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## A study of agriculture land use efficiency of Dhule district: A geographical analysis

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### Abstract

With significant socioeconomic development and a growing population, promoting land-use efficiency is, and will remain, the crucial land-use planning issue in China. This study analyzed the characteristics of land-use intensity and programmed industrial land-use planning. The data used in this study were collected from interviews with enterprises, the land registry, administrative committees of the development zones, the first distribution record of the state land-use rights certificates, and Shunyi's economic records. The evaluation of land-use efficiency involved comparing sectors, locations inside and outside development zones, land obtained by transaction or otherwise, and changes over time. Unlike standard dominant industry selections, this study considered the role of intensive land-use crucial to industrial development planning. This land-use efficiency analysis and industrial development planning enabled industrial land-use planning to be accomplished in three important and difficult respects: quantity, arrangement, and scheduling.

There is scope for extension of cultivated land by bringing fallow land potential agricultural land under cultivation. Therefore, immediate need is to give more emphasis on intensity of cropping and increasing yield from existing calculated are problem of under use of net sown area low productivity and kicks of crop failure are tarring the rural population. Therefore, it is fruitful to investigate the degree of intensity with which the net sown area is utilized.

**Keywords:** Agricultural land, land use efficiency, land use intensity

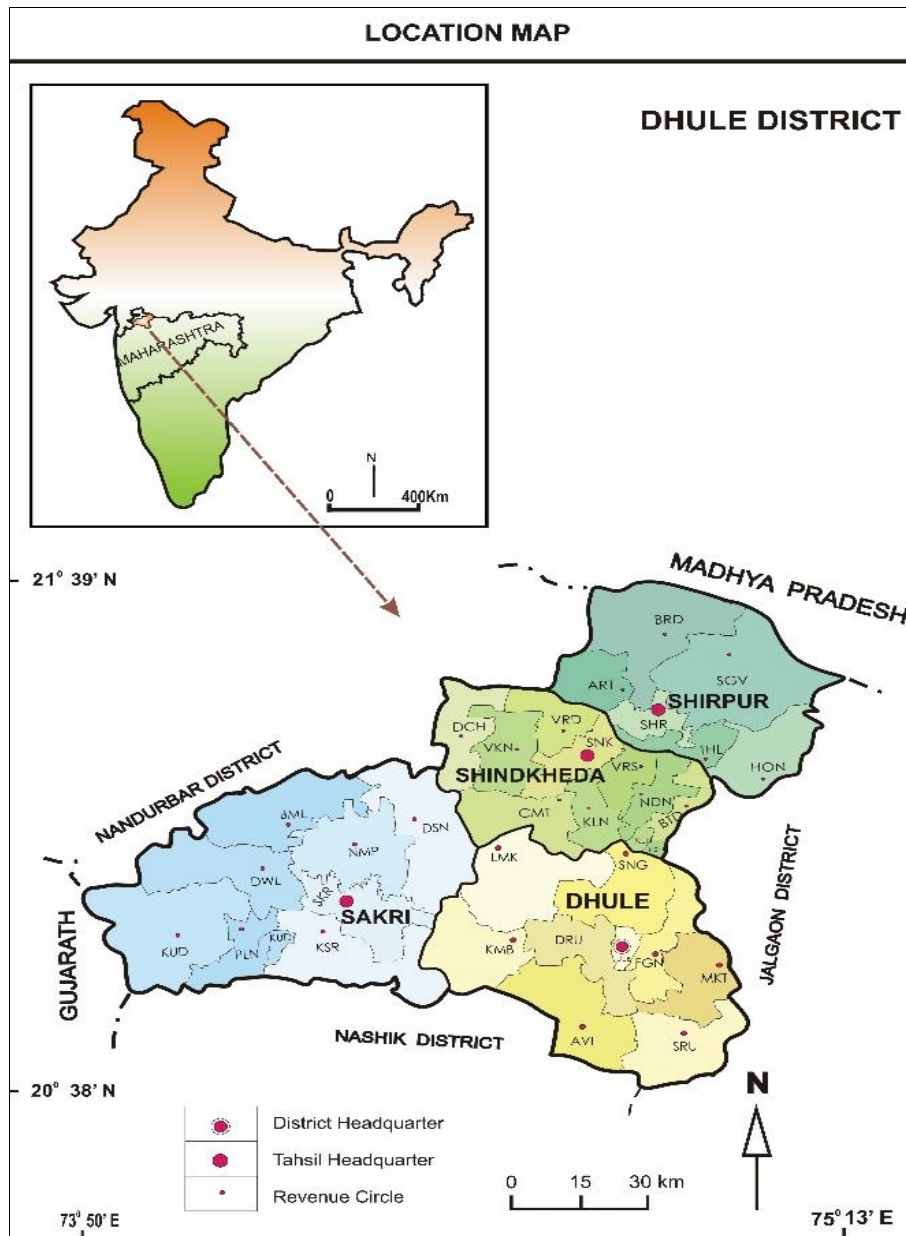
### Introduction

Land use efficiency may be defined as the extent to which the net sown area is cropped or re-sown. The gross cropped areas percentage of the net sown area gives a measure of land use efficiency which means the intensity of cropping. The difference between land use and land utilization is important. Land use is the use actually made of any parcel of land; house, apartments and industrial location are land use categories, whereas the term residential, industrial and agricultural refer to a system of land utilization implying roads, neighborhood retail and service activities as well as location of industries and the carrying of agricultural pursuit<sup>[3]</sup>. In a rural area, tree crop or row crop would identify land use, where orcharding, truck farming and grazing indicate a system of land utilization. The term 'land utilization' is also used for varied utilization of land and soil surveys e.g. land under cultivation, pasture barren, orchard, fallows, waste, culturable waste, settlements, forests, water bodies etc. According to J.L. Buck "Land utilization is the satisfaction, which the farm population derives from the type of agriculture developed, the provision for future production and contribution to national needs" (Quoted 1951)<sup>[4]</sup>. While the definition given by Salter is as follows: "Land utilization research can be described as dealing with problem