Chapter – V

LANDUSE PATTERN

5.0 Introduction

Landuse pattern means distribution of land for different purpose, such as forest, fallow, pasture and cultivation, etc. Such distribution depends upon various factors such as physical, human, socio economic and technical. The physical factors like topography, climate, soils, etc. determine limits of use of land. The human factors like the density of population, quality of the people, etc. and socio economic factors as well as technical factors determine the extent of the land.¹

Landuse is the surface utilization of all developed and vacant land on a specific space, at a given time lands are used for crops, forest, pasture, mining, transportation, garden, residential, recreational, industrial and commercial. Whereas, uncultivable waste land, barren and fallow lands are unused land. Landuse is also related to conservation of land from one major use to another general use.² Agriculture land resource play a strategic role in the socio-economic development of a nation. The world concentrated with increasingly growing pressure of population on limited land resources, the optimum use of every hectare of land in the national interest be made and no piece of land should remain as wasteland. These necessities are the determination of the optimum use of every piece of land.³

The use of land changes according to the changing needs of man stamp has classified the needs of man into six major categories viz., the need of work, home, food, transportation, communication,
defence and recreation. The most important is that, in China, the best agricultural land is converted into graveyard as people try to bury the important persons in the best agricultural fields to honour him. This is also true in case of study region. This tendency leads grave danger. Land that has once been withdrawn from agricultural use seldom returns to the farmer and if it does, it will only be after a long laps of time. Increasing population and changing needs of the man require revision of land utilization. The revision is done by trial and error method which leaves its trace of success and failure. The success of national planning is dependent upon the proper utilization of land. Some days in our country a planned programme will determine the pattern of landuse and there not only crops and tamed animals but indirectly things will be determined by man’s conscious planning and use of land.

The importance of landuse planning is to guide, how to use land and all the available resources of the environment simultaneously and conserve them for future. Land resources occupies the important role in the national development. It is clear from a statement made by the late prime minister Smt. Indira Gandhi in 1972, who said, “We can no longer afford to neglect our most important natural resources. This is not simply an environmental problem but one which is basic to the future of our country. The stark question before use is whether our soil will be productive enough to sustain the population of one billion by the end of this century at higher standards of living than now prevail, we must have long term plans to meet this contingency.”
Due to slow development in industries, agriculture in India in general and the study area in particular is gradually changing from wooden ploughs and other agricultural implements to mechanized tractors, spraying and harvesting machines. Land resources play a strategic role in determination of a man’s economic, social and cultural progress as is evidence from the economic history of different nations. Among the land resources, agricultural land resources has played a vital role since time immemorial engaging largest percentage of the inhabitants of the world owing to increasing pressure of population on land ever growing demand of food and raw materials, there is a bare need to use every piece of land properly, which calls for scientific, rational and economic planning for use of land resources without disturbing ecological as well as socio-economic balance of an area. It is the duty of the planners including geographers to study the land characteristics in respect of various natural aspects and to suggest the landuse under the defined management practices for sustained utilization.

### 5.1 General Landuse

In the year 1999-2000 the Koppal District has a total geographical area of 552495 hectares, out of which net sown area was 349942 hectares (63.33%), fallow land 18.09 percent (99946), other uncultivable land excluding fallow 3.20 percent (17659), land not available for cultivation 10.05 percent (55499) and forest land 5.33 percent (29451). In the same way during 2010-11, the total geographical area was 552495 hectares, the net sown area was 66.94 percent (369857), the increase in net sown is 3.61 percent (19915),
the fallow land 14.50 percent (80104), the decrease in the fallow land is -3.59 percent (-19842) and the same is used for different purposes. Other uncultivable land excluding fallow land was 3.16 percent (17453), the decrease in the other uncultivable land is -0.04 percent (-206) and the same is brought under cultivation, land not available for cultivation was 10.07 percent (55630), making a little bit net increase of 0.02 percent (131) and forest there is no any volume of changes in both the study period.

5.2 Forest

In assessing the character of the vegetation type a factor that cannot be neglected in the long occupation of man and the consequent change on the vegetal carpet through agriculture. The type of vegetation met with any given locality depends on the climate, soil and the post treatment has been emphasized by the leading plant ecologists. The influence of temperature and rainfall on plant life has received a special attention in the classification of climate proposed by Thornthwaite and Koppen.

