Chapter – IV

General Landuse In Jalna District

4.1 Introduction.
4.2 Meaning and Importance of Landuse.
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4.5 Tahsil Wise Trends In General Landuse Pattern In Jalna District.
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4.1 Introduction:

In the third chapter the role of non-physical determinant's and medium irrigation project made changes in farming of Jalna district. Agriculture such as irrigation, population, livestock, agricultural implements, use of chemical fertilizers, high yielding variety seeds, pesticides credit facilities, marketing and transportation are analysed in detailed. The purpose of this chapter is to describe and analyse the general land use pattern in Jalna district.

Landuse is the surface utilization of all developed and vacant land on a specific point at a given time and space. This "leads one back to the village farm and farmer, to the fields, gardens, pastures, fallow land, forests and to the isolated farmstead" as geography deals with the spatial relationship between these aspects and planning. This is because landuse changes to meet the variable demands of the land by the society in its new ways and conditions of life. The demand for new uses of land may be inspired by a technological change or by a change in size, composition and requirements of a community. Some changes are short-lived whereas others represent a more constant demand.

The concept of landuse planning has been recently introduced in land utilization studies which means the formulation and administration of land policies aimed at the employment of land resources and the uses for which they are socially, politically and economically best suited.

The idea of a landuse hierarchy varies with the production and consumption factors. The production factors are land transportation facilities and the stage of technological advancement. The consumption factor includes the number of people, consumption of goods per person and the gross experts. The growth of population may change the forest and pasture land into cropland including residential and industrial land utilization. Survey made up till now were mostly concerned the smaller areas of rural and urban sectors. Thus, the study of land utilization has economic, geographic and demographic dimensions. The geographic aspect consists largely of a survey of the temperature, humidity, topography and soil conditions, which influence the utilization of land for crops,
pasture or forest. The demographic aspect considers the studies of population
distribution, composition, characteristics and trends not only in the area being
surveyed but also in the whole region.

4.2 Meaning and Importance of Landuse:

Landuse is the use actually made of any parcel land, house, apartments and
industrial location are landuse categories, whereas the term residential, industrial
and agricultural refers to a system of land utilization implying roads, neighborhood
retail and service activities as well as location of industries and the carrying of
agricultural pursuits. In a real area, tree crop or row crop would identify landuse,
whereas orcharding, truck farming and grazing indicate a system of land
utilization.

Land is the basic resource of human society. Its utilization shows a
reciprocal relationship between the prevailing ecological conditions of a particular
region and man. The term "Land Utilization" is also used for varied utilization of
land and soil surveys e.g. 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 the contribution to national
needs\(^3\) 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 requirements".\(^4\)

In this sense land utilization involves an examination of the natural factors
affecting both the harnessed and the potential productivity of the land in 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
culturability 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. Landuse is mainly related to the
optimum use of the limited land between the alternative major types of landuse. In
rural areas, the major types of landuse is as follows: 1) agricultural land a) non-irrigated lands, b) irrigated lands, c) dry farming areas, d) grazing area 2) village orchards or forest lands, 3) forest land a) forest covered b) forest reclaimed landuse c) culturable or recreational landuse.

Land utilization is also related to "Conversion of land from one major use to another general use." Alter reclamation of forest land a question arises as to how the land should be utilized. The rotation of crops and their combination are after all minor problems of landuse study. This is because these aspects depend upon personal experience and intuition of the farmer who decides which crops should be grown in rotation.

For human existence, within certain biotic, ecological and economic conditions the utilization of land is prime importance. It involves relationships that exist between the societies on the one hand and cultural advancement, resource planning and carrying capacity of the land on the other. The intensive use of land depends upon population concentration, economic prosperity through better agricultural production, human establishments, industrial locations, communication and transport lines, while extensive use of the land is related to sparse populations, dispersed settlements, the absence of communication lines and the crude forms of transport. However, only the systematic utilization of land can be able to promote economic and cultural advancement. It there is no utilization of land, one cannot think of any progress. Thus, the study of land utilization is of immense valued in tracing out the past use of land and its future trend. Only through the study of the past land utilization one can be able to predict its future use and evolve land use planning of a particular region. The changing population and the economic the biological and the ecological problems are so alarming that the conservation and the best utilization of land become a necessary.

