Chapter - III

GENERAL LAND USE PATTERN

3.1 INTRODUCTION

3.2 CLASSIFICATION OF GENERAL LAND USE

3.3 TEMPORAL VARIATION IN LAND USE PATTERN

3.4 SPATIAL ANALYSIS OF GENERAL LAND USE (1980 - 1981)

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3.1 INTRODUCTION

Land use study carries a great importance because it can provide a picture about intensively used, under used and unused land of the area. The concept of general land use is related to the use to which land is put in a certain reason at a given period of time. The term land use is virtually self-explanatory, meaning the actual and specific use to which the land surface is put in terms of inherent primary land use namely, land under forest, pasture, cultivation etc. The general land use of any region is an impact of various factors. Land use is a result of combinations of both natural genesis and human influences which have been brought to bear unit in the past and of those which are still active in the present (Vink, 1975). Spatial variations in land use are related to physical environment. Socio-economic factors are also responsible for shaping the land use in the region. The changing man-environment relationship also plays a key role in defining the land use of the particular region. The basic objective of the land use pattern is to use the available land which is limited. The pattern of land use is complex and dynamic. The land use pattern is different in different regions. The present pattern of land use is a result of long continued operation of the whole range of environmental factors but modified by socio economic and historical elements (Shafi, 1951).

This chapter is devoted to the study of spatio-temporal analysis of general land use of Raigarh district. The general land use pattern has been classified as net sown area, land not available for cultivation, cultivable waste land, fallow land and forest cover. The data obtained for the period of 1980-81 and 2000-01 from Socio-economic Review and Statistical Abstract and District Census Handbook of Raigarh District, converted in to the percentage to the total geographical area. To avoid the fluctuations, three years’ data is averaged and used for analysis. The percentage is categories in different group. The
volume of change of these categories for twenty years was computed and volume of change was shown in above mentioned figures and interpreted the text. The analysis gives the proper understanding of the general land use and relevant aspects providing the base for further investigation.

3.2 CLASSIFICATION OF GENERAL LAND USE

The idea of the depicting the use of land in the map was conceived by Socuar in 1999. The academic and practical importance is increased after the important contribution by Baker (1923) in USA, D.L. Stamp (1930) in Britain, J.W. Coulter (1934) in Korea, Bucks (1937) in China and S. Van. Volkenberg (1949) in USA in the world and Lahiri (1950), Shafi (1950) and Majid Hussain (1970) in India.

“Land use means surface utilization of all developed and vacant lands for a specific point at a given time and space” (Foreman T.W. 1968). Land is controlled by climatic factors, soil characteristic, slope of land, degree of erosion, drainage and other environmental factors. The use of land changes according to the changing needs of man. Lands are used for forest, pastures, transportation, settlement, industrial and commercial purposes. Whereas, uncultivable waste land, barren and fallow land are the unused lands. D. Stamp (1962) was the first, who thinks on the land use and its classification. In his book ‘The land in Britain: Its use and misuse’ he classified the land in Britain in six categories such as a) forest and woodland b) Arable land c) Meadow land and permanent grass d) Health land and Moor land e) Garden f) Unproductive land. Internationally, land use has been classified into nine categories such as a) Settlement and non agricultural use b) Horticulture c) Tress and permanent crops d) Cropland e) Improved permanent pasture f) Improved grassing land g) Wood land h) Swamp and marshes and i) Unproductive land.

In India before 1951, the land use data is collected by Ministry of Agriculture, Government of India and arranged into a) Total geographical area,
b) Area under forest c) Area not available for cultivation d) Current fallow land e) Land under grove and orchid f) Land under scrubs and grasses g) Land permanently under water h) Built up land i) Land under transport and communication j) Barren land and f) forest.

Government of India has now officially classified land under following categories like a) Reported area for land cultivation purposes b) Forests. c) Barren and uncultivable land d) Land put to non-agricultural uses- i) Culturable waste, ii) Permanent pasture and other grazing land e) Land under miscellaneous trees, crops and groves not included in net area sown- i) Current fallow ii) Other fallow land f) Net sown area, g) Area sown more than once and h) Total cropped area. These twelve categories and finally grouped into five classes such as a) Forest land b) Net sown area c) Land not available for cultivation d) Cultivable waste and e) Fallow land. The above classification is used for present study.

3.3 TEMPORAL VARIATION IN LAND USE PATTERN
(1980-81 to 2000-01)

The general land use of any region undergoes the changes in any given period of time is called as temporal variation. The temporal changes in land use pattern of Raigarh district have studied for the period of twenty years i.e. 1980-81 to 2000-01 to find out the trends of variation in general land use and to identify the reasons of the changes. The main objective of this chapter is to highlight the spatio-temporal variations in general land use of the district. The tahsil is considered as a study unit and the land use categories are based on Census classification. The temporal variation in general land use for Raigarh district is shown in Table 3.1 and Fig. 3.1.
Table 3.1
Raigarh District
General Land Use Pattern

