use, Cropping pattern, Spatial Change, Agriculture, Ahilyanagar District

## Introduction

Agriculture is not only growing of crops but also rearing of animals (Agriculture Geography, Majid Husain) India is basically an agricultural oriented country, the role of agriculture is very vast as it is the most important enterprise in Indian economy. Agricultural geography studies land use and cropping. Cropping pattern is the ratio of area under different crops at a specific place and time. The cropping patterns of a region are closely influenced by the geo-climatic, socio-economic, historical and political factors (Hussain, M. 1996) patterns of crop land use of a region are manifestation of combined influence of physical and human environment. Their effects on both landscape and land use studies are likely to be far reaching (Coppock, 1968). Ahilyanagar district is known as the draught prone region. Present studies focusing upon the land use and cropping pattern in Ahilyanagar district. The relationship between cropping pattern and responsible geographical condition for it, is explaining in the present paper.

## Objective:

To investigate changes in general land use and cropping pattern during study period in Ahilyanagar District.

## Data base and Methodology

The current study of investigation is based on published source of information. Published information extract from District socio economic Abstract 1990-91 and 2023-24 The study of land use and cropping pattern is based on quantitative information. Spatial and Temporal changes shown by pie diagram of 10 crops for the period -1990-91 and 2023-24.

## Study area:

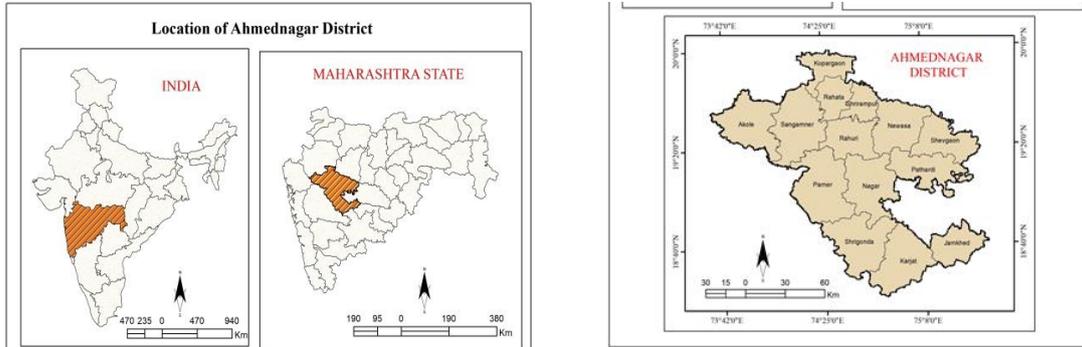
Ahilyanagar is the largest district in Maharashtra State having geographical area of 17418Sq.k.m. It consist of fourteen tehsil with one thousand five hundred eighty one villages with one thousand three hundred eight grampanchayat.

The absolute location of the study area is 180, 2'' to 190.9'' North latitude and 730.9'' to 750.5'' East longitude, and relative location; it surrounded by Nashik district, Chatrapati Sambhajnagar, Beed, Solapur and Osmanabad district.

The region with irregular shape and has 200 kilometers a length and width of 210 kilometers on 17,048 square kilometers area and having population of 4040642 persons in 2011 accounting 5.5 percent area of Maharashtra state.

In study region density was 237 persons per sq. kilometer. The sex ratio was 908 females per thousand males; literacy was 78.3 percent accounting urban literacy (84.7 percent) and rural literacy (72.9 percent). The growth of population from 1991 to 2001 was 19.80 percent. The study region has 46.48 percent cultivators, 22.28 percent agricultural labours and remaining 31.24 percent workers engaged other than agriculture sector. According to physiographical set up, study region is divided into three regions, namely, Sahyadri hill ranges, namely, Harishchandragad, Kalsubai, Adula, and Baleshwar Bhima and Godavar river flowing in the study region. Climate of study area is semi-arid 578.8 mm. average rainfall. The soil of study region consist of medium black to deep black deep black soil, grey to red. 71.10 percent area is found under cultivation and irrigation accounts 32.40 percent. The major crops, namely, jowar, wheat, bajra, maize, sugarcane, cotton, pulses and oilseeds and recently horticultural crops are cultivated in study region.

