CHAPTER - IV
LANDUSE

4.1 Introduction
4.2 General Landuse
4.3 Intensity of cropping
4.4 Agricultural Landuse
4.5 Irrigated cropping pattern
4.6 Overall changes in irrigated cropping pattern
4.7 Conclusion
4.1 INTRODUCTION

In the previous chapter the socio-economic and organizational factors responsible for fruit farming development have been studied. Present chapter proposes to analyse the landuse pattern, cropping pattern and changes there in the light of preceding discussion. The use of land constitutes a major item in national planning and this is especially in India, where more than 70 per cent of population depends directly or indirectly upon land for their livelihood.

Landuse of a region is the combined result of natural setup and human dynamism within socio-economical setup and technological development. Physical limitations of site find a direct expression in landuse. Landuse pattern is a key to understand geographical adjustment of agricultural resources (Balak Ram and Joshi, 1984).

The landuse and crop distribution pattern also indicate great influence and control imposed by rainfall distribution, physiographic and soil conditions supplemented by technological and other innovations. Landuse is a geographical concept since it involves specific areas. Landuse study in its spatial context is essential to understand regional zonation of the areas of optimum landuse, degraded areas etc. (Sinde, et al. 1987). Efficient use of land depends on the capacity of man to utilize the land and manage it in proper perspective. Thus utilisation of land for different purposes indicates an intimate relationship between prevailing ecological conditions and man (Pawar, 1989).
4.2 GENERAL LANDUSE AND CHANGE

Landuse is an important aspect of studies in agricultural geography. The concept of landuse has been used in so many ways by several scholars. Therefore there is no generally accepted scheme of classification exists despite many years of landuse studies by geographers (Kariel and Kariel, 1972).

In many such schemes, activity on the land has been the major criterion for the classifying landuse which essentially a qualitative rather than quantitative variable.

Land classification is based largely on the quality and intensity of the use of land (Ali Mohammad, 1978). Census of India has classified land utilisation in nine different categories, but in the present study they have been grouped into five major categories, as the percentage of area under individual categories is relatively insignificant. The land in the region has been divided into five major landuse categories.

4.2.1. Forest

This category includes all areas actually under forests whether state or private owned and classified or administrated as forests under any legal enactment dealing with the forests.

The study region has very insignificant area under forest, mostly arid and scrub patches are recorded. The forest area is noted in ranges and upland areas, Old as well as newly planted forests fall in Malshiras, Sangola, Solapur, Madha, Karmala, Barshi, Pandharpur and Mangalwedha talukas.
Table 4.1

(Area in (00) Hectares)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Major landuse categories</th>
<th>Area in hectares</th>
<th>Percentage to total geographical area</th>
<th>Percentage of state average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Geog. Area</td>
<td>14881.81</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>2.</td>
<td>Forest</td>
<td>256.59</td>
<td>1.72</td>
<td>17.46</td>
</tr>
<tr>
<td>3.</td>
<td>Land not available for cultivation</td>
<td>710.40</td>
<td>4.77</td>
<td>09.47</td>
</tr>
<tr>
<td>I</td>
<td>Land put for non agriculture use</td>
<td>168.86</td>
<td>1.13</td>
<td>3.94</td>
</tr>
<tr>
<td>II</td>
<td>Barren and uncultivable land</td>
<td>541.54</td>
<td>3.64</td>
<td>5.53</td>
</tr>
<tr>
<td>4.</td>
<td>Other uncultivated land (excluding fallow land)</td>
<td>786.97</td>
<td>5.29</td>
<td>7.99</td>
</tr>
<tr>
<td>I</td>
<td>Permanent pastures and other grazing lands</td>
<td>404.74</td>
<td>2.72</td>
<td>4.38</td>
</tr>
<tr>
<td>II</td>
<td>Miscellaneous tree crops and groves not included in the Net sown area</td>
<td>41.44</td>
<td>0.28</td>
<td>0.72</td>
</tr>
<tr>
<td>III</td>
<td>Cultivable waste land</td>
<td>340.80</td>
<td>2.29</td>
<td>2.89</td>
</tr>
<tr>
<td>5.</td>
<td>Fallow lands</td>
<td>2494.02</td>
<td>16.76</td>
<td>7.39</td>
</tr>
<tr>
<td>I</td>
<td>Current fallow</td>
<td>1448.57</td>
<td>9.73</td>
<td>3.69</td>
</tr>
<tr>
<td>II</td>
<td>Other fallow</td>
<td>1045.45</td>
<td>7.03</td>
<td>3.70</td>
</tr>
<tr>
<td>6.</td>
<td>Net sown area</td>
<td>10833.83</td>
<td>71.46</td>
<td>57.69</td>
</tr>
</tbody>
</table>

### Table 4.2

**Solapur district: trends of general landuse pattern**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Landuse category</th>
<th>1980-83</th>
<th>1997-2000</th>
<th>Volume of change in per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Forest</td>
<td>2.18</td>
<td>1.72</td>
<td>- 0.46</td>
</tr>
<tr>
<td>2.</td>
<td>Land not available for cultivation</td>
<td>4.88</td>
<td>4.77</td>
<td>- 0.11</td>
</tr>
<tr>
<td>3.</td>
<td>Other uncultivable land (excluding fallow land)</td>
<td>7.01</td>
<td>5.29</td>
<td>- 1.72</td>
</tr>
<tr>
<td>4.</td>
<td>Fallow land</td>
<td>10.33</td>
<td>16.76</td>
<td>+ 6.43</td>
</tr>
<tr>
<td>5.</td>
<td>Net sown area</td>
<td>75.60</td>
<td>71.46</td>
<td>- 4.14</td>
</tr>
</tbody>
</table>

| Dist. Total | 100 | 100 | ± 6.43 |


Forest occupies about 1.72 per cent of the total geographical area in the district which is less than the state average of 17.46 per cent. There are remarkable variations at taluka levels ranging from 0.00 per cent in Akkalkot taluka to over 3.5 per cent in Karmala, Mangalwedha and Pandharpur. High percentage of forested area is recorded in Mangalwedha, Pandharpur, Karmala, Nourth Solapur. Moderate proportion of area under forest can be found in South Solapur only. Remaining talukas have insignificant area under forest (Fig. 4.1.A).

The large-scale variations marked in the pattern show that the region has undergone some changes in the forest cover, varying from 0.12 to above 3 per cent increase. The notable increase in forest cover has taken place only in Mangalwedha (above 3.40 per cent), whereas
remarkable decrease in the forest is recorded in Sangola (over 3.90 per cent). Elsewhere no significant change is observed.