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sown Area</td>
<td>26.62</td>
<td>29.57</td>
<td>28.96</td>
<td>+ 2.95</td>
<td>- 0.61</td>
<td>+ 2.34</td>
</tr>
<tr>
<td>Land Not Available for Cultivation</td>
<td>24.17</td>
<td>17.74</td>
<td>22.68</td>
<td>- 6.43</td>
<td>+ 4.94</td>
<td>- 1.49</td>
</tr>
<tr>
<td>Other Uncultivable Land</td>
<td>17.22</td>
<td>23.01</td>
<td>18.04</td>
<td>+ 5.79</td>
<td>- 4.97</td>
<td>+ 0.61</td>
</tr>
<tr>
<td>Fallow Land</td>
<td>8.48</td>
<td>8.40</td>
<td>8.62</td>
<td>- 0.08</td>
<td>- 0.22</td>
<td>+ 0.14</td>
</tr>
<tr>
<td>Forest</td>
<td>23.50</td>
<td>21.73</td>
<td>21.65</td>
<td>- 1.77</td>
<td>- 0.08</td>
<td>- 1.85</td>
</tr>
</tbody>
</table>

Source - Socio-Economic Review and Statistical Abstract of Raigarh District from 1981 to 2001

3.3.1 Net Sown Area

The net sown area is the land which is being actually tilled for raising the crops. The temporal variation in net sown area from 1981 to 2001 is shown in Fig. 3.2. In 1981, the net sown area was 182833 hectares accounting 26.62 per cent of the total geographical area. After twenty years, in 2001 it was recorded as 198913 hectares which was 28.98 per cent. The figures from 1981 to 2001 show the fluctuation in the net sown area. In the first decade (1991), it was increased by 2.95 per cent and in next decade (2001) it was decreased by 0.61 per cent. In the study period, from 1981 to 2001 it was increased by 2.34 per cent. The highest net sown area in Raigarh district has recorded in 1991 was 29.57 per cent. In 2001 the net sown area was 28.96 per cent; it was less than the Maharashtra State i.e. 58 per cent. Seven tahsils observed high change and nine tahsils had lower change in the study region.
Chapter III – General Land Use Pattern

Fig. 3.1
Table 3.2
Raigarh District
Temporal Variation in Net Sown Area

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Year - 1980-81</th>
<th>Year - 2000-01</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Area in Hectares</td>
<td>Area in %</td>
<td>Area in Hectares</td>
</tr>
<tr>
<td>1</td>
<td>Alibaug</td>
<td>19234</td>
<td>38.54</td>
<td>23922</td>
</tr>
<tr>
<td>2</td>
<td>Uran</td>
<td>7900</td>
<td>42.38</td>
<td>5044</td>
</tr>
<tr>
<td>3</td>
<td>Panvel</td>
<td>20033</td>
<td>34.57</td>
<td>17294</td>
</tr>
<tr>
<td>4</td>
<td>Karjat</td>
<td>13734</td>
<td>21.09</td>
<td>13347</td>
</tr>
<tr>
<td>5</td>
<td>Khalapur</td>
<td>8900</td>
<td>21.91</td>
<td>7422</td>
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<tr>
<td>6</td>
<td>Pen</td>
<td>15700</td>
<td>31.40</td>
<td>15463</td>
</tr>
<tr>
<td>7</td>
<td>Sudhagad</td>
<td>5633</td>
<td>12.30</td>
<td>8821</td>
</tr>
<tr>
<td>8</td>
<td>Roha</td>
<td>17700</td>
<td>27.99</td>
<td>13592</td>
</tr>
<tr>
<td>9</td>
<td>Mangaon</td>
<td>24667</td>
<td>26.33</td>
<td>27422</td>
</tr>
<tr>
<td>10</td>
<td>Mahad</td>
<td>18100</td>
<td>22.33</td>
<td>31600</td>
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<tr>
<td>11</td>
<td>Poladpur</td>
<td>9200</td>
<td>24.73</td>
<td>10212</td>
</tr>
<tr>
<td>12</td>
<td>Mhasla</td>
<td>6633</td>
<td>21.28</td>
<td>5752</td>
</tr>
<tr>
<td>13</td>
<td>Shrivardhan</td>
<td>8000</td>
<td>30.74</td>
<td>9023</td>
</tr>
<tr>
<td>14</td>
<td>Murud</td>
<td>6800</td>
<td>29.64</td>
<td>10001</td>
</tr>
<tr>
<td>15</td>
<td>Tala</td>
<td>#</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td></td>
<td>District</td>
<td>182833</td>
<td>26.62</td>
<td>118913</td>
</tr>
</tbody>
</table>


# - The data of the Tala tahsil is included in Mangaon tahsil

The highest increase has observed with 16.66 per cent in Mahad tahsil and lowest change in observed in Uran tahsil (-15.32 per cent)

Very high change has recorded in Mahad and Murud tahsils which is more than 10 per cent. High change in observed in Sudhagad and Alibaug tahsils which is between 5 to 10 per cent.
Moderate change was found in Mangaon, Tala, Poladpur and Shrivardhan tahsils. Low change has recorded in Pen, Khalapur, Karjat, Panvel and Mhasla tahsils ranging from 0 to 5 per cent while very low change had recorded in Roha and Uran tahsils due to coastal saline land.