4.3 Scope and Objectives of Landuse Studies:

Landuse is the latest ramification of the fast growing tree of economic geography. Geographers can present a clear picture of the potentials of landuse, conductive to fruitful planning for a massive agricultural turnover. A plan for the
almost utilization of land asset should essentially include the requirements of land for location of industries, sites for houses etc. The consumption of better agricultural land for purposes of urbanization is, thus, a great danger to the farmers; because the withdrawn from agricultural use is either never returned to the farmer or even is returned, it is so done only after a long lapse of time.\(^7\)

The scope of present study confines itself to the essential ingredients of landuse, i.e. factors principles, approaches, landuse classification agricultural efficiency, tahsilwise changes in net sown area and change in various categories of landuse from the base year to current year.

4.4 Landuse Classification:

Landuse classification is the systematic arrangement of various classes of land on the basis of certain similar characteristics, intelligently and effectively in satisfying the needs of human society. Thus, land must be carefully utilized, so that it may fulfill our varied needs after its proper allocation. The best use of each parcel of land requires a scientific and methodically appreciable classification of the present landuse. This may help us in investigating the landuse problems and be the basis of planning for the best use of our land after considering the major landuse categories.

The landuse types and its classification must be clearly presented in comparison with other land classification according to productivity index and yield and quality of crops grown under physically defined system of management or according to Storie\(^8\) index based upon soil profile, soil texture and other physical factors combined to control the use capabilities of particular soil and its productivity under favourable environmental conditions.

Various geographers have studied landuse of several countries. The increase in population needs additional land for shelter and food produce and requires judicious utilization of our land resource. In view of this surging problem, world landuse inventory survey had been proposed in the International Geographical Congress at Lisbon in April 1949. An overwhelming support was received from Lenesclo to finance this ambitious project. Later on a commission of five persons
met at Clark University Worcester Massachusetts in December 1949, which had formulated a plan of objective and procedure to survey the world landuse.9

On the basis landuse survey has been carried out in several countries including Poland, Cyprus, Italy, Jamaica and other. There is an urgent need to carry out these surveys and the maps prepared afterwards should be compared, L.D. Stamps had suggested the classification of the land of Britain into categories, for broad national policy of landuse planning and conservation of land resources. He had proposed three major categories and 10 type based on10.

a) The nature of the site (elevation and scope)
b) The nature of the soil (its depth, texture and water condition)

The major categories are as follows:
1) Good 2) Medium and 3) Poor.

He suggested following ten sub categories.

**Good quality land:**
1. First class land
2. Good general purpose farm land.
3. First class land with grass.
4. Good but heavy land.
5. Medium quality light land.

**Medium quality land:**
6. Medium quality general
7. Poor quality heavy land.
8. Poor quality mountain and mear land.

**Poor quality land:**

J.L. Buck, in his monumental study of land utilization in China11 conclude from a survey of 16786 farms in 168 localities of eight agricultural region, that for agricultural China there can be no great increase in amount of farm land. He has given seven types of land utilization of China. They are as follows: 1) Arable land,

In India, landuse categories recognized by different scholars belongs to two different type e.g. town planers and urban geographers. Town planners quite often categories urban landuse as residential, commercial, industrial, transport, communication, public utilities, open space, agricultural vacant land and water bodies. On the other hand, there are minor differences amongst the urban landuse into the following categories, residential, agricultural, open spaces, military lands, parks and burial grounds.

In the light of physico-socio-economic environment, man determines the uses of land. These are taken into consideration while classifying the land under different categories and sub-categories. The census of India has classified the land into nine different categories as forest, barren, cultivable waste cultivated area etc. But for the present study, they are grouped into five landuse categories viz:

1) Area under forest
2) Area not available for cultivation
3) Other uncultivated land excluding fallow land.
4) Fallow land and
5) Net sown area.

Author has considered only five categories because area under other categories is insignificant. Out of these categories the first and the second comprises the total non-agricultural land. Third is the potential agricultural land and fourth and fifth constitute the agricultural land.

4.5 Tahsilwise Trends in General Landuse Pattern in Jalna District:

Due to the location and physical setting the general landuse pattern of the study region differs from tahsil to tahsil. The existing pattern of landuse as shown appears to have been resulted from a process of land exploitation within the frame of physical-socio-economic complex and modified by the expansion of irrigation and the growth of population. There is a change in geographical factors
in the entire study region. Physiography, soil types, rainfall and geology all these factors played important role in determine the agricultural practices. About 88.60% to 90.50% of the total geographical area is under cultivation because of varies physical features. Agricultural land is largely available (92.61 %) in the tahsil of Ambad in the Jalna district.