4.2.2. Land not available for cultivation

This category includes the land put to non agricultural use, barren and un cultivable land. Area under non agricultural uses comprises the area under settlements, roads, railway embankments, canals, tanks, and burial, cremation, play, camping etc. Whereas Barren and un cultivable lands are those covered by barren outcrops of rocky hills, swamps, silted lands, old quarry pits, sand deserts, river beds, torrents, ravines etc. In another words this is the land which can not be brought under cultivation. 4.77 per cent area belongs to this category, which is much less as compared to Maharashtra state average of 9.47 per cent. There are notable variations in the distribution of land under this category. Mohol taluka ranks first (over 10 per cent) in area under this category, followed by Sangola (8.22 per cent), Karmala (7.69 per cent). North Solapur and Pandharpur have substantial proportion (above the region average of 4.77 per cent) of area under this category which is followed by Barshi and South Solapur. Madha, Mangalwedha, Malshiras and Akkalkot have recorded less proportion of land (below 3 per cent) under this category.

No uniform pattern of change in land under this category is observable in the distribution of area involved in change. High increase in area under this category has been found in Mohol and Sangola (over 4 per cent). Less than 2 per cent positive change is observed in Barshi, North and South Solapur talukas, to other end decrease under this category is confined to Malshiras (over 4 per cent) followed by Akkalkot (over 3.5
per cent). Negligible change in area under this category is observed in Karmala, Pandharpur, Mangalwedha and Madha.

4.2.3. Other uncultivated land (excluding fallow land)

This category of land consists of i) culturable waste, ii) permanent pasture and iii) land under miscellaneous tree crops and groves. Culturable waste land includes the land which can be brought under cultivation for some times but which has been not cultivated successively for more than 5 years. The category of land under miscellaneous tree crops includes land under casuarina trees, grass, bamboo bushes or other trees used for fuel. Actually this land is put to some agricultural use but the areal extent of it is not included in the category for net sown area. Total area under this landuse category accounts to 5.29 per cent, in the district which is less than state average of 7.99 per cent. Regional distribution under this category varies from less than 2 per cent to over 17 per cent. Malshiras has recorded highest percentage (17.14 per cent) of area under this category followed by Sangola (9.84 per cent), moderate proportion of this category can be found in Northern talukas of the district. Rest of talukas have insignificant area under this category.

Spatial distribution of volume of change in uncultivated land is largely uneven. Maximum increase in area involved in change is found in two western talukas i.e. Malshiras and Sangola (3.12 & 2.06 per cent respectively). Rest of the talukas recorded decrease in area under this category, amongst which, Akkalkot, North Solapur and Karmala have very high negative change (over 4 per cent to above 5 per cent).
SOLAPUR DISTRICT
GENERAL LANDUSE PATTERN
(1997-2000)

Fig. 4.1
4.2.4. Fallow land

The term fallow is applied to land not under plough at the time of reporting but which has been sown in the past. The span of period for which a land remains fallow is different in various parts of the district. Because of scarcity conditions in all aspects, extent of fallow land varies in respect to time and space. Two types of fallow lands viz. current fallow and other fallow are considered by the agricultural census in India. For the present study, these two categories are grouped together. The study region has a substantial proportion of fallow land with an average of 16.76 per cent of the total geographical area which is more than the state average of 7.39 per cent.

Western part of the district recorded high per centage (over 15 per cent) of area under this category, where in Sangola ranks first (over 25 per cent). In eastern part of the study region only Akkalkot records over 15 per cent land as fallow. Rest of the talukas i.e. North Solapur, Mohol, South Solapur, Madha and Barshi have higher proportion of fallow lands than the state average. Percentage of fallow land in Solapur district decreases from southwest to northeast. Field work of the study indicuates that since the adoption of sturdy commercial fruit crops turns in to the best way of available resource optimization, farmers of the region have given up unprofitable dry land cropping. i.e. bajara, pulses and other cereal crops, thinking it is better to keep fallow land instead of accepting risk. This has resulted in existence of fallow land in western low rainfall areas.
During the period under review it is observed that substantial proportion of area is involved in change. Highest increase in the area under this category has been found in Karmala (over 15 per cent), followed by Akkalkot (over 14.5 per cent). 5 to 10 per cent increase in area under this category is noted in Madha, Sangola, Malshiras and Mohol. Low proportion of area under this category is found in Pandharpur, North and South Solapur. Increase in area under fallow condition could well be attributed in the attitude of farmers to abandon the cultivated land which is not at all productive. Whereas insignificant decrease in area under this category is found only in Barshi and Mangalwedha.

4.2.5. Net sown area

This category constitutes the extent of the cropped land in any region, which is of vital significance in studies relating to agricultural geography. The net area sown is the actual area under crops sown once in the same year. In Solapur district net sown area occupies the largest share i.e. 71.46 per cent of the region's geographical area which is more than state average of 57.69 per cent. River valleys of the district are well suited for agricultural practices. Although less productive, the land on plateau and hill slopes has also been brought under plough.

The outstanding proportion of this category is observed in three talukas namely Barshi, South Solapur and Madha (over 80 per cent). Other areas with higher percentage are in existence in Akkalkot Nourth Solapur, Pandharpur, Mohol and Mangalwedha (Fig. 4.2.A). Low proportion of this category (below 65 per cent) is found in Karmala and
Malshiras. Lowest proportion of area under this category can be found in Sangola (56.37 per cent), which is again less than state average. As discussed earlier, this low proportion of net sown area in this taluka is the result of change in attitude of farmers pertaining to available water-land-resource optimization. Therefore, naturally the proportion of net sown area has been restricted at lowest level in the region.

Region as whole except Mangalwedha, Malshiras and Barshi talukas experiences decrease in area under this category(Fig. 4.2.B). Insignificant increase (up to 1 per cent to 4.6 per cent) is found in Mangalwedha, Malshiras and Barshi. The range of decrease in area under this category is in between 0.33 per cent to 11 per cent. Noteworthy decrease in the proportion of this category has taken place in Karmala (over 11 per cent) and Sangola (over 8 per cent). Moderate decrease is found in Mohol, Madha and Akkalkot. Whereas low proportions of decrease in area under this category is observed in South Solapur and Pandharpur.

