

# A Geographical Study of Agricultural Land Use Efficiency in Jabalpur District (M.P.)

## Abstract

In this paper an attempt has been made to measure the level of agricultural land use efficiency in Jabalpur district. Jasbir Singh's method of land use efficiency is employed to measure the land use efficiency. Jabalpur district is chosen as unit of study. The variations in spatial pattern of land use efficiency are examined for the years 2001 and 2015.

**Keywords:** Land Use Efficiency, Cropping Pattern, Crop Intensity

## Introduction

Agricultural geography is one of the most highly developed branches of economic geography. Now a day's many geographers and economists give attention to study of land use efficiency in India and abroad. Agricultural productivity is largely depending upon the land use efficiency, so it plays an important role in the study of agricultural geography. Land use efficiency is defined as the extent to which the net area sown has been cropped or resown.

The total cropped area or gross area sown as percentage to net area sown gives a measure of land use efficiency, which really means the intensity of cropping.

Agricultural productivity is largely depending upon the land use efficiency. It is generally believed that the land use efficiency reflects itself in the yield and the yield figure has been used as the quantitative basis for the measurement of agricultural efficiency. Land use efficiency is largely depends upon fertility of soil, technological development, availability of irrigational facilities and socio-economic condition of farmers in the study region.

## Review of Literature

The performance of cultivable land is often represented by Land use efficiency. It is generally believed that the efficiency of agricultural reflects itself in the yield and so the yield figure has been used as the quantitative basis for the measurement of agricultural efficiency. The efficiency of land use in a study region can be determined by the interaction of physical, socio-economic and technological factors. A combination of natural and manmade factors makes land use efficiency is a complex device due to various manmade factors.

D.C.Gatade reported the concept of land use efficiency measurement for ratanagiri district maharashtra. The study showed the variations in spatial pattern of land use efficiency which is examined for the years 1982-87 and 1997-2002. He also proposed plans for sustainable agricultural development in the study area.

M.G.Kenall (1939) was the first to develop a measure for agriculture land use efficiency on the basis of output per unit area and he devised the system of ranking co-efficient method. Sapre and Deshpande (1964) suggested an equation to measure land use efficiency to multiplying and ranking of crops with that of land share divided by the total of crop land share. Bhatia (1967), Gupta (1968) and M. Ali (1972) among Indian Geographers paid attention to the study of land use efficiency in India.

Jasbir Singh (1972) explained land use efficiency as "The extent to which the net sown area cropped or resown." Here the total area cropped as a percentage of the net sown and it indicates the intensity of cropping.

S. B. Zodage et al. reported the importance of agricultural land use efficiency and examined the impact of gross cropped area in the satara district. Land use efficiency calculating method is used for measurement of land use efficiency to the collected information of Socio-economic abstract, 2011 in study area. It has been observed that the spatial pattern of gross

## Mahima Kushwaha

Research Scholar,  
Deptt.of Geography,  
Rani Durgavati University,  
Jabalpur, M.P.

## Kamlesh Mishra

Professor & Head,  
Deptt.of Geography &  
Director UGC, Acadmic Staff  
College,  
Rani Durgavati University,  
Jabalpur, M.P.

cropped area and net sown area widely unequal from tahsil wise in the satara district.

Pawar S.N. et al. (2013) showed the high land use efficiency is found in developed tehsil and low land use efficiency in less developed tehsils. The effect of rainfall, drought prone area, irrigation facilities, cultivated area, and nature of soil and size of land holding are the most important factors responsible for variation in land use efficiency in the study region.

Sunil B. Ogale (2014) reported that during the study period (1990-91 to 2010-11), the crop pattern of jowar has steadily declined. Sugarcane wheat, fruits and vegetable crops shown increasing trend during study period. Increasing irrigation facility is the main cause of this change in the study region.

Vinod kumar (2016) reported the changes in land use and cropping pattern of Jaisalmer district for the last two decades (2000-01 and 2010-11). He observed agriculture trend change towards the food crops to cash crops. The cropping pattern of the district has changed towards commercialization.

Zhou Zhongxue et al (2017) reported the rapid urbanisation and agricultural transformation from traditional cereal cultivation to modern urban agriculture has resulted in steadily increasing cost, output, and land use efficiency of urban agriculture.

An intense review of literature on agriculture land use and its pattern has been carried out and then, the objectives of present study are formulated.

**Objectives of the Study**

1. To study the land use efficiency of Jabalpur district.
2. To find out the areas of low, moderates and high intensity of cropping in the study region.
3. To compare land use efficiency of Jabalpur of 2001 and 2015.
4. To know the developing factors for land use efficiency.

**Data Base and Methodology**

For the present study all the seven tahsils of Jabalpur district were considered. The entire data is used for the investigation has been obtained from secondary data sources. The data regarding agriculture has been derived from district statistical handbook, gazetteer of Jabalpur, seasons and crops report published by the department of agriculture.