3.3.2 Land not available for cultivation

This broad category comprises of a number of different types of land which are not available for cultivation under the existing circumstances. This type of land use represents the land occupied by roads, railways, industries, water bodies, gardens, play grounds, grave land, and settlements. Land not available for cultivation has indicated the fluctuation in the study period. The land under this category in 1981 was 166000 hectares which was 24.17 per cent of the total geographical area. After twenty years in 2001 it was recorded as 155773 hectares which is 22.68 per cent. In first decade i.e. 1981 to 1991 it was decreased by 6.43 per cent and again increased up to 4.94 per cent in second decade i.e. 1991 to 2001. In the study period from 1981 to 2001 it was decreased by 1.49 per cent. The area under land not available for cultivation was 22.68 in 2001, which was more than the per cent area of Maharashtra state shown in Table- 3.3.

The highest increase has observed in Mhasla tahsil (19.66 per cent) and lowest decrease was observed in Mahad tahsil with -19.32 per cent. Seven tahsils had observed higher change and eight tahsils have lower change in the region.

Very high change has recorded in Mhasla and Uran tahsil (Fig. 3.3). High change in recorded in Khalapur, Shrivardhan and Murud tahsil which is between 4 to 12 per cent due to the development of industries and ports near the coastal tahsils.
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Fig. 3.3
Table 3.3

Raigarh District

Temporal Variation in Land Not Available for Cultivation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Year - 1980-81</th>
<th>Year - 2000-01</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Area in Hectares</td>
<td>Area in %</td>
<td>Area in Hectares</td>
</tr>
<tr>
<td>1</td>
<td>Alibaug</td>
<td>5967</td>
<td>11.96</td>
<td>6476</td>
</tr>
<tr>
<td>2</td>
<td>Uran</td>
<td>6767</td>
<td>36.30</td>
<td>9079</td>
</tr>
<tr>
<td>3</td>
<td>Panvel</td>
<td>16367</td>
<td>28.24</td>
<td>16930</td>
</tr>
<tr>
<td>4</td>
<td>Karjat</td>
<td>10467</td>
<td>16.07</td>
<td>5788</td>
</tr>
<tr>
<td>5</td>
<td>Khalapur</td>
<td>5667</td>
<td>13.95</td>
<td>8118</td>
</tr>
<tr>
<td>6</td>
<td>Pen</td>
<td>10800</td>
<td>21.60</td>
<td>11373</td>
</tr>
<tr>
<td>7</td>
<td>Sudhagad</td>
<td>8267</td>
<td>18.05</td>
<td>8735</td>
</tr>
<tr>
<td>8</td>
<td>Roha</td>
<td>8533</td>
<td>13.49</td>
<td>10423</td>
</tr>
<tr>
<td>9</td>
<td>Mangaon</td>
<td>27267</td>
<td>29.10</td>
<td>19131</td>
</tr>
<tr>
<td>10</td>
<td>Mahad</td>
<td>3500</td>
<td>43.23</td>
<td>19544</td>
</tr>
<tr>
<td>11</td>
<td>Poladpur</td>
<td>8100</td>
<td>21.77</td>
<td>9009</td>
</tr>
<tr>
<td>12</td>
<td>Mhasla</td>
<td>8600</td>
<td>27.59</td>
<td>14545</td>
</tr>
<tr>
<td>13</td>
<td>Shrivardhan</td>
<td>6767</td>
<td>29.46</td>
<td>8972</td>
</tr>
<tr>
<td>14</td>
<td>Murud</td>
<td>6233</td>
<td>23.50</td>
<td>7666</td>
</tr>
<tr>
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<td>Tala</td>
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<td>#</td>
<td>#</td>
</tr>
<tr>
<td>District</td>
<td></td>
<td>166000</td>
<td>24.17</td>
<td>155773</td>
</tr>
</tbody>
</table>

Source - Socio-Economic Review and Statistical Abstract of Raigarh District from 1981 to 2001

# - The data of the Tala tahsil is included in Mangaon tahsil

Moderate change was observed in Panvel, Pen, Sudhagad, Roha, Poladpur and Alibaug tahsils. The remarkable negative change was found in Karjat, Mangaon, Tala and Mahad Tahsil. Rough topography and kharland is the main causes for this. Raigarh district has high proportion of non agriculture land due to rapid growth of urbanization region; it required more land for industries residential purpose, commercial establishment, other organizations and transport network.
3.3.3 Other Uncultivated Land

Other cultivable land is also known as cultivable waste land. These lands are definitely cultivable but at present lying of waste on account of number of reasons. They can be enumerated under following heads encroachment by floods and erosion, poor drainage, scarcity of water and distance from settlements etc. This type of land includes all lands available for cultivation, whether not taken for cultivation ones but not cultivated during the preceding five years or more in succession (District Census Hand Book of Raigarh, Series 14 part XIII – A and B). Land under cultivable waste in Raigarh district has 118300 hectares (17.22 per cent) in 1981 and 123883 hectares (18.04 per cent) in 2001 (Table 3.4). It was increased by 5.79 per cent in 1981 to 1991 and again decreased by 4.97 per cent in next decade 2001. In the study period i.e.1981 to 2001 it was increased by 0.61 per cent. The highest per cent area under other uncultivated land has been observed in 1991 accounting 23.01 per cent of the total cropped area. This indicates the tendency in farmers to bring more and more land under cultivation. Though the cultivable waste land was declining in the district, still it was more than the Maharashtra State in (11.3 per cent) in 2001. Five tahsils has observed increase than while ten tahsils has decreased the area than the district average. The highest increase has recorded in Karjat tahsils with 21.67 per cent and lowest change recorded in Murud tahsil with -15.62 per cent.