The proportion of cultivated area has decreased by 4.14 per cent which is under fallow land systems (6.43 per cent) during the last two decades. Forgoing analysis reveals that though region has sound proportion (71.46 per cent) of cultivated area compared to state average the scarcity conditions have hampered the intensification and utilization of net sown area considerably. Regional variation in this category is the effect of total adversity condition.
SOLAPUR DISTRICT

NET SOWN AREA (1997-2000)

A

Area in %

>80
70-80
60-70
<60

CHANGES IN NET SOWN AREA
(1981-83 TO 1997-2000)

B

Volume Of Change in %

Increase
<2
0-2
6-8
8

Decrease
0-2
2-4

INTENSITY OF CROPPING

C

Index Of Croping
Intensity In %

>120
110-120
<110
R.a. 111.69 %

CHANGES IN INTENSITY OF CROPPING
(1981-83 TO 1997-2000)

D

Volume Of Change in %

Increase
<15
10-15
>5
R.a. +5 63

Decrease
0-5
5-10

Fig. 4.2
4.3 INTENSITY OF CROPPING

Intensity of cropping is defined as the extent to which the net area sown has been cropped or resown. The total cropped area or gross area sown as percentage of net area sown gives a measure of land use efficiency, which really means the intensity of cropping. The intensity of cropping refers to the number of crops raised on a field during an agricultural year. For example, if one crop is grown on a field in one year, the index of cropping is 100 per cent; if two crops in a year are procured, the intensity index will be 200 per cent. Therefore, the higher the index of the intensity of cropping, higher the land use efficiency and vice-versa (Singh 1974).

In Solapur district most of the crops are grown during kharif and rabi seasons due to peculiar climatic conditions and traditional methods of cropping in the area of well irrigation. Most common practice adopted by the farmers is that in kharif crops of short duration like bajara, maize, mug, groundnut, etc. are sown followed by rabi jowar. In areas of well irrigation farmers use to practice three crops in a year. Intensity of cropping is controlled to a great extent by the drought conditions in the region.

The spatial analysis of intensity of cropping revels that Karmala, Malshiras and Pandharpur have high intensity (above 119), where canal and well irrigation facilities are dominant (Fig. 4.2.C), followed by Sangola, Barshi and Mangalwedha. In these talukas kharif and rabi crops are growned widely by the farmers. North central and eastern parts of the district have low intensity of cropping due to rainfed agriculture and
adoption of fallow system for two three years. The traditional nature of agriculture is influencing factor in this part.

The spatio-temporal analysis of the intensity of cropping indicates that substantial increase in the intensity of cropping is observed in Karmala, Pandharpur and Malshiras (over 12.50 per cent) (Fig.4.2.D). In this context Karmala ranks top where lift irrigation from Ujani reservoir has been well developed. Moderate increase in cropping intensity is noted in Sangola and Barshi, whereas, above 5 per cent decrease in cropping intensity has been observed in South Solapur and Madha talukas. Insignificant change in the cropping intensity can be found in eastern, central and far eastern talukas of study region.

### 4.4 AGRICULTURAL LANDUSE

Agricultural land use refers to the proportion of area used to grow different crops during the agricultural year. Whereas cropping pattern means the proportion of area under various crops at a point of time (Kanwar, 1972). However this dynamic concept indicates that no agricultural land use pattern is ideal and good for all times to come (Chavan, 1987). It undergoes certain changes with adoption of innovations. It is also guided by physical, cultural and technological factors. Thus utilization of land for different purposes indicates an intimate relationship between prevailing ecological conditions and man (Pawar 1989). The study of crop association provides an adequate understanding of land and integrative reality that demands distributional analysis (A.Mohammad, 1978). The study of the agricultural land use not only provides base for understanding the complex structure of agricultural
landscape of the region, but also helps for better planning. Therefore, in this part of the present chapter an attempt is made to examine how intensively net sown area is being cropped.

Cropping pattern of the study region is typical of an under developed agricultural economy. The area under study grows a variety of crops. The relative strengths of the crops grown is derived by calculating the percentage strength for each talukas. Most of the agricultural land is covered by food crops (88.14 per cent) jowar, bajara and wheat are the three important staple crops occupy 65.55 per cent of the total cropped area. Fruits, sugarcane are other two important commercial food crops which occupy significant cropped land that is 5.55 per cent and 5.12 per cent of total cropped area respectively.

The changes in agricultural landuse of the district during the period under investigation are analysed further.

