

## Land Use Pattern In Sina River Basin, Maharashtra: A Geographical Study

Mr. M.D.Kadam

\*\*Dr. S.D.Shinde

\*Department of geography, Rajarshi Chhatrapati Shahu College, Kolhapur.

\*\* Department of Geography, Shivaji University, Kolhapur.

### Abstract

*The concept of land use is important in the study of agricultural geography. The significance of study of land use lies in the fact that it provides systematic explanation of uses of land under different categories in an area. In the present paper an attempt has been made to study the general land use pattern in Sina river basin for the period -2010-11. River Sina, a major left bank tributary of Bhima River, plays a significant role in the economy of the region. Though, Sina is a typical seasonal river, irrigation is made available in its lower parts through Bhima-Sina link canal in 2002-03 due to which general land use pattern in this region has been changed significantly. Sina river basin is an agrarian region. Tehsil wise area under different categories of land use has taken into consideration. The study region covers 2630700 hectares. The general land use pattern in Sina river basin is dominated by net sown area. The significance of this study increases with the increasing pressure of population on the land but it is a limited resource, hence its scientific utilization has become more important and it is possible only if the whole complex of general land use studied at micro level such as Sina river basin.*

**Keywords:** Land use, Resource, Sina River

### Introduction

Sina river basin is a geographical region of diverse physical and socio- economic characteristics. The concept of land use has been defined "the land as a whole must be so used to satisfy as many possible of the needs and legitimate desires of the people in the nation as a whole" (Stamp 1962). Land is an important asset of the region on which economic progress of this region depends. Overall development of a region also depends on proper use of land. Land resource play a strategic role in the determination of mans economic, social and cultural progress which could be easily seen and clearly understood through economic history of different countries. Use of land for agriculture is of vital important. The changing relationship in between man and environment plays a vital role in the determination of use of land within a region. The current pattern of land use is a result of long continuous procedure of the whole role of environmental factors but modified by socio-economic and historical elements, (Shafi, M. 1951). Land is necessary for human survival because it provides man with living space, with food and with number of raw materials which are used in the satisfaction of his wants.

The use of land for various purposes or activities is termed as land use. The land use pattern of a region is an outcome of natural, social and economic factors. Day-by-day land is becoming a scarce resource due to the increasing population pressure; hence these studies are important. Land use is also related to conservation of land from one major use to another general use (Nanavati 1957). The concept of land use has been distinctive ' the land as a whole must be so used to satisfy as many possible of the needs and legitimate desires of the people in the nation as a whole' (Stamp,1962). "Land use means surface utilization of all developed and vacant lands for a specific point at a given time and space" (Freeman T.W., 1968). The land use study forms the sphere head for the advance of the applied sciences as maps of land use have been recognized as essential tool for regional planning and development (Symmons, 1978). The study of land use pattern is of prime concern to geographers to know the relationship between man and environment (Tripathi and Vishwakarma, 1988). In this regard the study of general land use pattern in Sina river basin has taken into consideration.

### Study Area

Sina river basin lies in drought-prone area of Maharashtra and is a sub-basin of Bhima river. The study region extended from 17° 22'43" North Latitude to 19°09'09" North Latitude and 74°43'11" East Longitude to 75°53'48" East Longitude. The total geographical area of the river basin is about 12051.446 sq. k.ms. It accounts 4.73 per cent to the total of Krishna Basin (254743.31sq.k.ms). The study area is bounded by Rahuri tehsil of Ahmednagar district to the north, Beed and Osmanabad districts to the east, Karnataka state to the south and Malshiras and Pandharpur tehsils of Solapur district to the west. Study area comprises a) the parts of Ahmednagar, Pathardi, Parner, Shrigonda, Karjat and Jamkhed tehsils of Ahmednagar district, b) whole Ashti tehsil of Beed

district, c) whole Paranda tehsil and parts of Bhum, Osmanabad and Tuljapur tehsils of Osmanabad district and d) Whole Barshi and North Solapur tehsils and parts of Karmala, Madha, Mohol and South Solapur tehsils of Solapur district. (Fig. No. 1)