**Location map of the study area**



**Result and Discussion:**

The types of land use as follow

1. Forest Area
2. Non Agricultural Area.
3. Other than fallow
4. Fallow Land
5. Net Sown Area

Changing land use pattern showing in figure no. 1 and 2

**1. Temporal changes in general land use: 1990-91 to 2023-24**

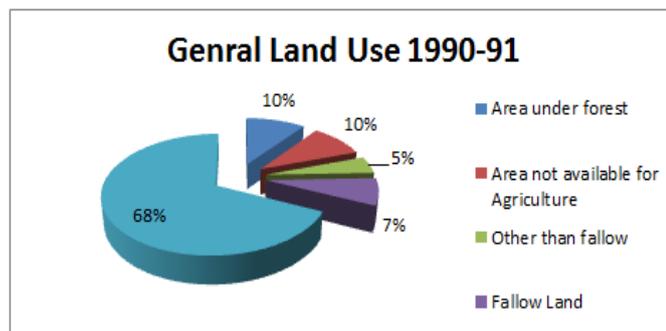
Changing land use of is the reflection of geographical factors. Land use is the dynamic aspect of any region on the earth surface. Changing land use of Ahilyanagar district presented in Table No. 1 and Figure no.1, 2

**Table No. 1-General Land Use**

Sr. No.	Type of land use	1990-91		2023-24		Change in %
		Area in '00'Ha.	Area in %	Area in '00'Ha.	Area in %	
1	Forest Area	1756	10.32	1316	7.73	-2.59
2	Non Agriculture	1607	09.44	1684	9.89	+0.45
3	Other than fallow	798	04.69	339	2.00	-2.59
4	Fallow Land	1256	07.38	1301	7.64	+0.26
5	Net Sown Area	11603	68.17	12380	72.74	+4.57
6	<b>Total Geographical Area</b>	<b>17020</b>	<b>100</b>	<b>17020</b>	<b>100</b>	<b>00</b>

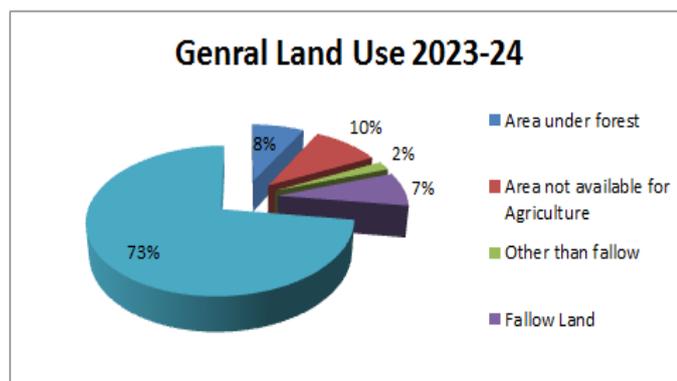
(Source: Socio-Economic Review and Statistical Abstract of Ahilyanagar District- 1991-92, 2023-24.)

**Figure No. 1**



( Prepared on the basis of seconadry data by researcher)

Figure No. 2



( Prepared on the basis of seconadry data by researcher)

### 1. Forest Area

Forest area is known as natural vegetation covered by flora and fauna. The study shows that there is a rapidly declining in the forest area. As per standard 33 percent area needed under forest cover to maintain environmental balance but in the district in 1990-91 there is only 10 percent area under forest which was further decreasing by 2.59 percent. This indicates alarming imbalance of environmental condition. Less green cover less rainfall because evapotranspiration through green leaves. Green leaves of plants provide additional source of humidity which is helpful to occurs rainfall.

### 2. Non Agricultural Area

Non-agricultural area defines that land is not used for agricultural pupose. Such land is used for road and railway transportation, industrialization, home etc. During the study period there is showing difference in non-agricultural area. The land under non-agricultural area in 1990-91 was 160700 hectares and it was 9.44 % of the total study region. In 2023-24 it was 168400 hectare which is 9.89 percent. It was increased by 0.45 percent. This indicates expansion of settlement, industrialisation, transport etc., due to increasing population.

### 3. Other than fallow

Other than fallow land define as cultivable waste land. In 1990-91; Other tan fallow land in study region has 79800 hectares and it was 4.69 %. In 2023-24; 33900 hectares which is 2%. It was decreased by 2.69 %. This indicates the area under fallow land comes under utilisation. It comes under cultivation land because of rural dwellers scattered in rural area because of land fragmentation. So land other than fallow was decreased.

### 4. Fallow Land

It defined as permanent, current and other fallow land. The land kept as barren or grazing or bush and trees

In 1990-91 it was 125600 hectares which was 7.38% and it was increased up to 130100 hectares which is 7.61 %. During study period from 1990-91 to 2023-24 it was slightly increased by 0.26%. Increasing in the proportion of fallow land is due to the purchase of land by the investors which are businessmen in city area. They are not doing agriculture so it becomes fallow land. Most of such fallow land found along the highways and roads.