Tahsilwise trends in general landuse pattern in Jalna district is shown in the table 4.1 with this generalized picture of general landuse pattern of the study region, a detailed analysis of the same is given below.

Mantha, Ghansawangi, Badnapur tahsils are newly formed and they have not time series data, hence, only five tahsils are considered for the study. For the analysis of general landuse data quinquennial averages for 1980-85 and 2000-2005 are used.

1) **Area under forest:**

Only 4800 hectares or 0.62% of the geographical area of the study region was under forest during 1980-85. It increased from 4800 hectares to 5700 hectares from 1980-85 to 2000-05. This shows that there was minor increase (0.12%) in forest area during the period of investigation. Table 4.1 indicates that forest area differs from tahsil to tahsil due to physical determinants.

Out of the total geographical area below 0.5% area was found under forest in Jafferabad and Partur tahsils whereas 0.5% to 1% geographical area was observed under forest in Ambad tahsil during 2000-2005. About 1% to 1.5% geographical area was noticed under forest in Bhokardan and Jalna tahsils during 2000-2005. (Map 4.3 A)

The negative change below 0.5% was observed in Bhokardan tahsil and zero percent change was noticed in Jafferabad and Partur tahsils from 1980-85 to 2000-2005. Below 0.5% position change in forest area was recorded in Jalna and Ambad tahsils from 1980-85 to 2000-2005. (Map 4.3 B) Variability of rainfall and increase population is responsible for the negative change in forest area in Jalna district.
<table>
<thead>
<tr>
<th>Landuse Category</th>
<th>Year</th>
<th>Bhokardan</th>
<th>Jafferabad</th>
<th>Jalna</th>
<th>Ambad</th>
<th>Partur</th>
<th>Total District</th>
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<tbody>
<tr>
<td>1</td>
<td>1980-85</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>6</td>
<td>2</td>
<td>48</td>
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<td></td>
<td>2000-2005</td>
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<td>25</td>
<td>12</td>
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<td>0.00</td>
<td>0.31</td>
<td>0.27</td>
<td>0.00</td>
<td>0.12</td>
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<td>1) Area Under Forest</td>
<td>1980-85</td>
<td>84</td>
<td>42</td>
<td>104</td>
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<td></td>
<td>2000-2005</td>
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<td>0.42</td>
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<td>2) Area Not Available for Cultivation</td>
<td>1980-85</td>
<td>78.8</td>
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<td>3.12</td>
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<td>3) Non Agricultural Land</td>
<td>1980-85</td>
<td>103</td>
<td>44</td>
<td>123</td>
<td>70</td>
<td>91</td>
<td>431</td>
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<tr>
<td></td>
<td>2000-2005</td>
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<td>Volumen of Change in %</td>
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<td>-1.15</td>
<td>0.00</td>
<td>0.73</td>
<td>1.25</td>
<td>0.20</td>
<td>0.39</td>
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<td>4) Uncultivated Land</td>
<td>1980-85</td>
<td>58</td>
<td>44</td>
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<td>102</td>
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<td></td>
<td>2000-2005</td>
<td>44.4</td>
<td>6.05</td>
<td>9.86</td>
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<tr>
<td>Volumen of Change in %</td>
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<td>0.00</td>
<td>-5.95</td>
<td>-1.51</td>
<td>-0.91</td>
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<td>5) Follow Land</td>
<td>1980-85</td>
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<tr>
<td></td>
<td>2000-2005</td>
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<td>139</td>
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<td>73</td>
<td>402</td>
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<td>Volumen of Change in %</td>
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<td>3.30</td>
<td>-0.47</td>
<td>-11.36</td>
<td>-7.31</td>
<td>-4.94</td>
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<td>6) Net Sown Area</td>
<td>1980-85</td>
<td>1033</td>
<td>598</td>
<td>1456</td>
<td>1776</td>
<td>1199</td>
<td>6062</td>
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<td></td>
<td>2000-2005</td>
<td>1093</td>
<td>574</td>
<td>1565</td>
<td>2037</td>
<td>1322</td>
<td>6591</td>
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<tr>
<td>Volumen of Change in %</td>
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<td>4.59</td>
<td>-3.30</td>
<td>5.69</td>
<td>11.62</td>
<td>8.03</td>
<td>6.85</td>
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<tr>
<td>7) Agricultural Land</td>
<td>1980-85</td>
<td>1146</td>
<td>639</td>
<td>1604</td>
<td>2073</td>
<td>1384</td>
<td>6846</td>
</tr>
<tr>
<td></td>
<td>2000-2005</td>
<td>1176</td>
<td>639</td>
<td>1704</td>
<td>2079</td>
<td>1395</td>
<td>6993</td>
</tr>
<tr>
<td>Volumen of Change in %</td>
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<td>2.30</td>
<td>0.00</td>
<td>5.22</td>
<td>0.27</td>
<td>0.72</td>
<td>1.90</td>
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<tr>
<td>8) Total Geographical Area</td>
<td>1980-85</td>
<td>1307</td>
<td>727</td>
<td>1916</td>
<td>2245</td>
<td>1532</td>
<td>7727</td>
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<td></td>
<td>2000-2005</td>
<td>1307</td>
<td>727</td>
<td>1916</td>
<td>2245</td>
<td>1532</td>
<td>7727</td>
</tr>
</tbody>
</table>