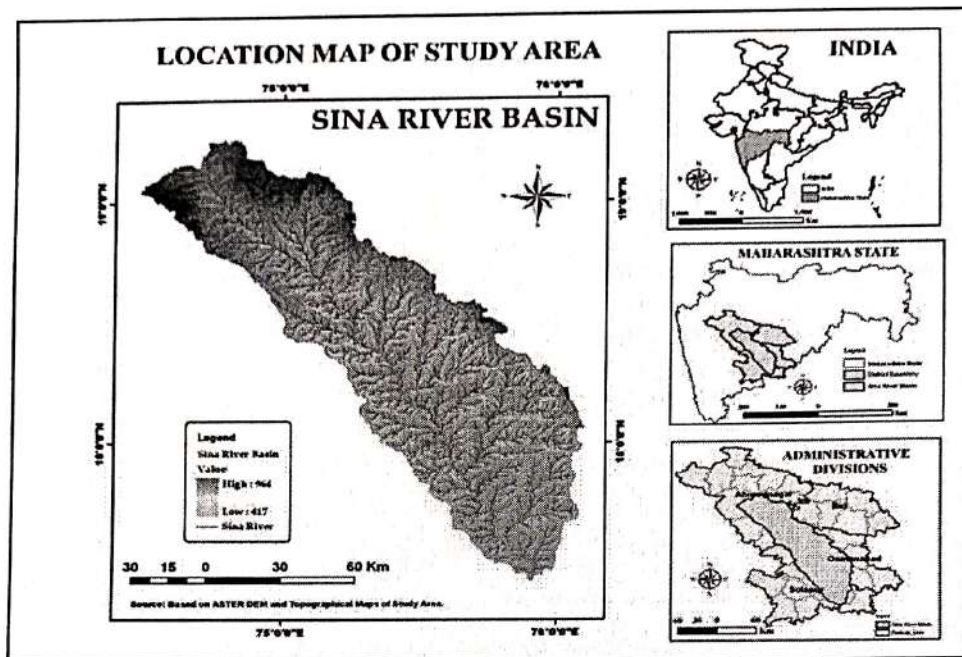


Fig. 1

**Objective:**

To study the general land use pattern in Sina river basin (2010-11).

**Data Base and Methodology:**

The present research work is based on statistical data collected from District Socio-Economic Abstracts of Ahmednagar, Beed, Osmanabad and Solapur district of 2011. Tehsil has taken as an areal unit for the present study Tehsil wise data of area under five land use categories i.e. area under forest, area not available for cultivation, land out of non agricultural use, fallow land and net sown area have collected. Data collected so far have tabulated, analyzed, percentages calculated, interpreted and presented through pie-chart.

**General Land Use Pattern in Sina River Basin- 2010-11**

The concept of land use has been defined as “the land as a whole must be so used to satisfy as many possible of the needs and legitimate desires of the people in the nation as a whole” (Stamp 1962). Total area under investigation is 2630700 hectare. Five categories of general land use and area covered by them are as below:

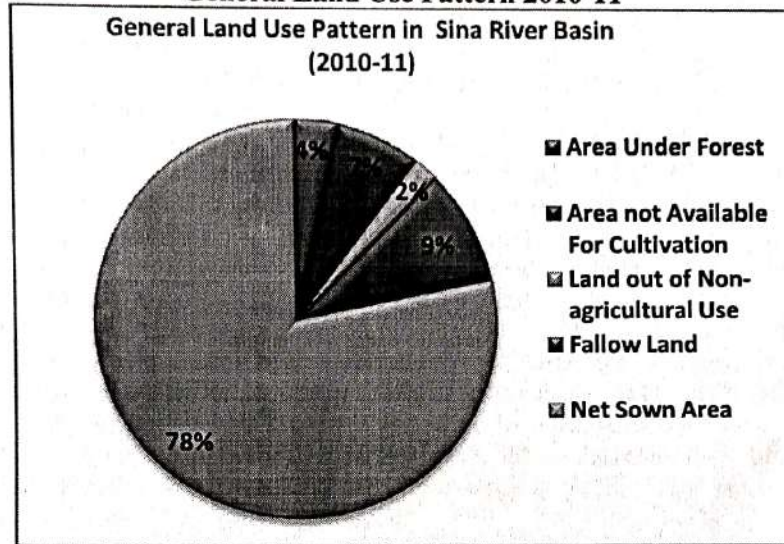
**Table 1 Land use Pattern in Sina River Basin 2010-11**

| Land Use Category                  |                            | 2010-11        |            |
|------------------------------------|----------------------------|----------------|------------|
|                                    |                            | Area Ha        | Area %     |
| Area Under Forest                  |                            | 78344          | 3.46       |
| Area not available for cultivation | Land Put To Non- Agri.     | 30316          | 1.34       |
|                                    | Barren & uncultivable area | 126041         | 5.57       |
|                                    | Total                      | 156357         | 6.91       |
| Land out on non-agricultural use   |                            | 45033          | 1.99       |
| Fallow land                        | Current Fallow             | 104230         | 4.61       |
|                                    | Other Fallow               | 107933         | 4.77       |
|                                    | Total (9+10)               | 212163         | 9.38       |
| Net sown area                      |                            | 1770283        | 78.26      |
| <b>Total</b>                       |                            | <b>2262180</b> | <b>100</b> |

Source: Based on Socio- economic Abstracts of Ahmednagar, Beed, Osmanabad and Solapur 2010-11

Tehsil wise general land use pattern for the year 2010-11 has shown in table 2 and figure 2.