### 5. Net Sown Area

The net sown area defines as land is used for actual growing of crops. The change in net sown area from 1990-91 to 2023-24 is presented in table no 1. In 1990-91 the net sown area was 1160300 hectares which was 68.17 %. In 2023-24 it was 12380 hundred hectares which was nearly about 73 %. In the study period from 1990-91 to 2023-24, it was increased by 4.57 %.

Investigation of general or common land use clearly shows that there is negative changes in forest area, positive changes shows for other than fallow; non-agricultural and net sown area.

### 2. Cropping Pattern of Ahilyanagar District-1990-91 to 2023-24

The study of cropping pattern is based on quantitative information obtained from Socio-Economic Review and Statistical Abstract of Ahilyanagar District- 1991-92 and 2023-24. Here with data extracted regarding area under major crops grown in the district. The major crops grown in district were Jowar (Sorghum), Bajara, wheat, pulses, sugarcane and oilseeds. It must be noted that the Jowar (Sorghum) is the traditionally dominant crop in the drought prone district like Ahilyanagar. But it losing its status, their share is decresing.

In 1990-91, Jowar occupied 41.35% area, it was 1249841 hectares. This is major cereal crop in district. Bajra is the second ranking cereal crop in the district. It is grown on 25.79 % area. Wheat grown on 5.47 % area while cotton occupied 0.14% area to total cropped area. Oilseeds having a share of 5.31 percent. Sugarcane is cash crop having 6.34 percent area.

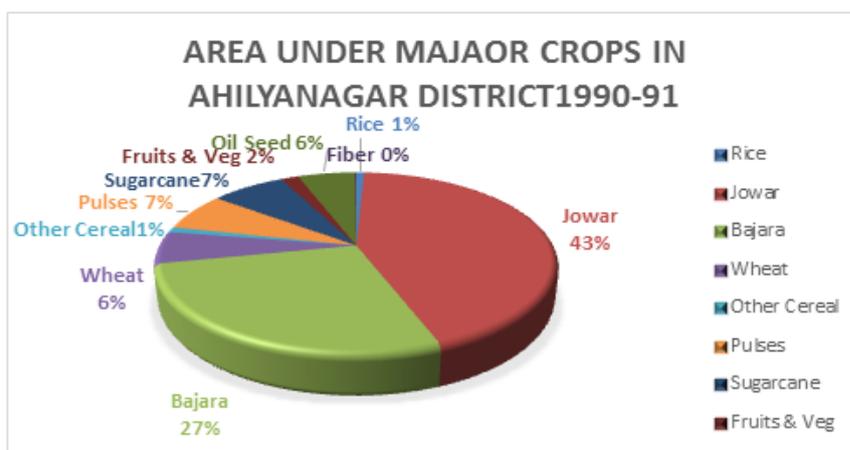
During the year 23-24 food crops namely Rice, and Wheat occupied nearly about 1percent area to total gross cropped area, which is 136296.25 hectares, Jowar and bajra holds 15.53 percent area which is 281391.4 hectares while cash crops namely, cotton, oilseed and sugarcane occupied nearly about 27.38% area to total gross cropped area. Fruits and vegetables occupied 13.94% in the district.

Table No. 4.2- Area under Major Crops and its Changes -1990-91 to 2023-24

Sr. No.	Major Crops	Year And Area In Percentage		Change In Percentage
		1990-91	2023-24	
1	Rice	0.76	0.95	0.19
2	Jowar	43.46	10.69	-32.77
3	Bajara	27.52	4.84	-22.68
4	Wheat	5.75	6.57	0.82
5	Other Cereal	0.98	22.10	21.12
6	Pulses	6.83	13.52	6.69
7	Sugarcane	7.22	7.87	0.65
8	Fruits & Veg	1.73	13.94	12.21
9	Oil Seed	5.58	11.05	5.47
10	Fiber	0.12	8.46	8.34

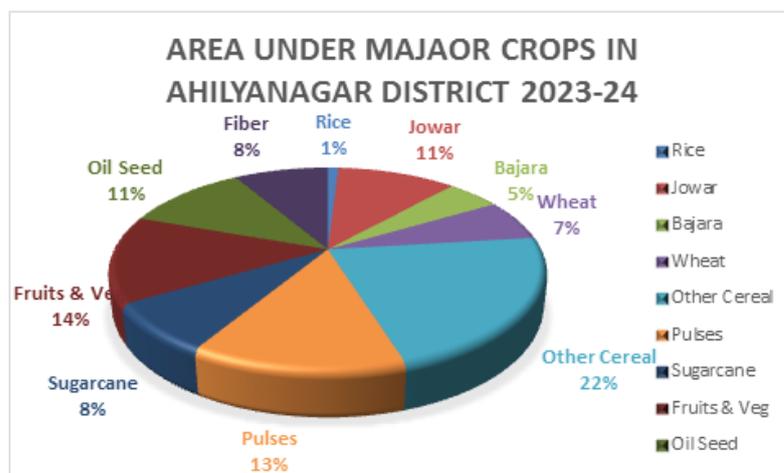
(Source: Socio-economic abstract, Ahilyanagar district (1990-91 & 2024-25))