4.4.1 General cropping pattern and change

Jowar

Jowar ranks first in the cropping pattern of the study region. Being a drought resistant crop it can withstand drought to a considerable extent and is grown as dry land and irrigated crop. It is a staple food in the region, which also provides dry fodder. Due to its extra ordinary quality jowar of this region is famous as “Barsi and Mangalwedha Jowar” all over India. Spatial pattern of jowar is a reflection of topography, climate and irrigation facilities. It shares high percentage (63.31 per cent to 70.12 per cent) in Madha, Sangola, Mohol, South Solapur and North Solapur.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Crops</th>
<th>1980-83 Area</th>
<th>Percentage</th>
<th>1997-2000 Area</th>
<th>Percentage</th>
<th>Volume of change in percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rice</td>
<td>5013.9</td>
<td>0.42</td>
<td>2805</td>
<td>0.24</td>
<td>-0.18</td>
</tr>
<tr>
<td>2.</td>
<td>Wheat</td>
<td>38427.3</td>
<td>3.18</td>
<td>36866.5</td>
<td>3.10</td>
<td>-0.08</td>
</tr>
<tr>
<td>3.</td>
<td>Jowar</td>
<td>769622.7</td>
<td>63.69</td>
<td>703729.5</td>
<td>59.25</td>
<td>-4.54</td>
</tr>
<tr>
<td>4.</td>
<td>Bajara</td>
<td>60223.2</td>
<td>4.99</td>
<td>37982</td>
<td>3.20</td>
<td>1.79</td>
</tr>
<tr>
<td>5.</td>
<td>Maize</td>
<td>12517.6</td>
<td>1.04</td>
<td>19065.4</td>
<td>1.60</td>
<td>+ 0.56</td>
</tr>
<tr>
<td>6.</td>
<td>Other cereals</td>
<td>2202.8</td>
<td>0.21</td>
<td>811</td>
<td>0.07</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>Total cereals</td>
<td>888307.5</td>
<td>73.63</td>
<td>801259.4</td>
<td>67.46</td>
<td>-6.17</td>
</tr>
<tr>
<td>7.</td>
<td>Gram</td>
<td>30093</td>
<td>2.49</td>
<td>27714</td>
<td>2.33</td>
<td>-0.16</td>
</tr>
<tr>
<td>8.</td>
<td>Tur</td>
<td>56435.6</td>
<td>4.68</td>
<td>39616.5</td>
<td>3.34</td>
<td>-1.34</td>
</tr>
<tr>
<td>9.</td>
<td>Moog</td>
<td>5373.8</td>
<td>0.45</td>
<td>2382.5</td>
<td>0.20</td>
<td>-0.25</td>
</tr>
<tr>
<td>10.</td>
<td>Other pulses</td>
<td>59945.1</td>
<td>4.97</td>
<td>34548.5</td>
<td>2.91</td>
<td>-2.06</td>
</tr>
<tr>
<td></td>
<td>Total pulses</td>
<td>151847.5</td>
<td>12.59</td>
<td>104261.5</td>
<td>8.78</td>
<td>-3.81</td>
</tr>
<tr>
<td></td>
<td>Total foodgrains</td>
<td>1040155</td>
<td>86.22</td>
<td>905520.9</td>
<td>76.24</td>
<td>-9.98</td>
</tr>
<tr>
<td>11.</td>
<td>Sugarcane</td>
<td>22985.8</td>
<td>1.90</td>
<td>60785.1</td>
<td>5.12</td>
<td>+ 3.22</td>
</tr>
<tr>
<td>12.</td>
<td>Spices</td>
<td>4827</td>
<td>0.40</td>
<td>4208</td>
<td>0.35</td>
<td>-0.05</td>
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<tr>
<td>13.</td>
<td>Fruits</td>
<td>2056.73</td>
<td>0.17</td>
<td>65908</td>
<td>5.55</td>
<td>+ 5.38</td>
</tr>
<tr>
<td>14.</td>
<td>Vegetables</td>
<td>7075.9</td>
<td>0.59</td>
<td>10406.1</td>
<td>0.88</td>
<td>+ 0.29</td>
</tr>
<tr>
<td></td>
<td>Total food crops</td>
<td>1077100.43</td>
<td>89.28</td>
<td>1046828.1</td>
<td>88.14</td>
<td>-1.14</td>
</tr>
<tr>
<td>15.</td>
<td>Cotton and other fiber crops</td>
<td>16436.8</td>
<td>1.36</td>
<td>4466.3</td>
<td>0.38</td>
<td>-0.98</td>
</tr>
<tr>
<td>16.</td>
<td>Groundnut</td>
<td>26258.6</td>
<td>2.18</td>
<td>30752.4</td>
<td>2.59</td>
<td>+ 0.41</td>
</tr>
<tr>
<td>17.</td>
<td>Safflower</td>
<td>54353.6</td>
<td>4.50</td>
<td>36695.4</td>
<td>3.09</td>
<td>-1.41</td>
</tr>
<tr>
<td>18.</td>
<td>Other oilseeds</td>
<td>16133.4</td>
<td>1.34</td>
<td>30526.3</td>
<td>5.09</td>
<td>+ 3.75</td>
</tr>
<tr>
<td></td>
<td>Total oilseeds</td>
<td>96745.6</td>
<td>8.02</td>
<td>127974.1</td>
<td>10.77</td>
<td>+ 2.75</td>
</tr>
<tr>
<td>19.</td>
<td>Fodder</td>
<td>13180.7</td>
<td>1.09</td>
<td>8182.3</td>
<td>0.69</td>
<td>-0.40</td>
</tr>
<tr>
<td>20.</td>
<td>Miscellaneous nonfood crops</td>
<td>2956.3</td>
<td>0.25</td>
<td>276.2</td>
<td>0.02</td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td>Total nonfood crops</td>
<td>129319.4</td>
<td>10.72</td>
<td>140898.9</td>
<td>11.86</td>
<td>+ 1.14</td>
</tr>
<tr>
<td></td>
<td>Gross cropped area</td>
<td>1206419.83</td>
<td>100</td>
<td>1187727</td>
<td>100</td>
<td>+ 13.60</td>
</tr>
</tbody>
</table>

Source: Compiled by researcher.
There is no any single talukas having less than 50 per cent of cropped area under this crop.

In case of jowar cultivation no salient change is observed at regional level. But taluka level analysis reveals considerable fluctuation. In the study region the area under jowar has decreased from 769622.7 hectares (63.79%) to 763729.5 hectares (59.25%), which is the case in Pandharpur, Karmala, Madha, Akkalkot, Barshi, Nourth Solapur, Mangalwedha, Mohol talukas. Actually these northern and eastern parts of the district are the traditional jowar growing tracts. Since the development of irrigation facilities at present, the farmers of these talukas have switch over to the cultivation of commercial crops. Striking increase in hectarage under this crop (12.27 per cent) is found in Sangola followed by South Solapur (6.56 per cent). It is largely due to introduction of High Yield Variety jowar seeds, which are again drought registrant but superior cereal crop. It is also observed that Sangola talukas has devoted 14.77 per cent additional irrigated land for this crop.

Wheat

Wheat is a rabi crop and requires winter temperature between 10 to 20°C. It can also be grown in areas where rainfall is less than 500 mm. with the help of irrigation. In the study region post monsoon rainfall is not sufficient for maximum production. The extent of irrigation provided to this crop determines its areal extent and yielding capacity. Wheat occupies only 3.10 per cent of the total cropped area of Solapur district, which is in Malshiras taluka followed by Karmala and Pandharpur talukas.
where irrigation facilities have been developed. Moderate proportion of area under this crop is observed in Barshi, South Solapur and Mohol also.

In case of wheat cultivation no major change is observed in the district. The analysis shows that hectarage under wheat has decreased from 38427.3 hectares (3.18 per cent) to 36886.5 (3.10 per cent) during the period under investigation. Noteworthy decrease can be found in Malshiras, Mangalwedha and Mohol followed by Barshi. Trend of farmers in the region is to bring new irrigated land under sugarcane cultivation.