High change was found in Poladpur and Pen tahsil (Fig. 3.4). Moderate change has observed in five tahsils, namely Alibaug, Panvel, Roha, Mangaon and Tala tahsils which is between 0 to 5 per cent.
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RAIGARH DISTRICT
TEMPORAL VARIATION IN OTHER UNCULTIVATED LAND (1980-81 to 2000-01)

Legend (Area in %)
- Very High (Above 10)
- High (05 to 10)
- Moderate (00 to 05)
- Low (00 to -05)
- Very Low (Below -05)

Fig. 3. 4
Table 3.4
Raigarh District
Temporal Variation in Other Uncultivated Land

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Year - 1980-81</th>
<th>Year - 2000-01</th>
<th>Change (%), Area in Hectares</th>
<th>Area in %, Area in Hectares</th>
<th>Area in %, Area in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alibaug</td>
<td>3833</td>
<td>7.68</td>
<td>3994</td>
<td>8.00</td>
<td>+ 0.32</td>
</tr>
<tr>
<td>2</td>
<td>Uran</td>
<td>900</td>
<td>4.83</td>
<td>647</td>
<td>3.47</td>
<td>- 1.36</td>
</tr>
<tr>
<td>3</td>
<td>Panvel</td>
<td>3267</td>
<td>5.64</td>
<td>3655</td>
<td>6.31</td>
<td>+ 0.67</td>
</tr>
<tr>
<td>4</td>
<td>Karjat</td>
<td>22267</td>
<td>34.20</td>
<td>36250</td>
<td>55.67</td>
<td>+ 21.47</td>
</tr>
<tr>
<td>5</td>
<td>Khalapur</td>
<td>10700</td>
<td>26.34</td>
<td>10189</td>
<td>25.09</td>
<td>- 1.26</td>
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<td>7849</td>
<td>15.70</td>
<td>+ 8.56</td>
</tr>
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<td>Sudhagad</td>
<td>10933</td>
<td>23.87</td>
<td>4425</td>
<td>9.66</td>
<td>- 14.21</td>
</tr>
<tr>
<td>8</td>
<td>Roha</td>
<td>8567</td>
<td>13.55</td>
<td>10668</td>
<td>16.87</td>
<td>+ 3.32</td>
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<td>9</td>
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<td>+ 1.37</td>
</tr>
<tr>
<td>10</td>
<td>Mahad</td>
<td>13700</td>
<td>16.90</td>
<td>7506</td>
<td>9.26</td>
<td>- 7.64</td>
</tr>
<tr>
<td>11</td>
<td>Poladpur</td>
<td>8500</td>
<td>22.85</td>
<td>11322</td>
<td>30.43</td>
<td>+ 7.59</td>
</tr>
<tr>
<td>12</td>
<td>Mhasla</td>
<td>8000</td>
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<td>6926</td>
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<td>- 3.45</td>
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<tr>
<td>13</td>
<td>Shrivardhan</td>
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<td>18.23</td>
<td>- 4.45</td>
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<td>14</td>
<td>Murud</td>
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<td>24.00</td>
<td>2223</td>
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<td>- 15.62</td>
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<td>District</td>
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<td>118300</td>
<td>17.22</td>
<td>122883</td>
<td>18.04</td>
<td>+ 0.61</td>
</tr>
</tbody>
</table>

Source - Socio-Economic Review and Statistical Abstract of Raigarh District from 1981 to 2001

# - The data of the Tala tahsil is included in Mangaon tahsil

Low change has observed in Uran, Khalapur, Mhasla and Shrivardhan tahsils while very low change had recorded in Mahad, Sudhagad and Murud tahsil. These negative changes indicate the increase in net sown area of these tahsils.
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RAIGARH DISTRICT
TEMPORAL VARIATION IN FALLOW LAND
(1980-81 to 2000-01)

Legend
(Area in %)

<table>
<thead>
<tr>
<th>Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>(Above 10)</td>
</tr>
<tr>
<td>High</td>
<td>(05 to 10)</td>
</tr>
<tr>
<td>Moderate</td>
<td>(00 to 05)</td>
</tr>
<tr>
<td>Low</td>
<td>(00 to -05)</td>
</tr>
<tr>
<td>Very Low</td>
<td>(Below -05)</td>
</tr>
</tbody>
</table>

Fig. 3.5
3.3.4 Fallow land

The term fallow land is used to those lands, which are not under cultivation at the time of reporting. The fallow land subdivided into three types:

a) Permanent fallow - means the land kept uncultivated for the period of five years or more. It consists the land under permanent pasture land and land under Miscellaneous trees and bushes.
b) Current fallow land - the land which were not sown at the time of crop reporting but were sown one or two years of left follow either in one season or one full year to improve the quality of the land.
c) Other Fallow - means the land kept uncultivated two to five years due to some problems.