**Table 1**  
**General Land Use Pattern 2010-11**



**Fig. 2 General Landuse pattern 2010-11**

Source: Based on Socio Economic Abstracts of Ahmednagar, Beed, Osmanabad and Solapur District, 2010-11

| Sr. No. | Tehsils      | Area Under Forest | Area not available for cultivation |                            |             | Land out of non-agricultural use | Fallow land    |              |              | Net sown area |
|---------|--------------|-------------------|------------------------------------|----------------------------|-------------|----------------------------------|----------------|--------------|--------------|---------------|
|         |              |                   | Land Put To Non-Agri.              | Barren & uncultivable area | Total (5+6) |                                  | Current Fallow | Other Fallow | Total (9+10) |               |
| -1      | -2           | -3                | -4                                 | -5                         | -6          | -7                               | -8             | -9           | -10          | -11           |
| 1       | Ahmednagar   | 8.10              | 1.81                               | 8.61                       | 10.42       | 1.17                             | 1.60           | 2.21         | 3.81         | 76.50         |
| 2       | Pathardi     | 4.61              | 0.55                               | 4.45                       | 5.00        | 0.83                             | 5.13           | 3.20         | 8.33         | 81.23         |
| 3       | Parner       | 9.53              | 1.19                               | 4.19                       | 5.38        | 0.43                             | 0.61           | 4.26         | 4.87         | 79.79         |
| 4       | Shrigonda    | 8.85              | 0.50                               | 4.69                       | 5.19        | 0.90                             | 5.37           | 3.68         | 9.06         | 76.00         |
| 5       | Karjat       | 8.09              | 0.03                               | 22.14                      | 22.16       | 3.72                             | 4.76           | 5.45         | 10.21        | 55.82         |
| 6       | Jamkhed      | 3.17              | 0.17                               | 2.58                       | 2.74        | 0.95                             | 0.76           | 10.90        | 11.66        | 81.48         |
| 7       | Ashti        | 1.16              | 2.01                               | 12.80                      | 14.81       | 12.11                            | 4.69           | 2.92         | 7.61         | 64.31         |
| 8       | Paranda      | 0.00              | 3.78                               | 0.38                       | 4.16        | 4.95                             | 7.63           | 4.60         | 12.23        | 78.66         |
| 9       | Bhum         | 0.24              | 2.59                               | 3.89                       | 6.48        | 4.22                             | 8.17           | 3.02         | 11.19        | 77.86         |
| 10      | Osmanabad    | 0.75              | 2.04                               | 0.21                       | 2.25        | 1.04                             | 5.75           | 6.22         | 11.96        | 83.99         |
| 11      | Tuljapur     | 0.46              | 1.45                               | 0.13                       | 1.58        | 0.72                             | 5.39           | 0.19         | 5.58         | 91.65         |
| 12      | Karmala      | 3.10              | 0.35                               | 6.63                       | 6.98        | 0.46                             | 4.65           | 5.52         | 10.17        | 79.29         |
| 13      | Madha        | 1.04              | 1.45                               | 1.50                       | 2.94        | 0.90                             | 6.19           | 6.23         | 12.42        | 82.69         |
| 14      | Barshi       | 0.79              | 0.97                               | 3.56                       | 4.53        | 0.62                             | 3.54           | 4.09         | 7.63         | 86.43         |
| 15      | Mohol        | 0.45              | 0.58                               | 8.94                       | 9.53        | 0.00                             | 6.40           | 7.35         | 13.75        | 76.28         |
| 16      | N. Solapur   | 1.66              | 2.95                               | 2.85                       | 5.80        | 1.65                             | 5.33           | 9.31         | 14.64        | 76.25         |
| 17      | S. Solapur.  | 0.69              | 2.15                               | 1.73                       | 3.87        | 0.16                             | 4.94           | 7.00         | 11.94        | 83.33         |
|         | <b>Total</b> | <b>3.46</b>       | <b>1.34</b>                        | <b>5.57</b>                | <b>6.91</b> | <b>1.99</b>                      | <b>4.61</b>    | <b>4.77</b>  | <b>9.38</b>  | <b>78.26</b>  |

#### 1 Area under Forest

Out of total area under investigation it is found that only 3.46 per cent land was under forest in 2010-11 in the study area. As compared tehsil wise land under forest in the basin, it is observed that Parner tehsil (9.53 per cent) in Ahmednagar district has highest and Bhum tehsil in Osmanabad district has lowest proportion (0.24 per cent) as compared to other tehsil in the study area. Shrigonda