**Bajara**

It is the most drought resistant crop requiring less amount of rainfall (350 to 450 mm) sustaining on shallow, black lighter soil or inferior land. About 3.20 per cent of the total cropped area of the district is under bajara. The principal bajara growing zone falls to south-western, western and north-western parts occupying area about 18.14, 11.49 and 3.09 per cent respectively. However, the area under bajara has decreased from 60223.2 hectares (4.99 per cent) to 37982 hectares (3.20 per cent) during the period under investigation. It is more than 36.5 per cent in overall study region except Malshiras. Area under this crop has increased in Malshiras taluka by 6999.2 hectares. The reason lies in the introduction of HYV of bajara grown on irrigated land. Except this talukas hectarage under this crop in the region has decreased and also its share has lost by 1.79 per cent. But at taluka level loss of proportion exceeds 17 percent in the Sangola taluka. Decrease in area under this crop is also observed in Akkalot, South Solapur, Mohol and Mangalwedha. In rest talukas insignificant change in area under this crop is observed.
Tur

Tur is an important pulse crop for livestock and human being as a nutritive food. It also constitutes important chain in rotation system of crops from the view point of soil management (Pawar 1989). Tur a kharif crop is generally grown as rain fed crop and rarely supplemented by irrigation. It shares about 3.34 per cent of the total cropped area. The principal growing areas of tur are the northeast and eastern parts of the region.

During the period under investigation tur it has lost the hectarage under it from 56435.6 (4.68 per cent). Major decrease in the area under this crop has been experienced in South Solapur, Norht Solapur, Akkalkot and Barshi, which are traditional growing talukas of tur. Decrease in area under tur indicates the changing tendency of farmers to grow other commercial crops alongwith sugarcane.

Other pulses

Study region also produces varieties of pulses alongwith tur e.g. gram, mung, math etc. Usally they are grown in rabi and kharif seasons occupying about 64,645 hectares (5.44 per cent) of the total harvested area. These pulses are sown as an inter crop and largely rain fed. The regional variation in cultivation of pulses is largely influenced by agro-climatic and edaphic conditions. It varies from 2.49 per cent in western part to 7.37 per cent in eastern parts of the district. In general proportion of area under these crops increases from west to east. Particularly Barshi is having highest area under these pulses in the district.
The area under pulses has decreased from 1,51,847.5 hectares (12.59 per cent) to 10,4261.5 hectares (8.78 per cent) during the period under investigation. It have been observed that major decrease in area under traditional pulses like math, black gram is considerable. Major decrease in hectarage under pulses is found in South Solapur (1.63 per cent), Mangalwedha (8.46 per cent), Pandharpur (6.99 per cent), Malshiras (5.92 per cent) and Mohol (5.63 per cent) talukas. It is largely due to the shift towards crops like sugarcane, fruits and vegetables.

**Sugarcane**

As one of the important cash crops in the region, occupies 18.52 per cent of gross irrigated area and 5.12 per cent of gross cropped area, it ranks third among irrigated crops next to fruit and jowar. Major percentage of sugarcane cultivating area rests in north-west and central part of the district, which at present is in Pandharpur (14.29 per cent), Malshiras (11.74 per cent) and Mangalwedha (7.80 per cent) talukas, where canal and lift irrigation facilities are developed.

It has been observed that hectarage under this crop has increased by more than two and half times during the period under review. Noteworthy increase in hectarage (from 3.00 to 11 per cent) has taken place in Pandharpur, Mangalwedha, South Solapur, Karmala, Mohol and Akkalkot taluka is mainly due to increase in perennial water sources from Ujani canal for Pandharpur, Mohol and Karmala taluka. The reason of which is the benefit from Ujni project.
Fruits and vegetables

Varieties of fruits and vegetables are grown in the region, which together share 6.43 per cent of the total cropped area. Leading fruit crops in the region is pomegranate, followed by ber, grape, mango, guava, lemon, chikku, banana, custard apple etc. Much variation can be found at taluka level. Highest area under fruit crops is recorded in Sangola taluka. This taluka has over 10 per cent of the total cropped land under various fruit crops. Pandharapur (8.81 per cent), Mangalwedha (6.18 per cent), Mohol (6.04 per cent), Madha (5.95 per cent) and Barshi taluka (5.25 per cent) follow it. Sangola taluka is at the top in pomegranate cultivation, whereas Pandharpur and Nouth Solapur are ranking highest in grapevine cultivation. Madha is ranking highest in ber, whereas Barshi is leading in mango cultivation. In the grapevine growing areas of the region Thomson seedless, Sonaka are the famous varieties, which earn valuable foreign currency. Ber and custard apple, sturdy in nature, are also grown in this zone. Moderate area under ber cultivation is recorded in Sangola followed by Mohol, Pandharpur and Mangalwedha talukas.

Pomegranate and ber have diffused over the region due to the efforts of farmers of Sangola, whereas credit of spread of grapevine goes to the farmers of the North Solapur and Pandharpur talukas (Pawar and Phule, 2002).

The area under vegetables is meager in the region (below 1 per cent). Leading talukas in respect of area under vegetables are Mohol, Karmala, Madha, Pandharpur and South Solapur taluka. These talukas
have devoted 2.59 per cent to over 7 per cent irrigated area for the cultivation of vegetables.

The region has experienced revolutionary growth in hectarage under fruit crops from 2056.73 hectares (0.17 per cent) to 65908 hectares (5.55 per cent) during the period under investigation. It falls largely in Sangola, Pandharpur, Barshi, North Solapur, Mohol, Malshiras and Mangalwedha. In these talukas farmers have adopted fruit crops with long experience of suitable agro climatic and edaphic conditions. Also the special efforts made by farmers of the region with agricultural experts form Mahatma Phule Krishi Vidypeeth, Rahuri and Government by providing 100 per cent subsidy for fruit crop plantation have made growth faster in area under fruit crops (Pawar and Phule, 2001). Maximum coarser shallow and well drained soils have been brought under ber, pomegranate, custard apple etc. For these sturdy fruit crops available seasonal irrigation is used. Sangola taluka has been brought highest hectarage under fruit crops from 73.6 hectares (0.07 per cent) to 10564 hectares (10.24 per cent) during the period under review. At present Sangola leads in pomegranate cultivation in the district. In general overall in the region, area under fruits has increased form 2.77 per cent to 10.17 per cent. Sangola, Pandharpur, Mangalwedha, Mohol taluka have posted higher increase along with moderate increase in Madha, Barshi and North Solapur talukas. Rest of talukas have recorded low increase (below 4 per cent) in the area under fruit crops.

There is slight increase in the hectarage under vegetables from 7075.9 (0.59 per cent) to 10466.1 hectares (0.88 per cent) during the
period under investigation, which is in Karmala, Pandharpur, Mohol and South Solapur. Increase in hectarage under vegetable in these talukas caused due to proximity of district market and head quarter and development of irrigation facilities.