Initially in 1981 land under total fallow land in Raigarh district was 58234 hectares accounting 8.48 per cent and it was reached up to 59176 hectares accounting 8.62 per cent of the total geographical area (Table - 3.5). It was declined by 8.08 in first decade in 1991 and 0.22 per cent in next decade in 2001. During the study period from 1981 to 2001 the fallow land has increased by 0.14 per cent. The total area under fallow land was 8.62 per cent of the total geographical area, which was more than the Maharashtra state (7.9 per cent) in 2001.

Seven tahsils had observed the increase and eight tahsils observed the decrease. The highest increase has recorded in Mahad tahsil with 10.17 per cent while lowest decrease is found in Poladpur tahsil with 12.87 per cent.

Very High change was observed in Mahad tahsil and high change has observed in Uran and Sudhagad tahsil (Fig. 3.5) which is more than five per cent due to unavailability of irrigation facilities. Moderate change has found in Panvel, Roha, Mangaon and Tala tahsils.

Low change has recorded in Karjat, Khalapur, Shrivardhan, and Murud tahsils which is ranging from 0 to -5 per cent. Very low changes are seen in Pen, Mhasla, Alibaug and Poladpur tahsils. These tahsils show increase in fruits and vegetables and fodder crops cultivation. The rugged topography with poor soil, shortage of water and supply of manure are responsible for these
Table 3.5
Raigarh District
Temporal Variation in Fallow Land

<table>
<thead>
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<th>Sr. No.</th>
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<th>Year - 2000-01</th>
<th>Change (%)</th>
</tr>
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<td>Area in %</td>
<td>Area in Hectares</td>
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<td>Murud</td>
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Source - Socio-Economic Review and Statistical Abstract of Raigarh District from 1981 to 2001

# - The data of the Tala tahsil is included in Mangaon tahsil

Fallow lands. Other reasons are lack of capital, lack of agricultural knowledge and farmer’s attitude. The traditional agricultural practices of keeping land barren, for improving the fertility of soil is a common trend in the region.
3.3.5 Forest

Forest land includes all land classified as a forest under any legal enactment dealing with forests or administered as forests, whether state owned or private, whether wooded or simply maintained as a forest land. The Table 3.6 clearly indicates that there is a continuous decline in the forest land.

Table 3.6

Raigarh District

Temporal Variation in Area Under Forest

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Tahsil</th>
<th>Year - 1980-81</th>
<th>Year - 2000-01</th>
<th>Change (%)</th>
</tr>
</thead>
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<td>Area in Hectares</td>
<td>Area in %</td>
<td>Area in Hectares</td>
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<td>Pen</td>
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<td></td>
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<td>161400</td>
<td>23.50</td>
<td>148694</td>
</tr>
</tbody>
</table>

Source - Socio-Economic Review and Statistical Abstract of Raigarh District from 1981 to 2001

# - The data of the Tala tahsil is included in Mangaon tahsil.
RAIGARH DISTRICT
TEMPORAL VARIATION IN FOREST LAND
(1980-81 to 2000-01)

Legend
(Area in %)
Very High (Above 0)
High (00 to -02)
Moderate (-02 to -04)
Low (Below -04)
Very Low No Change

Fig. 3.6
The area under forest has 161400 hectares during 1981 i.e. 23.50 per cent of the total geographical area of the district. It was declined by 1.77 per cent in 1991 and again declined by 0.08 per cent from 1991 to 2001. In 2001 the total forest land was 148694 hectares i.e. 21.65 per cent and it was more than the per cent area of Maharashtra state (16.7 per cent). The area under forest in twenty years from 1981 to 2001 has declined by 1.85 per cent is a result of rapid growth of industrialization and urbanization in the district. Increase in area had observed in four tahsils and decrease has observed in eleven tahsils in the study region. The highest increase has recorded in Panvel tahsil (1.31 per cent) and highest decrease is recorded in Karjat tahsil with -13.28 per cent. Fig. 3.6 shows the temporal changes in the forest land of the district.

High change ranging from 0 to -2 per cent was found in Panvel, Roha, Poladpur, and Shrivardhan tahsil due to the massive tree plantation by forest department in reserved forest area. Moderate change has recorded in seven tahsils namely Alibaug, Uran, Khalapur, Pen, Mangaon, Tala, Mahad and Murud tahsils between 0 to -2 per cent.

Low change is recorded in Mhasala with (-2.54 per cent) while lowest change has seen in Karjat tahsil with -13.28 per cent. This decrease has been observed due to utilization of forest and under transport, network, residential and commercial establishment of grand town and cities. No change has observed in forest cover in Sudhagad tahsil.