Source: Computed by Author  Figures in the brackets indicates percentage
2) **Area not available for cultivation:**

This group includes a) the land put to non-agricultural uses and b) barren and uncultivable land. These uses show that these areas will be no more available for crop cultivation shows close association with other uncultivated land and the net sown area in Jalna district. It means if there is a change at all more net sown area will be transferred to this category and this may happen particularly due to increasing urbanization predominantly the speed of the city of Jalna. The land under cultivation but for a very high price it can be brought under cultivation.

About 38300 hectares of land was not available for cultivation in the study region during 1980-85. Area not available for cultivation increased from 38300 hectares to 40400 hectares (0.27%) between 1980-85 and 2000-2005 in entire study region. Out of the total geographical area below 4% area was found under this group in Ambad tahsil while 4% to 6% geographical area was under area not available for cultivation in Jalna, Bhokardan and Jafferabad tahsils during 2000-2005. Above 6% geographical area was found under this category in Partur tahsil during 2000-2005. (Map 4.4 A)

Map 4.4 B reveals that zero percent change in area not available for agriculture was noticed in Jafrabad tahasil and below 1% negative change was found in Bhokardan tahasil between 1980-85 and 2000-2005 Below 1% positive change in this group was observed in Jalna, Ambad and Partur tahsil.

Table 4.1 indicates that non-agricultural land varies from 4.37% to 7.15% in the entire study region during 2000-2005.
Area Not Available for Cultivation in Jalna District 2000-2005

Volume of Change Area Not Available for Cultivation in Jalna District 1980-85 to 2000-2005
3) Uncultivable land (excluding fallow land):

Other uncultivable land excluding fallow land consists three types of land viz. a) culturable waste b) permanent pasture and grazing land and c) land under miscellaneous trees etc. In the ensuing discussion they are considered together. This is potential agricultural land which will be available for extension of agriculture but not been cultivated owing the different reasons. During 1980-85 about 45000 hectares land was uncultivable land. This land decreased from 45000 hectares to 27300 hectares in study region from 1980-85 to 2000-2005, It means that about 2.29% negative change was observed in this group between 1980-85 and 2000-2005.

Out of the total geographical area below 3% geographical area was found under uncultivable land in Partur and 3% to 6% area was observed under this group in Bhokardan, Jalna and Ambad tahsils during 2000-2005. Above 6% area was recorded under this categories in Jafferabad tahsils during the same period. (Map 4.5 A)

No change was found in Jafferabad tahsil whereas below 2% negative change in uncultivated land was noticed in Bhokardan, Ambad and Partur tahsils. Above 2% negative change was found in Jalna tahsil during the period of investigation. (Map 4.5 B) Negative change in uncultivable land was found in Bhokardan, Partur, Ambad and Jalna tahsils due to the proportion of other uncultivated land, which has gone to non-agricultural land in Ambad, Partur and Jalna tahsil from 1980-85 to 2000-2005. On the other hand no change was observed in Jafferabad whereas other uncultivated land transferred to agricultural land in Bhokardan tahsil during the period of investigation. (Table 4.1)
Uncultivable Land in Jalna District
2000-2005