Oil Seeds

Oil seeds grown in the region include groundnut, safflower, sunflower and other. Among that groundnut and safflower are important. Oil seeds all together constitute about 10.77 per cent to the total cropped area out of which safflower shares 3.09 per cent. It is sturdy and can sustain with low soil moisture, which is mostly rain fed. It is cultivated as a separate or inter crop with rainfed jowar in rabi season. Karmala records highest proportion of the area under this crop (9.45 per cent) followed by Mangalwedha (7.97 per cent), Madha (7.12 per cent) and Pandharpur (2.12 per cent).

Groundnut as another important oil seed of the region, occupies 2.59 per cent of the total cropped area. Madha having top position records 5.29 per cent to the total cropped area followed by Akkalkot (4.68 per cent), Karmala (4.21 per cent), Pandharpur (3.40 per cent), Barshi (2.45 per cent) and North Solapur (2.27 per cent). Remaining talukas of the region have negligible area under this crop.

The area under oil seeds has increased from 96,745.6 (8.02 per cent) to 127,974 hectares (10.77 per cent) during the period under review. This increase in area under oil seeds is confined to North Solapur, Akkalkot, Barshi, Mangalwedha, South Solapur and Madha talukas by
(7.31 per cent), (8.87 per cent), (5.84 per cent), (5.17 per cent), (2.28 per cent), and (5.30 per cent) respectively.

In fact area under safflower which is the traditional oil seed of the region has decreased. However the farmers of these talukas inclined to grow the High Yield Variety of sunflower and other oil seeds. It has been observed that in every taluka of the region other oil seeds except safflower and groundnut are cultivated in large scale. Therefore the hectarage under other oil seeds has increased more than 3.75 times. The area under groundnut has increased by 0.41 per cent during the period under review. Mangalwedha is the only taluka where area under safflower has increased from 3666 (4.51 per cent) to 7198 hectares (7.79 per cent). Whereas area under groundnut has increased in Karmala from 1254 (1.01 per cent) to 5203 hectares (4.21 per cent) and that of Pandharpur from 1654 (1.60 per cent) to 3844 hectares (3.40 per cent). This increase has taken place largely because of Ujani project. Since the availability of assured irrigation facilities groundnut is replaced by sugarcane, wheat or grape vine cultivation in Barshi, Mohol, South Solapur, Mangalwedha and Malshiras talukas.

4.4.2 Overall change in cropping pattern

"A change in agricultural land use implies a change in proportion of area under different crops at two different times" (Pawar, 1989). As such the amount of area involved in change for each areal unit (taluka) is calculated for individual crop and the crops of the leading increase and decrease are marked. In order to measure the quantitative change Weaver's Index (1954) is employed. Index of change in agricultural land
SOLAPUR DISTRICT
OVERALL CHANGES IN AGRICULTURAL LANDUSE PATTERN

Volume Of Change In %

>25 Very Outstanding Area Of Change
20-25 Outstanding Area Of Change
15-20 Moderate Area Of Change
<15 Area Of Low Change
R.a. + 13.60%

CROPS OF LEADING INCREASE

Sugarcane
Fruits
Jowar
Other Oil Seeds
Bajara
Tur
Other Pulses

CROPS OF LEADING DECREASE

Fig. 4.3
use = A/B. 'A' is the difference of percentage of crops of increase and "B" is the difference of percentage of crops of decrease for the period under investigation. This percentage of land which is actually involved in transfer of area from one crop to other. Higher the index, the more radical are the changes in land use pattern and lower the index more is the stability.

Index of change computed reveals four different areas of changes (Fig. 4.3.A).

Very outstanding are a of change

Very outstanding area of change with greater dynamism (over 29 per cent) is observed only in Pandharpur taluka, where proportion of irrigated area has increased by more than three times during the period under review. In this taluka increased irrigated land is mainly brought under sugarcane, fruits and vegetables. Crops of leading decrease are jowar and other pulses.

Outstanding area of change

Proportion of 20 to 25 per cent change is found in Sangola and South Solapur. Proportion of irrigated area of Sangola has increased more than twice during the period under review. The crops of leading increase noted in this taluka are fruits, vegetables and jowar, while crops of leading decrease are bajara, pulses and safflower (Fig. 4.3.B and C).

In south Solapur taluka irrigated area has increased from 7975 hectares to 14092 hectares. Irrigated land of this taluka is mainly used for
sugarcane, fruit crops and other oil seeds. The crops of leading decrease in this taluka are pulses, cotton and groundnut.

Areas of moderate change

The proportion of 15 to 20 per cent change is largely associated with Mangalwedha, Akkalkot, Karmala, Nourth Solapur and Barshi. Although these talukas are famous for growing traditional crops like Jowar and pulses, the crops of leading increase are sugarcane, and other oil seeds. These taluka have brought increased irrigated area under these crops at the cost of land under Jowar and pulses.

Area of low change

The transfer of area below 15 per cent is observed in Malshiras, Mohol and Madha taluka. The crops of leading increase in these talukas are bajara & fruits. It is interesting to note that in Malshiras taluka which is facilitated by canal irrigation, bajara has come up as a crop of leading increase at the cost of other pulses and cotton. It is due to adoption of high yielding varieties on irrigated land which is environmentally most suitable in this part. Madha and Mohol have fruit crop of leading increase at the cost of jowar and other pulses. These talukas are leading in ber and lime cultivation respectively, using available water resources.

4.5 IRRIGATED CROPPING PATTERN AND CHANGES

Irrigation is one of the important basic inputs which supports adoption of agricultural innovations such as high yielding varieties of seeds, new commercial fruit crops, machineries, chemical fertilizer and
overall development of agriculture as well. In case of irrigated crops, the choices are directly governed by specific purpose for which irrigated crops are to be grown. These are also conditioned by geographical factors and modified by the emergent, social and economic circumstances (Manoria, 1979). Present section therefore, deals with the irrigated cropping pattern and changes therein for some important individual crops of the study region.

Wheat

Although wheat occupies only about 3.10 per cent of the total cropped area, it shares 8.81 per cent of the total irrigated area. Highest irrigated area under this crop lies into Malshiras (15.26 per cent) followed by Karmala (11.48 per cent) Nourth Solapur (9.20 per cent) and Pandharpur (8.70 per cent). Rest of the talukas of the region are using less than 6 per cent of total irrigated land for this crop.