3.4 SPATIAL ANALYSIS OF GENERAL LAND USE (1980 - 1981)

The spatial variation in general land use pattern in Raigarh district is the result physiographic and socio-economic factors available in the region. The spatial variation in general land use categories was observed which are as follows – i) Net sown area ii) Land not available for cultivation iii) Other uncultivable land iv) Fallow land and v) Forest land.
3.4.1 Net Sown Area

The net sown area refers the actual area in the Raigarh district covers 182833 hectares land occupying 26.62 percent of the total geographical area. It is relatively lower than the Maharashtra state. Table 3.2 shows the net sown area in the Raigarh district. The highest percentage area under net sown area has observed in Uran tahsil covering 7900 hectares area and it was 42.38 per cent of the total geographical area. The lowest percentage area under net sown area was found in Sudhagad tahsil occupied 12.30 per cent to total geographical area. Fig. 3.7 shows the distribution of net sown area in the study region.

Very high percentage of net sown area has observed in Uran tahsil covering 42.38 per cent area. The high percentage of net sown area has observed in four tahsils namely Alibaug (38.54 per cent), Panvel (34.57 per cent), Pen (31.40 per cent) and Shrivardhan tahsil (30.74 per cent) due to availability of plain land and source of irrigation.

Moderate percentage of area under net sown has found in eight tahsils namely Karjat, Khalapur, Mhasla, Roha, Mangaon, Mahad, Poladpur and Murud tahsil ranging from 20 to 30 per cent.

Low percentage area has recorded in Sudhagad tahsil with 12.30 percent due to rough topography and poor irrigation facilities.

3.4.2 Land Not Available for Cultivation

The land under settlement, transport, water bodies, grounds, garden, small hillocks etc are known as land not available for cultivation. It is clear from Table 3.3 and Fig. 3.8 that the total area under not available for cultivation in Raigarh district was 166000 hectares in 1980-81 and it was 24.17 per cent of the total geographical area. It was higher than the Maharashtra state due to topographical features of the district. The highest per cent of land not available for cultivation was seen in Mahad (43.23 per cent) tahsil due to ghat region. The lowest per cent area has recorded in Alibaug tahsil with 13.49 per cent.
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF NET SOWN AREA (1980-81)

Legend
Area in %
Very High  (Above 40)
High      (30 to 40)
Moderate  (20 to 30)
Low       (Below 20)

Fig. 3. 7
Chapter III – General Land Use Pattern

RAIGARH DISTRICT

SPATIAL PATTERN OF LAND NOT AVAILABLE FOR CULTIVATION (1980-81)

Legend
Area in %
Very High (Above 30)
High (20 to 30)
Moderate (10 to 20)
Low (Below 10)

Fig. 3.8
Very high per cent area under area not available for cultivation has found in Mahad (43.23 percent) and Uran (36.30) percent due to ghat region in Mahad and coastal marshi land in Uran tahsil.

High per cent area has recorded in seven tahsils namely Panvel, Pen, Mangaon, Poladpur, Mhasla, Shrivardhan tahsil and Moderate area under land not available for cultivation has seen in four tahsils. Sudhagad recorded (18.05 per cent), Karjat (16.07 per cent), Khalapur (13.95 per cent), Roha (13.49 per cent) and Alibaug tahsils (11.96 per cent) in the study region

### 3.4.3 Other Uncultivable Land

The area under other uncultivable land in Raigarh district was 1183 hectares in 1980-81 which is 17.22 per cent of the total geographical area of the district. The highest percentage area under cultivable waste land is recorded in Karjat tahsil with 34.30 per cent and lowest area has observed in Uran tahsil with 4.83 percent. Table 3.4 and Fig. 3.9 shows the area under other uncultivable land in Raigarh district

Very high percentage area under cultivable waste is found in Karjat tahsil due to poor irrigation facilities in the tahsil. High percentage area has observed in six tahsils namely Khalapur (26.34 per cent), Sudhagad (23.87 per cent), Poladpur (22.85 per cent), Mhasla (25.67 per cent), Shrivardhan (22.67 per cent) and Murud tahsil (24.00 per cent) ranging from 20 to 30 per cent.

Moderate area under other cultivable land has found in Mahad (16.90 per cent), Roha (13.55 per cent) and Mangaon (13.02 per cent).

Low percentage area has recorded in four tahsils namely Alibaug, Pen, Panvel and Uran tahsil. The areas under other uncultivable land in all above tahsils are ranging from 4.63 per cent to 7.68 per cent area.
RAIGARH DISTRICT
SPATIAL PATTERN OF OTHER UNCULTIVATED LAND
(1980-81)

Legend
Area in %
Very High (Above 30)
High (20 to 30)
Moderate (10 to 20)
Low (Below 10)

Fig. 3.9
3.4.5 Fallow Land

The fallow land includes permanent fallow and other fallow land. The permanent fallow land is the land kept uncropped for the period more than five years. It includes land under permanent pasture, miscellaneous trees and groves and other folder land. Current fallow land which include lands that were not sown at the time of crop reporting but were sown one or two years or left fallow either in one season or for one complete agriculture year to replenish the soil fertility. Table 3.5 and Fig. 3.10 display the total area under fallow land in Raigarh district. Total land under fallow land was 58234 hectares which is 8.48 per cent of the total geographical area of the study region and it is lower than the Maharashtra state. The highest fallow land has observed in Poladpur tahsil occupied 18.55 per cent land and lowest area was recorded 2.01 per cent in Murud tahsil.