The Koppal District or the study region has the total geographical area of 552495 hectares, out of which 5.33 percent (29451 hectares) of land under forest during both the study period. There is no change in the forest during the span of twelve years of the study period (1999-2000 to 2010-2011). It is below the India’s average of forest cover i.e., more than 23 percent of the total geographical area. Experts in soil management usually recommend that minimum of 30 to 33 percent of the total land should be covered area under forest.
## Koppal District

**Change in General Land Utilization in Hectares 1999-2000 and 2010-2011**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Year</th>
<th>Forest land</th>
<th>Land Not Available for Cultivation</th>
<th>Other Uncultivated Land Excluding Fallow Land</th>
<th>Fallow Land</th>
<th>Net Sown Area</th>
<th>Total Geographical Area in Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>1999-2000</td>
<td>14482</td>
<td>12331</td>
<td>7753</td>
<td>17972</td>
<td>79593</td>
<td>132131</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>14482</td>
<td>12361</td>
<td>7753</td>
<td>16568</td>
<td>80967</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td>0</td>
<td>30</td>
<td>0</td>
<td>-1404</td>
<td>1374</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>1999-2000</td>
<td>10779</td>
<td>27193</td>
<td>2332</td>
<td>9498</td>
<td>86955</td>
<td>136755</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>10779</td>
<td>27229</td>
<td>2126</td>
<td>4097</td>
<td>92524</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td>20</td>
<td>36</td>
<td>-6</td>
<td>-5401</td>
<td>5569</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kushtagi</td>
<td>1999-2000</td>
<td>4110</td>
<td>9987</td>
<td>4709</td>
<td>28188</td>
<td>88785</td>
<td>135779</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>4110</td>
<td>10019</td>
<td>4709</td>
<td>23571</td>
<td>93370</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td>0</td>
<td>32</td>
<td>0</td>
<td>-4617</td>
<td>4585</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>1999-2000</td>
<td>80</td>
<td>5998</td>
<td>2865</td>
<td>44288</td>
<td>94609</td>
<td>147830</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>80</td>
<td>6021</td>
<td>2865</td>
<td>35868</td>
<td>102996</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td>0</td>
<td>33</td>
<td>0</td>
<td>-8420</td>
<td>8387</td>
<td></td>
</tr>
<tr>
<td></td>
<td>District Total</td>
<td>1999-2000</td>
<td>29451</td>
<td>55499</td>
<td>17659</td>
<td>99946</td>
<td>349942</td>
<td>552495</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>29471</td>
<td>55630</td>
<td>17453</td>
<td>80104</td>
<td>369857</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change</td>
<td>20</td>
<td>131</td>
<td>-206</td>
<td>-19842</td>
<td>19915</td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed by Researcher
Fig. 5.1: Change in General Land Utilization in Hectares
1999-2000 and 2010-2011

Volume of Change 1999-2000

- Forest
- Land Not Available for Cultivation
- Other Uncultivated Land Excluding Fallow Land
- Fallow Land
- Net Sown Area

Volume of Change 2010-2011

- Forest
- Land Not Available for Cultivation
- Other Uncultivated Land Excluding Fallow Land
- Fallow Land
- Net Sown Area
### Table-5.2

**Koppal District**

**General Land Use Pattern in Percent 1999-2000 and 2010-2011**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Year</th>
<th>Forest</th>
<th>Land Not Available for Cultivation</th>
<th>Other Uncultivated Land Excluding Fallow Land</th>
<th>Fallow Land</th>
<th>Net Sown Area</th>
<th>Geographical Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>1999-2000</td>
<td>10.96</td>
<td>9.33</td>
<td>5.87</td>
<td>13.60</td>
<td>60.24</td>
<td>23.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>10.96</td>
<td>9.35</td>
<td>5.87</td>
<td>12.54</td>
<td>61.28</td>
<td>23.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Change</strong></td>
<td>0</td>
<td>0.02</td>
<td>0</td>
<td>-1.07</td>
<td>1.03</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>1999-2000</td>
<td>7.88</td>
<td>19.88</td>
<td>1.70</td>
<td>6.95</td>
<td>63.58</td>
<td>23.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>7.88</td>
<td>19.91</td>
<td>1.55</td>
<td>3.00</td>
<td>67.66</td>
<td>23.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Change</strong></td>
<td>0</td>
<td>0.03</td>
<td>-0.15</td>
<td>-3.95</td>
<td>4.07</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>3.02</td>
<td>7.38</td>
<td>3.47</td>
<td>17.36</td>
<td>68.77</td>
<td>24.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Change</strong></td>
<td>0</td>
<td>0.02</td>
<td>0</td>
<td>-2.80</td>
<td>3.38</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>1999-2000</td>
<td>0.05</td>
<td>4.05</td>
<td>1.94</td>
<td>29.96</td>
<td>64.00</td>
<td>26.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>0.05</td>
<td>4.07</td>
<td>1.94</td>
<td>24.26</td>
<td>69.67</td>
<td>26.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Change</strong></td>
<td>0</td>
<td>0.02</td>
<td>0</td>
<td>-5.69</td>
<td>5.48</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>District Total</strong></td>
<td>1999-2000</td>
<td>5.33</td>
<td>10.05</td>
<td>3.20</td>
<td>18.09</td>
<td>63.33</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2010-2011</td>
<td>5.33</td>
<td>10.07</td>
<td>3.16</td>
<td>14.50</td>
<td>66.94</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Change</strong></td>
<td>0</td>
<td>0.02</td>
<td>-0.04</td>
<td>-3.59</td>
<td>3.61</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Computed by Researcher
Fig. 5.2