situations in which people in a given locality are in the process of transformation from activities with certain land requirements to activities with different land requirement<sup>[5]</sup>." In this sense land utilization involves an examination of the natural factor affecting both the harnessed and the potential productivity of the land is a changed situation of the locality and its requirements. These factors are the land, temperature, rainfall and soil, which in a configuration together constitute the physical background of agriculture and determine the limits of both the cultivability and productivity of the land. Land utilization mainly deals with the problems related to the society and the region as a whole, rather than a private farmer. Land use is mainly related to the optimum use of the limited land between the alternative major types of land use.

**Study area**

Dhule district lies in state of Maharashtra. Dhule district, previously known as west Khandesh is in northern part of Maharashtra State. It is bounded between north latitude 20°38' to 21°61' and east longitude 73°50' to 75°11'(E with altitude of 180 to 250 meters above mean sea level. The district is limited by Nandurbar district in the north- west, Nashik district in south and Jalgaon district in east. The district headquarters is located at Dhule city. For

administrative suitability, the district is divided into 4 tahsils viz., Dhule, Sakri, Shirpur and Sindkheda. The district has a geographical area of 8061 sq. km. out of which 2051 sq.km. is covered by forest, whereas cultivatable area is 4752 sq. km. and net sown area is 4966 sq. km. Agriculture is the main profession of the people. The entire district forms a part of the Tapi basin. It has a total population of 2,050,862 as per 2011 census. The district has 4 towns and 683 villages. Tapi is the main river flowing through the district.



**Fig 1:** Location map

**Objective**

**The main objective of the study area**

1. To study for the agriculture efficiency of the study region.
2. To understand the region agriculture efficiency the study region.
3. To suggest the remedies to increase the agriculture efficiency for sustainable development.

**Data Base and Methodology**

Present study mostly relied on the secondary data collected

through Agriculture Development and district statistical Department of Dhule District socio- economic abstract of Dhule District. For the present investigation, eleven crops are selected Simple statistical methods has used to present study. In order to assess the agricultural efficiency, the following formula.

$$\text{Index of Land use Efficiency} = \frac{\text{Gross Cropped Area} \times 100}{\text{Net Shown Area}}$$

The eleven tahsils of district done as shown in table. After

words index of land efficiency is calculated by above formula for each district. There are regional variations in index of various tahsils of district. The index value is classified and interpretation gives the proper results.

**Explanation and Result**

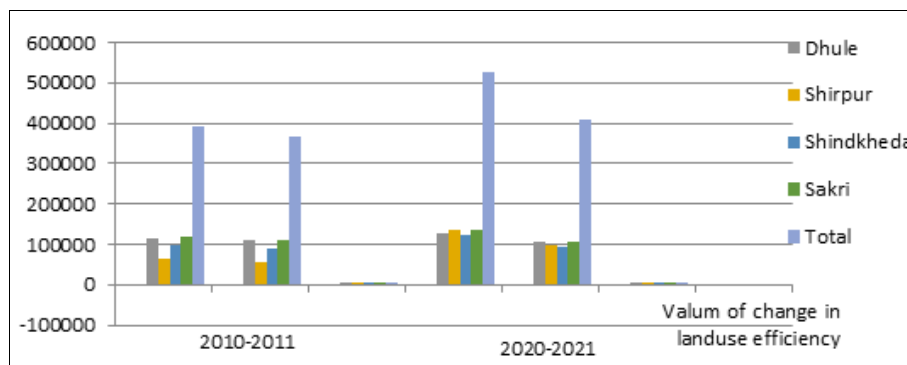
Agriculture efficiency is a scientific device to study the in fertility productivity and capacity of the land so that its misuse and underuse can be checked by planning for further