Jowar

Jowar shares about 20.13 per cent of the irrigated land which is more than the state average of 17.48 per cent. Over 42 per cent of irrigated land is covered under this crop in Sangola taluka (Fig. 4.5.A) followed by North Solapur (31.27 per cent) and Madha (28.86 per cent) talukas. 15 to 20 per cent of irrigated land is shared by jowar in Pandharpur, Malshiras, Mohol and Akklkot talukas, whereas 10 to 15 per cent such land is alloted to this crop in Karmala, South Solapur and Barshi. Less than 10 per cent irrigated area has been brought under Jowar in Mangalwedha taluka.
Table No. 4.4
Solapur District: Temporal change in irrigated cropping pattern 1980-83 to 1997-2000
(Area in Hectares)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Crops</th>
<th>1980-83 area</th>
<th>Percentage</th>
<th>1997-2000 area</th>
<th>Percentage</th>
<th>Volume of change in percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rice</td>
<td>3083.5</td>
<td>1.79</td>
<td>1422.7</td>
<td>0.44</td>
<td>-1.35</td>
</tr>
<tr>
<td>2.</td>
<td>Wheat</td>
<td>21926.3</td>
<td>12.72</td>
<td>28529.7</td>
<td>8.81</td>
<td>-3.91</td>
</tr>
<tr>
<td>3.</td>
<td>Jowar</td>
<td>64083.8</td>
<td>37.18</td>
<td>65147.2</td>
<td>20.13</td>
<td>-17.05</td>
</tr>
<tr>
<td>4.</td>
<td>Bajara</td>
<td>3604.8</td>
<td>2.09</td>
<td>10050.7</td>
<td>3.10</td>
<td>+1.01</td>
</tr>
<tr>
<td>5.</td>
<td>Maize</td>
<td>10639.8</td>
<td>6.17</td>
<td>11929.4</td>
<td>3.69</td>
<td>-2.48</td>
</tr>
<tr>
<td>6.</td>
<td>Other cereals</td>
<td>998.8</td>
<td>0.58</td>
<td>1708.6</td>
<td>0.53</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>Total cereals</td>
<td>104337</td>
<td>60.53</td>
<td>118788.3</td>
<td>36.70</td>
<td>-23.83</td>
</tr>
<tr>
<td>7.</td>
<td>Gram</td>
<td>5647.9</td>
<td>3.28</td>
<td>9189.4</td>
<td>2.84</td>
<td>-0.44</td>
</tr>
<tr>
<td>8.</td>
<td>Tur</td>
<td>1128.7</td>
<td>0.65</td>
<td>3373.5</td>
<td>1.04</td>
<td>+0.39</td>
</tr>
<tr>
<td>9.</td>
<td>Moog</td>
<td>60.9</td>
<td>0.04</td>
<td>264.6</td>
<td>0.08</td>
<td>+0.04</td>
</tr>
<tr>
<td>10.</td>
<td>Other pulses</td>
<td>367.3</td>
<td>0.21</td>
<td>5653.1</td>
<td>1.75</td>
<td>+1.54</td>
</tr>
<tr>
<td></td>
<td>Total pulses</td>
<td>7204.8</td>
<td>4.18</td>
<td>18480.6</td>
<td>5.71</td>
<td>+1.53</td>
</tr>
<tr>
<td></td>
<td>Total foodgrains</td>
<td>111541.8</td>
<td>64.71</td>
<td>137268.9</td>
<td>42.41</td>
<td>-22.30</td>
</tr>
<tr>
<td>11.</td>
<td>Sugarcane</td>
<td>22918.6</td>
<td>13.30</td>
<td>59941.2</td>
<td>18.52</td>
<td>+5.22</td>
</tr>
<tr>
<td>12.</td>
<td>Spices</td>
<td>4298.8</td>
<td>2.49</td>
<td>3967.3</td>
<td>1.22</td>
<td>-1.27</td>
</tr>
<tr>
<td>13.</td>
<td>Fruits</td>
<td>2056.73</td>
<td>1.20</td>
<td>65908</td>
<td>20.36</td>
<td>+19.16</td>
</tr>
<tr>
<td>14.</td>
<td>Vegetables</td>
<td>6708.8</td>
<td>3.89</td>
<td>11123.5</td>
<td>3.44</td>
<td>-0.15</td>
</tr>
<tr>
<td></td>
<td>Total food crops</td>
<td>147524.73</td>
<td>85.59</td>
<td>278208.9</td>
<td>85.95</td>
<td>+0.36</td>
</tr>
<tr>
<td>15.</td>
<td>Cotton and other fiber crops</td>
<td>7924.6</td>
<td>4.6</td>
<td>3776.4</td>
<td>1.17</td>
<td>-3.43</td>
</tr>
<tr>
<td>16.</td>
<td>Groundnut</td>
<td>12303.7</td>
<td>7.14</td>
<td>18728.4</td>
<td>5.78</td>
<td>-1.36</td>
</tr>
<tr>
<td>17.</td>
<td>Safflower</td>
<td>—</td>
<td>—</td>
<td>6570.1</td>
<td>2.03</td>
<td>+2.03</td>
</tr>
<tr>
<td>18.</td>
<td>Other oilseeds</td>
<td>138.1</td>
<td>0.08</td>
<td>9709.3</td>
<td>3.00</td>
<td>+2.92</td>
</tr>
<tr>
<td></td>
<td>Total oilseeds</td>
<td>12441.8</td>
<td>7.22</td>
<td>35007.8</td>
<td>10.81</td>
<td>+3.59</td>
</tr>
<tr>
<td>19.</td>
<td>Fodder</td>
<td>4181.9</td>
<td>2.42</td>
<td>6367.5</td>
<td>1.97</td>
<td>-0.45</td>
</tr>
<tr>
<td>20.</td>
<td>Miscellaneous nonfood crops</td>
<td>295.5</td>
<td>0.17</td>
<td>3417.7</td>
<td>0.10</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>Total nonfood crops</td>
<td>2484.8</td>
<td>14.41</td>
<td>45469.4</td>
<td>14.05</td>
<td>-0.39</td>
</tr>
<tr>
<td></td>
<td>Gross cropped area</td>
<td>172368.53</td>
<td>100</td>
<td>323678.3</td>
<td>100</td>
<td>+32.31</td>
</tr>
</tbody>
</table>

Source: Compiled by researcher.
Bajara

3.10 per cent of total irrigated area is shared by this crop alongwith 1.01 per cent increase in irrigated area during the period under investigation. The major change in this regard have occurred in Malshiras (9.38 per cent), Madha (1.75 per cent), Karmala (0.04 per cent) and Pandharpur (0.05 per cent). It is largely due to introduction of High Yield Variety seed and inclination of farmers to cultivate superior variety providing irrigation.