KOPPAL DISTRICT GENERAL LANDUSE
FOREST – 1999-2000

KOPPAL DISTRICT GENERAL LANDUSE
FOREST – 2010-11

KOPPAL DISTRICT GENERAL LANDUSE
LAND NOT AVAILABLE FOR CULTIVATION – 1999-2000

KOPPAL DISTRICT GENERAL LANDUSE
LAND NOT AVAILABLE FOR CULTIVATION – 2010-11

INDEX
Very Low
Below 5%
Low
5.01% to 10%
Medium
10.01% to 15%
High
15.01% to 20%
Very High
Above 20%

INDEX
Very Low
Below 5%
Low
5.01% to 10%
Medium
10.01% to 15%
High
15.01% to 20%
Very High
Above 20%

INDEX
Very Low
Below 5%
Low
5.01% to 10%
Medium
10.01% to 15%
High
15.01% to 20%
Very High
Above 20%

INDEX
Very Low
Below 5%
Low
5.01% to 10%
Medium
10.01% to 15%
High
15.01% to 20%
Very High
Above 20%
Fig. 5.2 Contd…

KOPPAL DISTRICT GENERAL LANDUSE
OTHER UNCULTIVATED LAND EXCLUDING FALLOW LAND – 1999-2000

KOPPAL DISTRICT GENERAL LANDUSE
OTHER UNCULTIVATED LAND EXCLUDING FALLOW LAND – 2010-11

KOPPAL DISTRICT GENERAL LANDUSE
FALLOW LAND – 1999-2000

KOPPAL DISTRICT GENERAL LANDUSE
FALLOW LAND – 2010-11

INDEX

Very Low
Below 5%

Low
5.01% to 10%

Medium
10.01% to 15%

High
15.01% to 20%

Very High
Above 20%

INDEX

Very Low
Below 5%

Low
5.01% to 10%

Medium
10.01% to 15%

High
15.01% to 20%

Very High
Above 20%
Fig. 5.2 Contd…

KOPPAL DISTRICT GENERAL LANDUSE
NET SOWN AREA – 1999-2000

INDEX
- Very Low: Below 5%
- Low: 5.01% to 10%
- Medium: 10.01% to 15%
- High: 15.01% to 20%
- Very High: Above 20%

KOPPAL DISTRICT GENERAL LANDUSE
NET SOWN AREA – 2010-11

INDEX
- Very Low: Below 5%
- Low: 5.01% to 10%
- Medium: 10.01% to 15%
- High: 15.01% to 20%
- Very High: Above 20%
Hence, study region can have an ideal percentage of area under forest to maintain the minimum ecological balance of the Koppal District. In this connection the fallow land and other waste lands like barren hills, etc., can be considered for the growth of forest.

The talukawise area under forest varies significantly as compared to the district’s average during both the study period. The highest was found in Gangavati taluka 10.96 percent (14482 hectares) and lowest was found in Yelburga taluka 0.05 percent (80 hectares). In other two talukas are have Koppal 7.88 percent (10779 hectares) and another one Kushtagi 3.02 percent (4110 hectares) had medium area under forest. As we explain above Gangavati and Koppal talukas are covered which is above the district average as well as Kushtagi and Yelburga talukas are covered below the district average (5.33%) area under forest. (Table 5.1 & 5.2) and (Fig. 5.1 & 5.2)

5.3 Land Not Available for Cultivation

The land under this class of landuse comprises those lands which are put to non-agricultural uses. Such as settlements, roads, railway, water bodies, factories, gardens, playground and embankment, aerodrome, etc. and other land put to uses other than agriculture. The total area under this category is 10.05 percent which constitute of 55499 hectares of total geographical area in the year 1999-2000, but it was increased to 10.07 percent which constitute of 55630 hectares of the total geographical area in the year 2010-11. This is mainly because of high production of non-agricultural land is due to the alarming growth of population which required more land for
residential purpose, commercial establishment, educational and other institution, transportation and industries, etc. The land under this category is increasing slowly and is bound to increase in future also with the development of science and technology. Non-agricultural land is an index of the development of an area when the area is developed in the construction of buildings and transportation facilities.

The taluka level analysis regarding the land not available for cultivation reveals that all talukas fall under increasing trend, Koppal taluka 0.03 percent (36 hectares), Yelburga 0.02 percent (33 hectares), Kushtagi 0.02 percent (32 hectares) and Gangavati 0.02 percent (30 hectares), all the talukas have slowly increased due to demand of land for commercial, agricultural and industrial purposes.