Fig No. 3



( Prepared on the basis of seconadry data by researcher)

Fig No. 4



( Prepared on the basis of seconadry data by researcher)

**Fig No. 5**

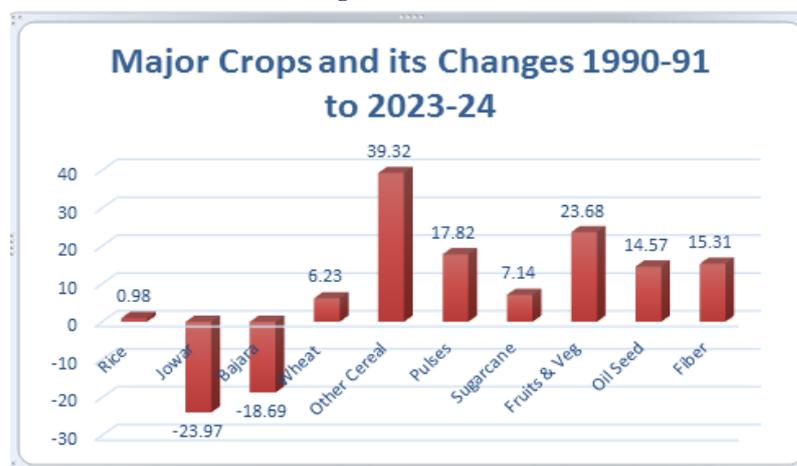


Figure number 5 shows the temporal changes in major crops in their areal strength in the study area. Area under Jowar and Bajara decreased by about 43% in 2023-24 compared to 1990-91. Other crops registered positive change in 2023-24. The change comes because of geographical factors like distribution and amount of precipitation, irrigation, loan facility and hybrid seeds and selling price of agricultural goods, chemical and domestic fertilizer, labor cost and availability of labor etc. The change in area under crops registered significant positive change in Other cereals include maize as cash crop (39.32 percent), Fruits and vegetables (23.68 percent), pulses (17.82 percent), fiber (15.31 percent), wheat (6.23 percent) and pulses (2.68) and Rice increasing only 1 percent during study period.

#### **Conclusion:**

Changing land use and cropping patterns is a dynamic process as the world changes dynamically. In the study area it is noted that during the study period the general land use changes negatively in forest area and decreases in fallow land. Increasing population decreasing both areas which result in increasing in the net sown area and non-agricultural (NA) area to fulfill the needs of increasing population.

Changing cropping pattern of the study area during the study period clearly indicates that farmers of the study area are getting more returns from agriculture. Positive changes registered in cash crops like cotton, sugarcane, onion, oilseeds like soyabean etc. On the other hand, traditional food crops like Jowar and Bajara lose their position in the study area due to low income.

#### **Acknowledgment**

I would like to express gratitude to my Ph.D. research guide Dr. Santosh J. Lagad and Ph.D. Research center, Department of Geography of K. J. Somayya College, Kopergaon. I am also giving thanks to Dr. Thokal A.T. for her guidance and kind support during the research paper publication and also thanks to Editor and supporting staff of International Journal of world Geology, Geography, Agriculture, forestry and Environment Sciences for giving the guideline and support for publication.

#### **Financial support and sponsorship**

Nil.

#### **Conflicts of interest**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

#### **References:**

1. Coppock J. T., "Crop livestock and enterprise combination in England and Wales." *Economic Geography* 40, 1964 pp. 65-81.
2. Majid Husain (2002) *Agriculture Geography*, pp 229-231
3. Majid Husain (1992) crop combination regions in Uttar Pradesh. *A study of methodology*, vol, 44, no. 2, pp. 143
4. Sing Jasbir and Dhillon S.S. (1984): *Agriculture Geography*, Tata Mc. Graw-Hill publishing company, New Delhi.
5. *Socio-Economic Abstract of Ahmednagar district (1991)*
6. *Socio-Economic Abstract of Ahmednagar district (2016)*
7. Weaver J. C. (1974), "Crop Combination Regions in the Middle West". *The Geographical Review* 44, (1954) pp. 175 and 175-200.
8. *Social and Economic Review 2024*
9. *Social and Economic Review 1991*
10. Thokal A.V. *Geographical Analysis of Changing Land use and cropping pattern: A Case Study of Ahmednagar District (M.S.)*