INDEX

Map 4.5 A

R.A. = 3.53

Volume of Change in Uncultivable Land in Jalna District 1980-85 to 2000-2005

INDEX

Map 4.5 B

R.A. = 2.29
4) **Fallow land:**

The fallow land includes current fallow land and old fallow land largely found due to inadequate water supply or excess of moisture supply, extensive holdings and heavy clayey, soil difficult for filling at proper time. Sometimes they are kept fallow for preserving fertility and to prevent soil exhaustion. Thus efficiency of fallow land system in preserving fertility and maintaining crop yields to be acknowledged. Taking into consideration the period of fallow land, census of India has divided this categories into two types viz. land kept fallow during one year is called current fallow land and when it kept fallow for 1 to 5 years it is called as permanent fallow land. However, in the present study both the sub-categories are grouped together.

The study area has significant land under fallow land viz. 5.2% (40200 hectares) of the total geographical area during 2000-2005. Out of the total geographical below 2% area was found under fallow land in Ambad whereas 2% to 6% area was found under this group in Partur tahsil during 2000-2005. Above 6% fallow land was recorded in Bhokardan, Jalna and Jafferabad tahsils during the same year. (Map 4.6 A)

Both positive and negative change in fallow land was occurred in the study region between 1980-85 and 2000-2005. Below 3% negative change in fallow land was recorded in Bhokardan and Jalna tahsils whereas above 3% negative change in fallow land was recorded in Partur (7.31 %) and Ambad (11.36%) during the period of investigation. Above 3% positive change was noticed in Jafferabad from 1980-85 to 2000-2005 (Map 4.6 B). Negative change was observed in fallow land because some fallow land has transferred to net sown area in Bhokardan, Jalna, Ambad and Partur tahsils during the period under study.
5) **Net sown area:**

This category and fallow lands together constitute the extent of cropped land in any region and therefore is of vital significance in studies relating to agricultural geography. The net sown area is the actual area under crops counting areas sown more than once in the same year only once. Table 4.1 indicates that the net sown area occupies the share viz. 85.03% in the study region. However, it is higher than Marathwada region and Maharashtra State 73.88% and 58.30% respectively.

Net sown area increased from 606200 hectares to 659100 hectares between 1980-85 and 2000-2005. It means that about 6.85% net sown area was increased in the entire study region during the period of investigation.

Out of the total geographical area below 80% area was found under net sown area in Jafferabad while 80% to 85% area was net sown area in Bhokardan and Jalna tahsil during 2000-2005. Above 85% geographical area was recorded under net sown area in Partur, Ambad tahsil during 2000-2005. (Map 4.7 A)

Map 4.7 B reveals that below 4% negative change in net sown area was noticed in Jafferabad because net sown area was transferred to fallow land during the period of investigation. Below 6% positive change in net sown area was observed in Jalna and Bhokardan tahsil whereas above 6% positive change in net sown area was recorded in Partur (8.03%) and Ambad (11.62%) from 1980-85 to 2000-2005. (Map 4.7 B) Fallow land was transferred to net sown area in above mentioned four tahsils from 1980-85 to 2000-2005.
Wheel Diagram of General Landuse in Jalna District

1980-85

Index
- Area Under Forest
- Area Not Available for Cultivation
- Uncultivated Land
- Follow Land
- Net Sown Area

Diagram - 4.1

Wheel Diagram of General Landuse in Jalna District

2000-2005

Index
- Area Under Forest
- Area Not Available for Cultivation
- Uncultivated Land
- Follow Land
- Net Sown Area

Diagram - 4.2

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4.6 Tahasilwise Per Capita Net Sown Area in Jalna District:

Taking into consideration all the landuse categories it will be useful at this stage to measure the per capita net sown area in the study region. Table 4.2 gives us idea about tahasilwise per capita net sown area in Jalna district during the last three decades.