5.4 Other Uncultivable Land Excluding Fallow Land

The land under this category as other uncultivable land is an important type of landuse. This category excludes fallow lands. The uncultivable land consists of groves, petty and minor forest land and unused lands. The study region has 3.20 percent (17659 hectares) of total land under this category as per 1999-2000 statistical data. Against for this, it is decreased to 3.16 percent (17453 hectares) in the year 2010-11. The net decrease is 0.04 percent (206 hectares) of land during with in the span of twelve years. This decline is notified in only one taluka of the study region i.e., Koppal taluka except other three talukas. It is mainly because of overuse of water/excess use of water. This drastic change of land is converted into net sown area to improve the agricultural efficiency in the district.
5.5 Fallow Land

The term fallow applied to the lands which were not under crops at the time of reporting, though they were sown in the immediate past. The fallow lands are generally divided into two categories i.e., old fallow lands which comprise those lands that have been left uncultivated for more than five years and the current fallow lands which include lands that were net 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 year to replenish the soil fertility.

The definition of the term ‘current fallow’ very greatly differs in many parts of the country. In Punjab, land is classified as ‘current fallow’ if it has been left uncultivated for less than two years. In Maharashtra, land continues to be classified as ‘current fallow’ if it has continued uncultivated from less than ten years. But in Bihar, ‘current fallow’ is applied to all such lands which were not under crops at the time of reporting but which had been sown in recent past. Thus, ‘current fallows’ are a part and partial of the arable land.

The study region has a fallow land of 18.09 percent (99946 hectares) during 1999-2000, whereas it decreased to 14.50 percent (80104 hectares) in the year 2010-11. The net decrease of fallow land is -3.59 percent (-19842 hectares) over a period of twelve years (1999-2000 to 2010-11). This reclaimed land is almost used for cultivation purposes.

The talukawise analysis reveals that, Yelburga has 29.96 percent (44288 hectares), Kushtagi has 20.76 percent (28188 hectares),
hectares), Gangavati has 13.60 percent (17972 hectares) and Koppal
taluka has 6.95 percent (9498 hectares) during 1999-2000. In the
year 2010-11, Yelburga has 24.96 percent (35868 hectares), Kushtagi
has 17.36 percent (23571 hectares), Gangavati has 12.54 percent
(16568 hectares) and in Koppal only 3 percent (4097 hectares) during
the year 2010-11. All these talukas in the study region are decrease of
the fallow land during the study period. Therefore this factor has
much bearing on the higher increase of agricultural efficiency in the
Koppal District.

5.6 Net Area Sown

The net area sown is the land which is being actually tilled for
rising of different food and cash crops. The net area sown and the
fallow land together constitute the extent of cropped land in a region.
This is mainly due to constant increase of population and need for
food. Out of the total geographical area of the study region (349942)
63.33 percent of land was the net sown area in the year 1999-2000,
whereas it is increased to 66.94 percent (369857) in the year 2010-11.
This resulted in a net increase of land and this category by (19915)
3.61 percent. The study region was shown increased under net sown
area by Yelburga 5.48 percent (8387 hectares), Koppal 4.07 percent
(5569 hectares), Kushtagi 3.38 percent (4585 hectares) and Gangavati
1.03 percent (1374 hectares). All these talukas have increased their
land under net sown area. This is because of land under net sown is
reclaimed from fallow land. (Table 5.1 & 5.2) and (Fig. 5.1 & 5.2)
5.7 Agricultural Landuse

Agriculture is the backbone of the Indian economy and provides livelihood for about 65 percent of the people in India. Agriculture provides food grains or cereals to the people, fodder to the animal and stimulation to the industrial development which are of agro-based nature and the use of raw materials like cotton, sugarcane and oilseeds. The unbalanced growth of population on the one hand and the slow growth and development of agriculture and industries on the other hand, this fact have great pressure on the agricultural land to produce more food. At this juncture it is necessary to give first priority to agricultural development with its basic necessaries like high yielding variety seeds, pesticides, fertilizers, irrigation and providing necessary timely guidance to village farmers at the micro level.

Due to slow development in agriculture and industries in India in general and study area in particular is gradually changing from wooden ploughs and other agricultural implements to mechanized tractors, spraying and harvesting machines. Apart from the above said factors, planning for maximum return from the land, based on the optimum utilization of the cultivated land and maintenance of agronomic balance between agriculture, forestry, grazing grounds, etc., emphasizes the need for a careful landuse study in regarded to its resources and utilization pattern. The agricultural land under different crops in Koppal District bears not only a closed relation with physical agro-climatic conditions but also economical, social and infrastructural facilities of agriculture.
During both the study periods (1999-2000 to 2010-2011) there were more changes under crop landuse in the district. In the year 1999-2000, 63.33 percent (349942 hectares) of land was under net sown, whereas, it was increased to 66.94 percent (369857 hectares) during 2010-2011. The net increased is 3.61 percent (19915 hectares) of land within a twelve years period of time. This increased land is brought from fallow land, other uncultivable land and also dry grass lands, non-permanent pasture and other grazing lands for agriculture, which is distributed to landless labourers by the state government. This net increase of land under net sown area is a good sign of agriculture development of the study region.