Very high per cent area has recorded in Poladpur (18.55 per cent) and Mangaon (16.93 per cent) tahsils. High percentage area is observed in Alibaug tahsil with 13.89 per cent.

Moderate area under fallow land has seen in six tahsils namely Pen, Sudhagad, Roha, Mahad, Mhasla and Shrivardhan tahsils between 5 to 10 per cent.

Low percentage area, less than 5.00 per cent has observed in Uran, Panvel, Karjat, Khalapur and Murud Tahsils.

3.4.6 Area Under Forest

The area under forest in Raigarh district was 161400 hectares in 1980-81 which was 23.50 per cent of the total geographical area of the district. This area under forest was higher than the Maharashtra state. Table 3.6 and Fig. 3.11 show the distribution of forest land in the region. The highest area under forest has recorded in Sudhagad tahsil with 36.90 per cent and lowest area has recorded in Shrivardhan tahsil with 10.38 per cent.
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF FALLOW LAND (1980-81)

Legend
Area in %
Very High (Above 15)
High (10 to 15)
Moderate (05 to 10)
Low (Below 05)

Fig. 3.10
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF LAND UNDER FOREST
(1980-81)

Legend
Area in %
- Very High (Above 30)
- High (20 to 30)
- Moderate (10 to 20)
- Low (Below 10)

Fig. 3.11
Very high per cent area has recorded in Sudhagad (36.90 per cent), Roha (39.74 per cent), Khalapur (35.45 per cent) and Pen (30.02 per cent) tahsils.

High per cent area has observed in Alibaug, Panvel, Karjat and Murud tahsils ranging from 20 to 30 per cent area.

Moderate area under forest has found in Uran, Mangaon, Mahad, Poladpur, Mhasla and Shrivardhan tahsils between 10 to 20 per cent.

3.5 SPATIAL ANALYSIS GENERAL LAND USE (2000-2001)

The spatial distribution in general land use pattern is a result of physiographical, social and economic factors.

3.5.1 Net Sown Area

The net sown area is the land which is being actually cultivated for raising the crops. It also includes the current and other fallow lands. Table 3.2 shows the net sown area in the Raigarh district. The total net sown area in the Raigarh district covers 198913 hectares land accounting 28.96 per cent of the total geographical area. It has relatively less than the Konkan region 33.10 per cent and Maharashtra state 58.00 per cent. The highest per cent of net sown area has recorded in Alibaug tahsil covering 23922 hectares and it was 47.94 per cent of the total geographical area. The lowest per cent of net sown area in found in Khalapur tahsil covering 7427 hectares and it was 18.27 per cent of the district. It is obvious from Table 3.2 and Fig. 3.12 that the coastal central area of the district is dominant in net sown area due to fertile soil and irrigation facility.

The very high per cent of net sown area has seen in Alibaug tahsil covering 23922 hectares and it was 47.94 per cent of the total geographical area. High area under net sown area has observed in Mahad (38.99 per cent), Murud (37.70 per cent), Shrivardhan (33.66 per cent), Pen (30.93 per cent), This region has lateritic soil with high rainfall mostly used for food grain and fruits crops.
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF NET SOWN AREA (2000-01)

Legend
Area in %

Very High (Above 40)
High (30 to 40)
Moderate (20 to 30)
Low (Below 20)

Fig. 3.12
Chapter III – General Land Use Pattern

Moderate per cent of net sown area has observed in six tahsils, namely Panvel (29.84 per cent), Mangaon (29.37 per cent), Poladpur (27.45 per cent), Uran (27.05 per cent), Roha (21.49 per cent) and Karjat (20.50 per cent) tahsils ranging from 20 to 30 per cent.

The Sudhagad (19.26 per cent), Mhasla (18.45 per cent) and Khalapur (18.27 per cent) tahsil has low per cent area (less than 20 per cent) under net sown area due to rough topography and poor irrigation facilities.

3.5.2 Land Not Available for Cultivation

This category of land comprises those lands which are kept into non-agricultural uses such as settlements, transport network, garden, water bodies, industries and embankments etc. It also includes land rock exposure, small hillocks and mountain ranges.

It is clear from the Table 3.3 and Fig. 3.13 that the total area not available for cultivation in Raigarh district was 155773 hectares during 2000-01 and it was 22.68 per cent of the total geographical area. It was too high than Maharashtra state (9.4 per cent) due to rough relief, drainage channels and creeks in the district. The land not available for cultivation varies between 8.89 to 48.70 per cent. The highest per cent was recorded in Uran tahsil (48.70 per cent) due to large area covered by kharland and lowest area occupied 8.89 per cent total geographical area of the district in Karjat tahsil.

The very high per cent area not available for cultivation has recorded in Uran (48.70 per cent), Mhasla (46.66 per cent) and Shrivardhan (34.48 per cent) tahsils.