(8.85 per cent), Ahmednagar (8.10 per cent) and Karjat tehsils (8.09 Per cent) in Ahmednagar district have remarkable proportion of land under forest; however Mohol (0.45 per cent), Tuljapur (0.46 per cent), South Solapur (0.69 per cent), Osmanabad (0.75 per cent) and Barshi tehsils (0.79 per cent) have very few amount of land under forest. Madha,

## 2 Area Not Available For Cultivation

This land use category accounts 6.91 per cent to the total area of study region in 2010-11. As considered tehsil wise area under this category in the basin, Karjat tehsil of Ahmednagar district has highest (22.16 per cent) and lowest proportion was noticed in Tuljapur tehsil (1.58 per cent) of Osmanabad district. Ashti (14.81 Per cent) and Ahmednagar (10.42 Per cent) tehsils have also high proportion of land under this category.

Remaining thirteen tehsils have between 2 to 10 per cent area under this category of land use. As far as area put to non-agricultural uses are concerned it was only 1.34 per cent and barren and uncultivated land was 5.57 per cent to the total area of the study under investigation. As compared land put to non agricultural uses with barren and uncultivable land only three tehsils viz. Paranda, Osmanabad and Tuljapur have high proportion; Whereas remaining fourteen tehsils shows that barren and uncultivable area was high than the land put to non agricultural uses (Table-1).

## 3 Land out of Non Agricultural Use

In Sina river basin only 1.99 per cent land was under this category in 2010-11. While considering tehsil wise area under land out of non-agricultural use Ashti tehsil (12.11 per cent) of Beed district has the highest per cent land as compared to other tehsils. Paranda (4.95 Per cent), Osmanabad (4.22 Per cent) and Karjat (3.72 Per cent), tehsils have medium proportion and the remaining thirteen tehsils in the basin have less than average area under land out of non-agricultural uses (Table-1).

## 4 Fallow Land

In 2010-11 out of total geographical area of study region i.e. 9.38 per cent area was under fallow land. Out of total fallow land 4.61 per cent area and 4.77 per cent area was under current fallow and other fallow respectively.

North Solapur (14.64 Per cent), Mohol (13.75 Per cent), Karmala (12.42 Per cent), Paranda (12.23 per cent), Osmanabad (11.96 per cent), South Solapur (11.94 Per cent), Jamkhed (11.66 Per cent) and Bhum (11.19 Per cent) tehsils have high proportion of fallow land as compared to other tehsils in the study region on the one hand and Ahmednagar (3.81 per cent), Parner (4.87 per cent) and Tuljapur (5.58 per cent) tehsils have low proportion of fallow land to the total geographical area of respective tehsils on the other. Other five tehsils have moderate proportion of fallow land to their total geographical area. As considered current fallow land Bhum (8.17 per cent), Paranda (7.63 per cent), Mohol (6.40 per cent), Osmanabad (5.75 per cent), Tuljapur (5.39 percent and Pathardi (5.13 per cent) tehsils have high proportion whereas Parner (0.61 per cent) and Jamkhed (0.76 per cent) tehsils have low proportion of current fallow land in 2010-11. As far as other fallow land is considered Jamkhed (10.90 per cent) tehsil has high and Tuljapur (0.19 per cent) tehsil has lowest area.

## 5 Net Sown Area

This category of land use dominated land use pattern in Sina river basin. Net sown area to the total Sina river basin was 78.26 per cent. Table 1 shows net sown area in 17 tehsils of Sina river basin. While analyzing net sown area it is observed that Tuljapur has highest (91.65 per cent) and Karjat tehsil has lowest (55.82 per cent) proportion of land under this category. Tuljapur followed by Barshi (86.43 per cent), Osmanabad (83.99 per cent), South Solapur (83.33 per cent), Madha (82.69 per cent), Jamkhed (81.48 per cent) and Pathardi (81.23 per cent) tehsils noticed higher proportion of net sown area Whereas Ashti (64.31 per cent) tahsil in Beed district has low proportion. Remaining eight tehsils have between 76 to 80 per cent net sown area to their respective geographical area.

## Conclusion

It is observed that the area under forest is very low throughout the basin. It is found that all tehsils in Ahmednagar district have good proportion of area under forest than other tehsils in the study area whereas tehsils in Osmanabad district have below 1 per cent area under forest. While studying fallow land it is found that except Tuljapur tehsil in Osmanabad district and remaining all tehsils have proportion of other fallow land was high than the current fallow land. It is noticed that out of 17 tehsils 9 tehsils have higher proportion of net sown area than average net sown area of basin

(78.26 percent). The general land use pattern in Sina river basin dominated by net sown area because it accounts 78.26 per cent land to the total geographical area of Sina river basin.

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