5.8 Spatio Temporal Changes in Area of Different Crops in the District from 1999-2000 to 2010-2011

Agriculture is the main occupation of the people of the study region. The crop distribution in the whole region has close relationship to the distribution of rainfall and fertility of the soil. The area produces a variety of crops and its cropping pattern reflects the spatial variation in climate and topography. The main food crops grown in the district are Paddy, Jowar, Bajra, Groundnut, Cotton, Maize and Pulses, etc., are important food crops and non-food crops.

**Jowar**

Jowar is a drought resistant crop it is the staple food of Koppal District. It requires an annual rainfall of 30-100 cms and the temperature of 27°C to 32°C. This crop cannot be harmful to the other crops. It is for excellence a crop of dry farming areas grown mostly
grow, if the temperature is less than 16°C. An excessive moisture and prolonged droughts without irrigation support. But, this crop can be grown in both dry and wet conditions.

During 1999-2000, the study region had 22.50 percent (83640 hectares) of land under this crop and it is decreased to 14.43 percent (61078 hectares) in the year 2010-2011. The net decrease -8.07 percent (22562 hectares) in a twelve year period during 1999-2000, Kushtagi taluka had highest land under the Jowar crop i.e., 27.47 percent (22619 hectares) and it was followed by Yelburga 25.84 percent (23367 hectares), Koppal 22.45 percent (19196 hectares) and Gangavati taluka 16.26 percent (18470 hectares) (See Table-5.3 & 5.4 and Fig. 5.3 & 5.4). During the year 2010-11, it is noted that, Yelburga taluka had the highest land under Jowar crop i.e., 19.81 percent (22446 hectares) and it is followed by Kushtagi 19.71 percent (18328 hectares), Koppal 9.85 percent (10283 hectares) and Gangavati taluka 9.04 percent (10021 hectares). However the crop is staple food in the entire study region as it provides food to the people and fodder to the cattles for the whole year.
### Table 5.3

**Koppal District**

Area under Different Crops in Hectares and percentages - 1999-2000

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Paddy</th>
<th>Jowar</th>
<th>Bajra</th>
<th>Wheat</th>
<th>Maize</th>
<th>Minor Millets</th>
<th>Bengal Gram</th>
<th>Tur</th>
<th>Other Pulses</th>
<th>Groundnut</th>
<th>Sugarcane</th>
<th>Cotton</th>
<th>Total Sown Area to District Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>65505</td>
<td>18470</td>
<td>7527</td>
<td>558</td>
<td>509</td>
<td>640</td>
<td>1912</td>
<td>1873</td>
<td>4976</td>
<td>6321</td>
<td>1527</td>
<td>3743</td>
<td>113561</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>57.68</td>
<td>16.26</td>
<td>6.63</td>
<td>0.50</td>
<td>0.45</td>
<td>0.56</td>
<td>1.68</td>
<td>1.65</td>
<td>4.38</td>
<td>5.57</td>
<td>1.34</td>
<td>3.30</td>
<td>30.54</td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>7163</td>
<td>19196</td>
<td>9812</td>
<td>1247</td>
<td>5906</td>
<td>1295</td>
<td>1064</td>
<td>2865</td>
<td>9271</td>
<td>21076</td>
<td>667</td>
<td>5929</td>
<td>85491</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>8.38</td>
<td>22.45</td>
<td>11.48</td>
<td>1.46</td>
<td>6.91</td>
<td>1.51</td>
<td>1.24</td>
<td>3.35</td>
<td>10.84</td>
<td>24.65</td>
<td>0.78</td>
<td>6.94</td>
<td>22.99</td>
</tr>
<tr>
<td>3</td>
<td>Kushtagi</td>
<td>191</td>
<td>22607</td>
<td>22619</td>
<td>2213</td>
<td>1753</td>
<td>936</td>
<td>2156</td>
<td>4791</td>
<td>9504</td>
<td>14476</td>
<td>-</td>
<td>1068</td>
<td>82314</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.23</td>
<td>27.47</td>
<td>27.48</td>
<td>2.69</td>
<td>2.13</td>
<td>1.14</td>
<td>2.62</td>
<td>5.82</td>
<td>11.55</td>
<td>17.59</td>
<td>-</td>
<td>1.30</td>
<td>22.13</td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>717</td>
<td>23367</td>
<td>10540</td>
<td>6546</td>
<td>3298</td>
<td>2635</td>
<td>4016</td>
<td>3480</td>
<td>8087</td>
<td>19430</td>
<td>-</td>
<td>8297</td>
<td>90413</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.80</td>
<td>25.84</td>
<td>11.66</td>
<td>7.24</td>
<td>3.65</td>
<td>2.91</td>
<td>4.44</td>
<td>3.85</td>
<td>8.94</td>
<td>21.50</td>
<td>-</td>
<td>9.18</td>
<td>24.31</td>
</tr>
<tr>
<td>Dist. Total</td>
<td>73576</td>
<td>83640</td>
<td>50498</td>
<td>10564</td>
<td>11466</td>
<td>5506</td>
<td>9148</td>
<td>13009</td>
<td>31838</td>
<td>61294</td>
<td>2194</td>
<td>19037</td>
<td>371770</td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>19.80</td>
<td>22.50</td>
<td>13.58</td>
<td>2.84</td>
<td>3.10</td>
<td>1.48</td>
<td>2.46</td>
<td>3.50</td>
<td>8.56</td>
<td>16.49</td>
<td>0.59</td>
<td>5.10</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Koppal District at a Glance 2000-01
Fig. 5.3: Crop wise Land Utilization - 1999-2000