Table 4.2

Tahasilwise Per Capita Net Sown Area in Jalna District
(Net sown area in hectare)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>01</td>
<td>Bhokardan</td>
<td>0.60</td>
<td>0.52</td>
<td>0.42</td>
</tr>
<tr>
<td>02</td>
<td>Jafferabad</td>
<td>0.74</td>
<td>0.55</td>
<td>0.43</td>
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<tr>
<td>03</td>
<td>Jalna</td>
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<tr>
<td>04</td>
<td>Ambad</td>
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<td>Partur</td>
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<td>06</td>
<td>Jalna District</td>
<td>0.59</td>
<td>0.48</td>
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</table>

Source: - Computed by the Author

Table 4.2 indicates that during 1981 the highest per capita net sown area was recorded in Jafferabad and Ambad tahsil whereas the lowest per capita net sown area was recorded in Jalna tahsil (0.42 hectares) in 1981. In 1991 the highest per capita net sown area was recorded in Ambad tahsil (0.57 hectares) while the lowest per capita was experienced in Jalna (0.34 hectares). During 2001 per capita net sown area was decreased in every tahsil but per capita net sown area was not so much decrease in study region during the period of investigation.
4.7 Volume of Change in Landuse from 1980-85 to 2000-2005:

Taking into consideration all the landuse categories it will be useful at this stage to measure the overall volume of change of land use from 1980-85 and 2000-2005. Index of volume of change in land use from 1980-85 is indicated by A/B whereas 'A' is the summation of differences of percentage of landuse categories of increase and 'B' is that of decreases for the period of investigation. A and B should be same but opposite singns.\(^{14}\).

This overall volume includes the land actually involved in the transfer from one category to the other category. Naturally, where this volume is greater, we can say that more dynamic conditions exist there.

**Table 4.3**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the tahsil</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Bhokardan</td>
<td>4.60</td>
</tr>
<tr>
<td>02</td>
<td>Jafferabad</td>
<td>3.30</td>
</tr>
<tr>
<td>03</td>
<td>Jalna</td>
<td>5.69</td>
</tr>
<tr>
<td>04</td>
<td>Ambad</td>
<td>11.38</td>
</tr>
<tr>
<td>05</td>
<td>Partur</td>
<td>8.03</td>
</tr>
<tr>
<td>06</td>
<td>Jalna District</td>
<td>7.01</td>
</tr>
</tbody>
</table>

*Source: - Computed by the Author*

Table 4.3 clearly indicates that Jalna, Partur and Ambad tahsils have shown dynamic (above 5%) change in general landuse. Bhokardan and Jafferabad tahsils have shown semi dynamic (below 5%) volume of change in general landuse during the period of investigation.

4.8 Landuse Efficiency:

The proportion of potential agricultural land (uncultivated land) decreased from 5.62% to 3.78% during the period of investigation. 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 cultivated area. Problem of under use of net sown area, low productivity and risk of crop failure are taxing the rural population, therefore, it is truthful to investigate the degree of intensity with which the net sown area is utilized.

Land use efficiency may be defined as the extent to which the net sown area is cropped or re-sown. The gross cropped area as a percentage of the net sown area gives a measure of land use efficiency, which means the intensity of cropping.

Table 4.4
Landuse Efficiency in Jalna District
(Area in "000" hectares)

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of the tahsil</th>
<th>1980-85</th>
<th></th>
<th>2000-2005</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name</td>
<td>Gross cropped area</td>
<td>Net sown area</td>
<td>Index of landuse efficiency</td>
<td>Gross cropped area</td>
</tr>
<tr>
<td>01</td>
<td>Bhokardan</td>
<td>1122</td>
<td>1054</td>
<td>106.45</td>
<td>1165</td>
</tr>
<tr>
<td>02</td>
<td>Jafferabad</td>
<td>612</td>
<td>599</td>
<td>102.17</td>
<td>709</td>
</tr>
<tr>
<td>03</td>
<td>Jalna</td>
<td>1667</td>
<td>1587</td>
<td>106.30</td>
<td>1690</td>
</tr>
<tr>
<td>04</td>
<td>Ambad</td>
<td>2023</td>
<td>1979</td>
<td>102.22</td>
<td>2116</td>
</tr>
<tr>
<td>05</td>
<td>Partur</td>
<td>1223</td>
<td>1200</td>
<td>101.92</td>
<td>1380</td>
</tr>
<tr>
<td>06</td>
<td>Jalna</td>
<td>6667</td>
<td>6419</td>
<td>103.86</td>
<td>7060</td>
</tr>
<tr>
<td></td>
<td>District</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed by the Author

Table 4.4 indicates that the highest gross cropped was recorded in Jalna tahsil during 1980-85 and 2000-2005, on the other hand the lowest gross cropped area was recorded in Jafferabad during the above mentioned period.