The high per cent area not available for cultivation has observed in eight tahsils ranging from 22.75 per cent to 29.21 per cent including Panvel (29.21 per cent), Murud (28.90 per cent), Poladpur (24.22 per cent), Mahad (24.11 per cent), Pen (22.75 per cent) and Mangaon (20.42 per cent) tahsil. Out of these six tahsils four are the coastal tahsils and two tahsils are under the foothill of Sahayadri mountain range.
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF OTHER UNCULTIVATED LAND
(2000-01)

Legend
Area in %

Very High (Above 30)
High (20 to 30)
Moderate (10 to 20)
Low (Below 10)

Fig. 3.14
Moderate area was found four tahsils namely Alibaug (12.98 per cent), Khalapur (19.99 per cent), Sudhagad (19.07 per cent), and Roha (16.48 per cent) tahsil. The low per cent area (less than 10.00 per cent) has seen in Karjat tahsil with 8.89 per cent.

### 3.5.3 Other Uncultivable Land

The land under this category is the waste land, though it can be used for agriculture and plantation. This type of land included all lands available for cultivation weather not taken up for cultivation ones but not cultivated during preceding five years or more in succession (District Census Hand book, Raigarh, Part XIII – A & B). This land is also known as cultivable waste land. These lands may be fallow or some times may be covered by scrubs, bamboos or bushes. Table 3.4 and Fig. 3.14 reveal the area under other uncultivable land in Raigarh district

The total geographical area other uncultivable land in Raigarh district was 123883 hectares in 2000-01 which occupies 18.04 per cent of the district. This area under cultivable waste is more than Maharashtra state (8.00 per cent). The highest cultivable waste land has recorded in Karjat tahsil occupied 55.67 per cent due to small land holdings and tribal population. The lowest area under this category was observed in Uran tahsil covering only 3.47 per cent of the total geographical area. The cultivable waste land has found near the coastal land due to marshy land, either on the slope of hills and mountain ranges.

Very high percentage area under other uncultivable land has recorded in Karjat tahsil occupied 55.67 per cent. High percentage area under other uncultivable land was observed in Poladpur (30.42 per cent), Khalapur (25.09 per cent), and Mhasla (22.22 per cent) tahsils.

The moderate per cent area under other uncultivable land ranging from 10 to 20 per cent has observed in five tahsils namely, Shrivardhan (18.23 per cent), Roha (16.87 per cent) Pen (15.10 per cent), Mangaon (14.39 per cent) tahsil.
Chapter III – General Land Use Pattern

The low per cent cultivable waste land below 10 per cent has recorded in Sudhagad (9.66 per cent), Mahad (9.26 per cent), Murud (8.38 per cent), Alibaug (8.00 per cent) and Uran (3.47 per cent) tahsil.

3.5.4 Fallow Land

Fallow land is the land not used for cropping at the time of reporting. Fallow land further can be used for the cultivation. Table 3.5 and Fig. 3.15 show the total area under fallow land in Raigarh district. Total land under fallow land was 59176 hectares which was 8.62 per cent of the total geographical area and it was more than the Maharashtra State (7.9 per cent). The highest fallow land has observed in Mangaon tahsil occupied 19.42 per cent land followed by Mahad (15.68 per cent) and Sudhagad (15.68 per cent) due to hilly high relief.

Very high percentage area under fallow land has recorded in Mangaon (19.52 per cent) and Sudhagad (15.09 per cent) tahsil cent), Khalapur (25.09 per cent), and Mhasla (22.22 per cent) tahsils.

The moderate per cent area under fallow land ranging from 5 to 10 per cent has observed in four tahsils namely, Uran, Panvel, Roha and Poladpur tahsil.

The low per cent cultivable waste land below five per cent was recorded in Alibaug, Karjat, Khalapur, pen, Mhasla, Shivardhan and Murud tahsils.

3.5.5. Area under Forest

The area under forest in Raigarh district was 148694 hectares in 2000-01 which was 21.65 per cent of the total area of the district. The area under the forest was higher than the Maharashtra state (16.7 per cent). The highest area under forest is recorded in Sudhagad tahsil (36.90 per cent) followed by Roha (35.80 per cent) and Khalapur (35.36 per cent). Table 3.6 and Fig. 3.16 show the total area under fallow land in Raigarh district.

The very high per cent area under forest land has recorded in Sudhagad (36.90 per cent), Khalapur (35.36 per cent) and Roha (35.80 per cent) tahsils.
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF FALLOW LAND (2000-01)

Legend
Area in %

Very High  (Above 15)
High     (10 to 15)
Moderate (05 to 10)
Low       (Below 05)

Fig. 3.15
Chapter III – General Land Use Pattern

RAIGARH DISTRICT
SPATIAL PATTERN OF LAND UNDER FOREST
(2000-01)

Legend
Area in %
Very High (Above 30)
High (20 to 30)
Moderate (10 to 20)
Low (Above 10)

Fig. 3.16
The high per cent area under forest land has observed in four tahsils ranging from 22 per cent to 30 per cent including Panvel (23.48 per cent) Alibaug (27.93 per cent), Pen (28.13 per cent), and Murud (24.11 per cent) tahsils. All these four tahsils are the coastal tahsils of the district.

Moderate area has found seven tahsils namely Uran, Karjat, Mangaon, Tala, Mahad, Poladpur and Shrivardhan tahsils ranging from 10 to 20 per cent. The low per cent area (less than 10.00 per cent) is seen in Mhasla tahsil with 9.73 per cent.
REFERENCES