- Jowar, 61078
- Paddy, 78134
- Bajra, 66897
- Dairy, 61078
- Minor Millets, 2885
- Maize, 48187
- Wheat, 9156
- Tur, 12677
- Groundnut, 47001
- Other Pulses, 32509
- Sugarcane, 2250
- Cotton, 21367
## Table-5.4

**Koppal District**

Area under Different Crops in Hectares and percentages - 2010-2011

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Paddy</th>
<th>Jowar</th>
<th>Bajra</th>
<th>Wheat</th>
<th>Maize</th>
<th>Minor Millets</th>
<th>Bengal Gram</th>
<th>Tur</th>
<th>Other Pulses</th>
<th>Groundnut</th>
<th>Sugarcane</th>
<th>Cotton</th>
<th>Total Sown Area to District Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>69955</td>
<td>10021</td>
<td>6194</td>
<td>154</td>
<td>3607</td>
<td>594</td>
<td>4292</td>
<td>2781</td>
<td>3586</td>
<td>7773</td>
<td>291</td>
<td>1583</td>
<td>110831</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>63.12</td>
<td>9.04</td>
<td>5.59</td>
<td>0.14</td>
<td>3.25</td>
<td>0.54</td>
<td>3.87</td>
<td>2.51</td>
<td>3.24</td>
<td>7.01</td>
<td>0.26</td>
<td>1.43</td>
<td>26.19</td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>7869</td>
<td>10283</td>
<td>17153</td>
<td>2010</td>
<td>27555</td>
<td>563</td>
<td>10482</td>
<td>2365</td>
<td>8090</td>
<td>11511</td>
<td>1945</td>
<td>4539</td>
<td>104365</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>7.54</td>
<td>9.85</td>
<td>16.44</td>
<td>1.93</td>
<td>26.40</td>
<td>0.54</td>
<td>10.04</td>
<td>2.27</td>
<td>7.75</td>
<td>11.03</td>
<td>1.86</td>
<td>4.35</td>
<td>24.66</td>
</tr>
<tr>
<td>3</td>
<td>Kushtagi</td>
<td>203</td>
<td>18328</td>
<td>29108</td>
<td>1771</td>
<td>5884</td>
<td>760</td>
<td>8581</td>
<td>4622</td>
<td>10404</td>
<td>10832</td>
<td>-</td>
<td>4248</td>
<td>92970</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.22</td>
<td>19.71</td>
<td>31.31</td>
<td>1.90</td>
<td>6.33</td>
<td>0.82</td>
<td>9.23</td>
<td>4.97</td>
<td>11.19</td>
<td>11.65</td>
<td>-</td>
<td>4.57</td>
<td>21.97</td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>107</td>
<td>22446</td>
<td>14442</td>
<td>5221</td>
<td>11141</td>
<td>968</td>
<td>17719</td>
<td>2909</td>
<td>10429</td>
<td>16885</td>
<td>14</td>
<td>10997</td>
<td>113278</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.09</td>
<td>19.81</td>
<td>12.75</td>
<td>4.61</td>
<td>9.84</td>
<td>0.85</td>
<td>15.64</td>
<td>2.57</td>
<td>9.21</td>
<td>14.91</td>
<td>0.01</td>
<td>9.87</td>
<td>26.77</td>
</tr>
<tr>
<td>Dist. Total</td>
<td>78134</td>
<td>61078</td>
<td>66897</td>
<td>9156</td>
<td>48187</td>
<td>2885</td>
<td>41074</td>
<td>12677</td>
<td>32509</td>
<td>47001</td>
<td>2250</td>
<td>21367</td>
<td>423215</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>18.46</td>
<td>14.43</td>
<td>15.80</td>
<td>2.16</td>
<td>11.39</td>
<td>0.68</td>
<td>9.71</td>
<td>3.00</td>
<td>7.68</td>
<td>11.11</td>
<td>0.53</td>
<td>5.05</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Koppal District at a Glance 2010-11
Fig. 5.4 : Crop wise Land Utilization 2010-11

- Jowar, 61078
- Paddy, 78134
- Bajra, 66897
- Bengal Gram, 41074
- Maize, 48187
- Wheat, 9156
- Tur, 12677
- Groundnut, 47001
- Other Pulses, 32509
- Minor Millets, 2885
- Cotton, 21367
- Sugarcane, 2250
**Paddy (Rice)**

Paddy is principally a tropical crop, which requires high temperature, high humidity and wet soils throughout its growth. It required 21°C to 24°C temperatures and an average annual rainfall of 150 cms. It can also grown in areas where rainfall is less than 150 cms, provided such areas have enough irrigational facilities. Deep fertile clay or loamy soil is best suited for paddy crop.