The formula used for study

$$\text{Land use efficiency} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} * 100$$

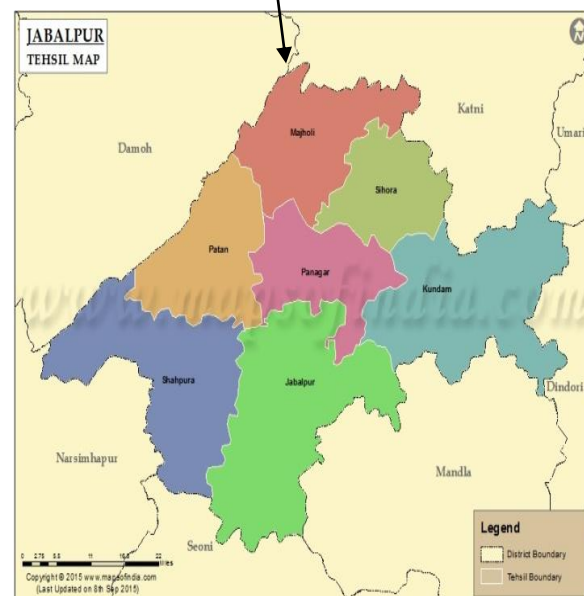
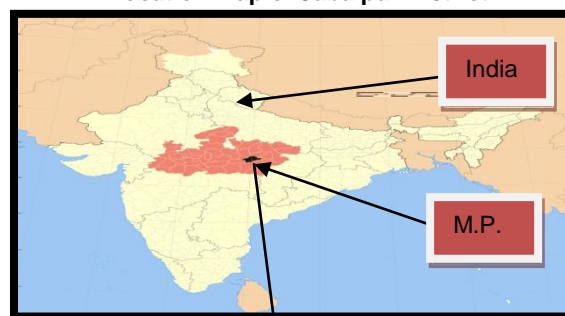
For studying the cropping pattern, the index of land use efficiency played an important role.

**The Study Region**

Jabalpur is one of the central districts of Madhya Pradesh. The tropic of cancer passes through the northern boundary of the district with Katni. The district is stretched in NE-SW direction with maximum length being 120Km along NE-SW direction and the maximum width is about 100 Km along E-W to ENE-WSW direction. It lies between latitudes 22°49'- 23.45°N and longitudes 79.20°- 80°37'E. The area of

the district is about 5211Km<sup>2</sup> . The district falls in Survey of India Toposheet Nos. 55 M, 64 A and 55 N on 1:250,000 scale. It has an average elevation of 411 M (1348 ft). It is bounded by Katni district in North and NE, Umaria district in East, Damoh district in the West, Narsinghpur district in the North West, Seoni district in the South West, Mandla district in the South and Dindori district in the South East. Administratively it is divided into 4 sub division 7 tahsils and 7 blocks with the district HQ is at Jabalpur city. The city is also having Divisional HQ of Jabalpur Division (Commissioner) comparison of 8 districts namely: Jabalpur, Katni, Mandla, Dindori, Narsinghpur, Balaghat, Chhindwara and Seoni.

**Location Map of Jabalpur District**



**Result & Discussions**

Table no. 1 & 2 reveal that land use efficiency of Jabalpur district was 136.45% during the period under investigation while comparing with 2001, it was 132.83%. During the year 2015 land use efficiency of shahpura tahsil was highest with 146.51%. Most of the net sown area is available in Sahpura and Patan tehsil of Jabalpur district. Since in majholi the increase in net sown area is highest which shows the possibility of highest crop intensity index.

**Table No.1: Tahsil Wise Land Use Efficiency in Jabalpur District  
(Area in 00 hectares)**

S.No.	Name of The Tahsil	2001			2015		
		Gross Crop Area	Net Sown Area	Land Use Efficiency In %	Gross Crop Area	Net Sown Area	Land Use Efficiency In %
1	Sihora	36210	27196	133.14	39095	28031	139.47
2	Majholi	48592	37431	129.81	54811	39657	138.21
3	Patan	70431	49736	141.42	72745	49650	146.51
4	Shahpura	74596	53498	139.43	75537	54165	139.45
5	Jabalpur	42585	34702	122.71	45206	35938	125.78
6	Panagar	38327	28565	134.17	40459	29390	137.66
7	Kundam	43618	35675	122.26	46680	37645	124
8	Jabalpur District	354399	266803	132.83	374533	274476	136.45

Source: District statistical hand book 2001, 2015

**Table No.2: Computed Land Use Efficiency In Jabalpur District**

S.No.	Name of The Tahsils	Land Use Efficiency (2001)	Land Use Efficiency (2015)	Volume of Change
1	Patan	133.14	137.47	+4.33
2	Panagar	129.81	138.21	+8.40
3	Shahpura	141.42	146.51	+5.09
4	Majholi	139.43	139.45	+0.02
5	Jabalpur	122.71	125.78	+3.07
6	Kundam	134.17	137.66	+3.49
7	Shihora	122.26	124.00	+1.74

On the strength of percentage the study region can be divided into three categories viz. Area of low intensity, area of moderate intensity and area of high intensity considering the index of land use efficiency during 2011.

1. Area of low land use efficiency (below 130%) — during 2001 to 2015 low land use efficiency was recorded in the Jabalpur and sihora tahsil. Due to increase of non cultivable land. It may be due conversion of agriculture land to commercial purpose land.
2. Area of medium land use efficiency(130% to 140%)— area of medium land use efficiency were observed in patan, panagar, majholi, kundam tahsils in 2001 and 2015. land use efficiency increased due to the decrease of non cultivable land in some area.
3. Area of high land use efficiency (141% and above)— out of the seven tahsils shahpura tahsil (146.51%) had high efficiency observed in the period of investigation. The high land use efficiency was found in this tahsil because of availability of other necessary facilities and also less percentage of non cultivable waste lands in it.

Over all the land use efficiency is found to be increased during 2001 to 2015 in Jabalpur tahsils.

#### Conclusion

The degree of cropping intensity and its spatio temporal variation is influenced by the intensity of irrigation, rainfall, farm size, use of modern inputs, soil fertility, physiography in the study region. The agricultural efficiency of Jabalpur district shows variation in large scale. More irrigation in low efficiency region will certainly increase the efficiency of the land since it is the boosting factor to production. High land use efficiency is found in developed tehsil and low land use efficiency in less developed tehsils.

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