Tur

Though tur is a rainfed crop in the region it shares 1.04 per cent of irrigated land. Irrigated area under this crop is in Barshi (4.70 per cent), Karmala (2.01 per cent) and Sangola (1.02 per cent) taluka, whereas Pandharpur, Mangalwedha have least irrigated area under this crop.

Sugarcane

Sugarcane, grown on irrigated area, occupies only 18.52 per cent of total irrigated land and ranks third among the irrigated crops. Major percentage of irrigated land under sugarcane lies in the central belt extended from Malshiras to the west and Akkalkot to the east. Where South Solapur (37.41 per cent) and Mangalwedha (30.94 per cent) taluka are ranking highest in respect of proportion of irrigated area followed by Pandharpur (29.62 per cent), Malshiras (26.19 per cent), Akkalkot (24.77 per cent), and Mohol (18.80 per cent) taluka.
Fruit crops and Vegetables

The region has witnessed 32 times increase in irrigated area under fruit during last two decades, which spreads over 20.36 per cent of total irrigated area. Among that 30 per cent area is contributed by central and south western part of the region viz. Mangalwedha, Sangola and Mohol (Fig. 4.6.C). Whereas moderate proportion of irrigated area under these crops (20.30 per cent) is observed in north-eastern and eastern talukas. Low proportion of irrigated area under fruits is noted in Pandharpur taluka, whereas north-western talukas, viz. Malshiras and Karmala show very low proportion of irrigated area under these crops. The vegetable crops share 3.44 per cent of total irrigated area.

Oil Seeds

Oil seeds share over 10 per cent, out of total irrigated area in the region where groundent and safflower as major, accompanied with 3 per cent share of other oil seeds.

Larger area in this regard lies in Karmala (over 31 per cent), followed by Barshi (17.03 per cent) and Madha (16.68 per cent). Moderate proportion is found in Akkalkot (13.83 per cent) whereas 5 to 10 per cent area is observed in central part of the region. Neligible area is observed in the talukas situated at south and south western part of the district (fig 4.7.A).

4.6 OVERALL CHANGES IN IRRIGATED CROPPING PATTERN

As a result of expansion of irrigation, mechanization, introduction of pomegranate, ber, grape, other fruits and vegetables, with drastic
IRRIGATED AREA UNDER FRUITS AS PERCENTAGE TO GROSS IRRIGATED AREA (1997-2000)

CHANGES IN IRRIGATED AREA UNDER FRUITS AS PERCENTAGE TO GROSS IRRIGATED AREA (1980-83 TO 1997-2000)

VOLUME OF CHANGE IN %

<10
10-20
20-30
25-35
>30
change in attitudes of farmers of the region, irrigated cropping pattern has undergone some changes during the period under investigation (Fig. 4.8.A). Region as a whole shows 32.31 per cent change in irrigated cropping pattern. But at taluka level this change varies from 30 to 60 per cent. Greater change is observed in Mangalwedha (over 64 per cent), followed by Mohol (54.03 per cent) and Sangola (52.13 per cent). It is largely due to introduction of fruit crops and seasonal increase in irrigation facilities. Moderate change can be found in Karmala, Madha and South Solapur (46.06 per cent, 44.02 per cent, 45.08 per cent respectively). Low change (30 to 40 per cent) is found in Barshi (38.12 per cent), Akkalkot (32.97 per cent), North Solapur (31.44 per cent) and Pandharpur (30.38 per cent). Relatively insignificant change (below 30 per cent) is observed in Malshiras where irrigation facilities are provided since long back.

Fruit culture has come up as leading change in irrigated crop covering 70 per cent area of the district. Only in Malshiras, Karmala and South Solapur talukas bajara, safflower and sugarcane have respectively emerged as leading crops (Fig. 4.8.B). Regarding the crops of leading decrease jowar is an important crop which has lost its proportion from 72 per cent to 56 per cent area of the region replaced by safflower and bajara. Groundnut and bajara are the crops of leading decrease in Sangola taluka (Fig. 4.8.C), vegetables in South Solapur, cotton in Akkalkot which gave way to fruits and sugarcane.
SOLAPUR DISTRICT

OVERALL CHANGES IN IRRIGATED CROPPING PATTERN
(980-83 TO 1997-2000)

Volume Of Change in %

IRRIGATED CROPS OF LEADING INCREASE

IRRIGATED CROPS OF LEADING DECREASE

Fig. 4.5
4.7 CONCLUSION

The land use pattern of the region is the reflection of the effect of physical and socio-economic factors. The arable land (net area sown + follow land) occupies above 88 per cent of geographical area indicating that there is hardly any scope for increasing the land for agriculture to any appreciable extent. Therefore intensity of agriculture has to be stepped up by adopting technological changes.

Greater change in general land use pattern is observed in Karmala (+15.94 per cent) that getting benefits from Ujani dam, whereas mirer change is observed in Barshi (2.15 per cent).

Cropping pattern of the study area is typical of an under developed agricultural economy. Jowar is the dominant crop occupying major portion (over 59 per cent) of the cultivable land.

Region as a whole has experienced 13.60 per cent change in cropping pattern during the period under investigation. Maximum change (over 25 per cent) is found in south western part of the district with moderate change at northern and eastern border. Temporal dynamics in cropping pattern reveals that bajara, pulses, safflower and jowar are crops of leading decreases. Whereas leading increase is found in fruits, sugarcane, vegetables and other oil seeds (except safflower). The switch over from traditional to commercial cropping is mainly confined to the areas where irrigation facilities are made available and where pomegranate, ber, grapes, custard apple are adopted.
Largest change in agricultural land use by 29.40 per cent, 24.85 per cent and 20.34 per cent is observed in the Pandharpur, Sangola, and South Solapur respectively. Decreasing trend of jowar cropping is noted in 70 per cent area of the study region. It includes Pandharpur, Akkalkot, Karmala, Barshi, Madha, Mohol, Mangalwedha taluka.

Area under traditional pulses has been decreasing almost all over the region. Notable decrease in area under bajara crop is found in Sangola taluka as against significant increase in area under fruit crops. This increase is 14276 per cent as compare to the base year of 1980-83. Development of irrigation facilities and introduction of High Yield Variety seeds of cereal crops and introduction of new fruit and vegetable crops largely influence change in agricultural land use in the study region.

The change in irrigated cropping pattern is very high. Which is associated with Mangalwedha, Sangola, and Mohol. Malshiras experiences very low change as it is having better irrigation facilities since long past.

REFERENCE