In the year 1999-2000, the study region had a 19.80 percent (73576 hectares) of land under this crop and it decreased to 18.46 percent (78134 hectares) in the year 2010-11. The net decrease is -1.34 percent during the study period. In the year 1999-2000 and 2010-11 Gangavati taluka had the highest land under the paddy crop i.e., 57.68 percent (65505 hectares) and (69955 hectares) i.e., 63.12 percent and it was followed by Koppal taluka had the second largest land under this Paddy crop land during both the study period i.e., 8.38 percent (7163 hectares) and 7.54 percent (7869 hectares) respectively, Yelburga had 0.80 percent (717 hectares) and 0.09 percent (107 hectares) during 1999-2000 and 2010-11 respectively. Kushtagi taluka had 0.23 percent (191 hectares) and 0.22 percent (203 hectares) during 1999-2000 and 2010-11 respectively. However, the crop is stable in Gangavati taluka only, not in other talukas of the district. It also provides food to the people and fodder to cattles and buffaloes.

**Bajra (Sajje)**

Bajra is grown for both food and fodder purposes, it needs dry and warm climate between 25°C to 35°C temperature and an average
annual rainfall of 50 cms. It can be cultivated on all types of soils. Bajra is a short seasonal (3 to 4 months) kharif crop which is sown in June and July and harvested in September and October. The crop can be cultivated along with Jowar, Ragi and Minor Millets.

During the year 1999-2000, the study region had an area of 13.58 percent (50498 hectares) of land under this crop and it is increased to 15.80 percent (66897 hectares) in the year 2010-11. The net increase is 2.22 percent (16399 hectares) within a span of twelve years of study period. Kushtagi taluka occupied highest land under the Bajra crop i.e., 27.48 percent (22619 hectares) and it was followed by Yelburga 11.66 percent (10540 hectares), Koppal 11.48 percent (9812 hectares) and Gangavati taluka had 6.63 percent (7527 hectares) respectively. During 2010-11, the study region, again Kushtagi taluka had highest land under this crop i.e., 31.31 percent (29108 hectares) and it is followed by Koppal 16.44 percent (17153 hectares), Yelburga 12.75 percent (14442 hectares) and in Gangavati taluka only 5.59 percent (6194 hectares) of land is used for Bajra cultivation.

Maize

Maize can be grown in arid and semi-arid conditions and also it can be grown in irrigated soils. It is generally grown during kharif season. It requires 35°C temperatures and the rainfall of 75 to 125 cms, sandy, loamy and well drained black soils are suitable for maize cultivation. Sowing is done in the months of May/June and harvesting takes place in the months of September/October.
During the year 1999-2000, the study region had 3.10 percent (11466 hectares) of land under Maize crop and it has increased to 11.39 percent (48187 hectares) during 2010-11. In the year 1999-2000, Koppal taluka had land under this crop i.e., 6.91 percent (5906 hectares), and it is followed by Yelburga 3.65 percent (3298 hectares), Kushtagi 2.13 percent (1753 hectares) and last one Gangavati taluka 0.45 percent (509 hectares). During 2010-11 it is noted that, again Koppal taluka had the highest land under Maize crop i.e., 26.40 percent (27555 hectares) and it is followed by Yelburga with 9.84 percent (11141 hectares), Kushtagi with 6.33 percent (5884 hectares) and Gangavati taluka with 3.25 percent (3607 hectares) in the study region.

**Wheat**

Wheat is also one of the most important food grains of the study region. It requires cool climate with moderate rainfall. It needs 10°C to 15°C temperatures and an average annual rainfall of 50 cms. Well drained loams and clay loams are considered ideal for wheat cultivation. Alluvial and Black soils are also suitable for this crop. Sowing is done in the month of September/October and the harvesting in the months of January/February.

During 1999-2000, the study region had 2.84 percent (10564 hectares) of land under this crop and it has decreased to 2.16 percent (9156 hectares) during the year 2010-11. The talukawise distribution of wheat crop land, Yelburga taluka occupied highest area under this crop i.e., 7.24 percent (6546 hectares) and it is followed by Kushtagi with 2.69 percent (2213 hectares), Koppal with 1.46 percent (1247
hectares) and Gangavati taluka with only 0.50 percent (558 hectares).

During 2010-11, again Yelburga taluka stands first with 4.61 percent (5221 hectares) of area under wheat crop, followed by Koppal with 1.93 percent (2010 hectares), Kushtagi with 1.90 percent (1771 hectares) and lastly Gangavati taluka had lowest land under this crop i.e., 0.14 percent (154 hectares).