use. The object of land use is to ensure the productivity and efficiency of agricultural land and its should be based on a real appreciation of the agricultural needs, including the relative agricultural value of land in a locality, Several methods have been used to measure the agricultural efficiency with same virtues and short coming in them. Dhule district Agricultural efficiency is measured in the following table.

**Table 1:** Statement showing Land use Efficiency in Dhule District (2010-11 to 2020-21)

Tahsil	2010-2011			2020-2021			Valum of change in land use efficiency
	Gross cropped area	Net Sown area	Index of land use efficiency	Gross cropped area	Net Sown area	Index of land use efficiency	
Dhule	112985	109433	103.25	129468	107629	120.29	-17.04
Shirpur	63569	55138	115.29	135645	97674	138.88	-23.59
Shindkheda	96100	91600	104.91	125036	95677	130.69	-25.78
Sakri	117804	111272	105.87	135282	107814	125.48	-19.61
Total	390458	367443	106.26	525431	408794	128.53	-22.27

**Source:** Data is compiled by researcher on the basis of district Socio- Economic review and statistical abstract of abstract of Dhule District. (2010-2011 to 2020-2021)



**Graph 1:** Statement showing Land use Efficiency in Dhule District (2010-11 to 2020-21)

Table No. 1 reveals that the regions average gross cropped area and net sown area 390458 hectares and 367443 hectares respectively during 2010-2011. The index of land use efficiency was 106.26 percent between 2010-2011 land use efficiency indexes was decreased 22.27 percent in study region during the period of investigation. Below 105 percent efficiency was found in Dhule and Shindkheda Tahsil, whereas 105 percent to 110 percent land use efficiency was observed in Sakri Tahsil. While above 110 percent land use efficiency was recorded in Shirpur Tahsils during 2010-2011 (Graph No. 1).

Below 125 percent land use efficiency land use was found in Dhule Tahsil. Above 125 land use efficiency was took place in Sakri, Shindkheda and Shirpur Tahsils during 2020-2021. This type of different land use efficiency is mainly confirmed to the irrigation possibilities pattern of agricultural practices. Crops and limitation imposed by the physical environment as the soil types physiographic and nature of rainfall distribution etc. the region are divided in three categories on the basis of percentage low density, medium density and high density. (Graph No. 1).

**1. Area of low intensity (Below 125 percent)**

Are of low intensity area distributed in Dhule, Shindkheda, Sakri, Shirpur Tahsil. Soil conditions use of chemical fertilizers, pesticides, variety seeds, physiographic irrigation all these factors are the causes of low intensity.

**2. Area of medium intensity (120 percent to 130 percent)**

Area of medium intensity are confirmed to Sakri and Dhule Tahsil. Percentage of Physiography, irrigation, soil conditions, manures etc. are responsible for the medium intensity.

**3. Area of High Intensity (Above 130 percent)**

High intensity was found in Shindkheda and Shirpur Tahsils, physical and non-physical factors are responsible for the high intensity of land use.

**Strategy for growing land use efficiency**

1. To use new Agricultural technology.
2. To increase the source of irrigation and develop new irrigation mode.
3. To develop the crop insurance.
4. To develop the transport network.
5. To arrange the agricultural conference and increase the agricultural.
6. To develop the agricultural education in rural area.
7. To alternate the fallow land to Agricultural land.

**Conclusion**

Variation in land use efficiency are mainly confined to the irrigation possibilities pattern of agricultural practices crops and limitations imposed by the physical environment as the soil types, physiography and nature of rainfall distribution etc. On the strength of percentage to the region is divided

into three categories *viz.* Low intensity, medium intensity and high intensity.

Area of low intensity below 125 percent Dhule, Shindkheda, Sakri, Shirpur Tahsil. Percentage of irrigation, Physiography, Soil, condition use of chemical fertilizers, pesticides, high yielding variety seeds all these factors is responsible for low intensity. Areas of medium intensity 120% to 130% are confined to Sakri and Dhule Tahsil. Percentage of Physiography, irrigation, soil conditions, manures etc. are responsible for the medium intensity. Area of high Intensity Above 130% High intensity was found in Shindkheda and Shirpur Tahsils, physical and non-physical factors are responsible for the high intensity of land use.

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