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1) **Low efficiency region (Below 105%)**:  
   It was recorded in Partur and Ambad tahasil physical and non-physical determinants of agricultural are responsible for low efficiency.

2) **Moderate efficiency region (105 % to 110%)**:  
   It was observed in Bhokardan and Jalna tahasils where infrastructural facilities for agricultural are not so much developed. Government has given more benefits to improve the irrigational condition even then due to variability of rainfall these tahasils showed moderate landuse efficiency.

3) **High landuse efficiency (Above 110%)**:  
   It was recorded in Jafferabad tahsil during the period of investigation. All tahsils shows 0.14% to 21.39% positive change in landuse efficiency during the period of investigation. The highest positive change in landuse efficiency was experienced in Jafferabad (21.39%) whereas the lowest positive change in landuse efficiency was took place in Bhokardan (0.14%) from 1980-85 to 2000-2005. Landuse efficiency showed in Map No. 4.8
4.9 Correlation Matrices of General Landuse:

Table 4.5 indicates that the correlation between area under forest and area not available for cultivation was above 0.70 in Jafferabad and Jalna whereas it was very slight positive correlation in other tahsils during the period of investigation. Correlation between forest land and culturable waste land was negative in Ambad in the other hand it was positive and it varies from 0.00 to 0.68 in remaining tahsils. Correlation between forest land and fallow land was positive in all tahsils and it varies from 0.01 in Ambad to 0.57 in Bhokardan tahsil during the period of investigation.

Correlation between forest land and net sown area was negative in Ambad while it was positive and varies from 0.29 to 0.69 in remaining tahsils of the study area.

Table 4.5 reveals that very slight negative correlation was experienced in area not available for cultivation and culturable waste land was found in Partur, Jalna and Ambad and very slight positive correlation between these groups was recorded in other tahsils from 1980-81 to 2004-2005 Very slight positive and negative correlation was experienced between area not available for cultivation and fallow land and net sown area in all tahsils.
## Table 4.5
Tahsilwise Correlation Matrics of General Landuse in Jalna District

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of the tahsil</th>
<th>Year</th>
<th>Area Under forest</th>
<th>Area not available for agriculture Purpose</th>
<th>Culturable waste</th>
<th>Fallow land</th>
<th>Net sown area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bhokardan</td>
<td>1980-81 to 2004-05</td>
<td>-</td>
<td>+ 0.45</td>
<td>+ 0.50</td>
<td>+0.57</td>
<td>+0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>+0.018</td>
<td>-0.22</td>
<td>-0.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+0.39</td>
<td>-0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.59</td>
</tr>
<tr>
<td>2</td>
<td>Jafferabad</td>
<td>1980-81 to 2004-05</td>
<td>-</td>
<td>+0.72</td>
<td>+0.43</td>
<td>+0.57</td>
<td>+0.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>+0.04</td>
<td>+0.21</td>
<td>+0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.12</td>
<td>+0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.89</td>
</tr>
<tr>
<td>3</td>
<td>Jalna</td>
<td>1980-81 to 2004-05</td>
<td>-</td>
<td>+0.70</td>
<td>+0.02</td>
<td>+0.51</td>
<td>+0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-0.18</td>
<td>+0.02</td>
<td>+0.09</td>
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<td></td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.5</td>
</tr>
<tr>
<td>4</td>
<td>Ambad</td>
<td>1980-81 to 2004-05</td>
<td>-</td>
<td>+0.17</td>
<td>-0.27</td>
<td>+0.01</td>
<td>-0.11</td>
</tr>
<tr>
<td></td>
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<td>-</td>
<td>-</td>
<td>-0.04</td>
<td>-0.28</td>
<td>+0.75</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>+0.79</td>
<td>+0.04</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Partur</td>
<td>1980-81 to 2004-05</td>
<td>-</td>
<td>+0.35</td>
<td>+0.68</td>
<td>+0.57</td>
<td>+0.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-0.27</td>
<td>+0.05</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>+0.36</td>
<td>+0.24</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.39</td>
</tr>
</tbody>
</table>

**Source:** Computed by the Author.

Very slight positive and negative correlation between culturable waste land and other categories were recorded in all tahsils during the period under study. Very slight positive and negative correlation between fallow land and net sown area was found in all tahsils during the period of investigation.
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