**Minor Millets**

Minor millets needs about 25°C to 30°C temperature and an average annual rainfall of 60 to 80 cms. These millets can be grown in almost all types of soils along with Jowar, Groundnut, etc. these crops are sowing during the months of September/October and the harvesting is done during the months of January/February.

During 1999-2000, the Koppal District had 1.48 percent (5506 hectares) of land under this crop. Yelburga taluka has the highest land under this crop i.e., 2.91 percent (2635 hectares) and it was followed by Koppal with 1.51 percent (1295 hectares), Kushtagi with 1.14 percent (936 hectares) and Gangavati taluka with 0.56 percent (640 hectares). In the year 2010-11, the study region had 0.68 percent (2885 hectares) of land under this crop. About -0.80 percent (-2621 hectares) of land is reduced during the period of twelve years (1999-2000 to 2010-11). It is mainly because of cultivation of cash crops i.e., Cotton, Groundnut, etc. Yelburga taluka had the highest land under this crop i.e., 0.85 percent (968 hectares) and it is followed by Kushtagi with 0.82 percent (760 hectares), Gangavati with 0.54
percent (594 hectares) and Koppal taluka with 0.54 percent (563 hectares) in the study region.

**Bengal Gram**

Bengal gram needs about 25°C to 30°C temperature and average annual rainfall of 50 to 70 cms. It is grown on almost all types of soil and along with the crops like Jowar, Groundnut, Wheat, etc. sowing is done in the month of September/October and harvesting takes place in the study during January/February.

During 1999-2000, the study region had 2.46 percent (9148 hectares) of the land under this crop. Almost all talukas have grown this crop. Yelburga taluka occupied highest land under Bengal gram i.e., 4.44 percent (4016 hectares) and remaining three talukas Kushtagi with 2.62 percent (2156 hectares), Gangavati with 1.68 percent (1912 hectares), Koppal with 1.24 percent (1064 hectares) of land under this crop of the district.

In the year 2010-11, the total cropped area of the district 9.71 percent (41074 hectares), the highest land under this crop is occupied by Yelburga taluaka with 15.64 percent (17719 hectares) and Gangavati taluka had lowest area i.e., 3.87 percent (4292 hectares), remaining two talukas i.e., Koppal with 10.04 percent (10482 hectares) and Kushtagi 9.23 percent (8581 hectares) of land under this crop.

**Tur**

Tur needs about 25°C to 30° C temperature and an average annual rainfall of 50 to 75 cms. This crop can be grown on almost all types of soils along with Jowar, Groundnut, Bajra, etc. sowing is done
in the month of June/July and harvesting takes place during October/November.

In both the study periods in all talukas of district this crop is grown. During 1999-2000, the district had an area of 3.50 percent (13009 hectares) under Tur crop. Kushtagi taluka occupied highest land i.e., 5.82 percent (4791 hectares), the lowest area is found in Gangavati taluka with 1.65 percent (1873 hectares). Remaining two talukas i.e., Yelburga with 3.85 percent (3481 hectares) and Koppal with 3.35 percent (2865 hectares) of land under this crop.

In the year 2010-11, the district had 3 percent (12677 hectares) which shows a decline of 0.50 percent (332 hectares) from 1999-2000 to 2010-11. It is mainly because of shifting of Tur to Bajra crop. Kushtagi taluka had highest land under this crop with 4.97 percent (4622 hectares), Yelburga with 2.57 percent (2909 hectares), Gangavati with 2.51 percent (2781 hectares) and Koppal with 2.27 percent (2365 hectares) of land under this crop respectively.

**Other Pulses**

This category of crops includes horse gram, black gram, green gram, etc., these pulses are grown in arid and semi arid conditions and also can be grown in irrigated tracts. These crops are generally grown in rabi seasons. These require a mild and cool weather and a rainfall of 35 to 50 cms. These pulses can be grown well on loamy soil. Usually these pulses are cultivated along with the major crops like Jowar, Wheat, Bajra, Groundnut, etc. sowing in the month of September/October and harvesting takes place in January/February.
The crop is also grown in all talukas of the study region. During 1999-2000, the district had 8.56 percent (31838 hectares) of land under this crop. Kushtagi taluka occupied highest area under other Pulses i.e., 11.55 percent (9504 hectares) and followed by Koppal with 10.84 percent (9271 hectares), Yelburga with 8.94 percent (8087 hectares) and Gangavati with 4.38 percent (4976 hectares) of land under these talukas of the district.

During 2010-11, the district had 7.68 percent (32509 hectares) of land under other pulses. Except Yelburga taluka other three talukas are declined area under this crop from 1999-2000 to 2010-11. Kushtagi taluka occupied highest land under this crop i.e., 11.19 percent (10404 hectares) and it was followed by Yelburga 9.21 percent (10029 hectares), Koppal with 7.75 percent (8090 hectares) and in Gangavati taluka with 3.24 percent (3586 hectares) of land under other pulses (See Table-5.5 & 5.6).

**Groundnut**

Groundnut is one of the important oil crop in the country. It is believed that this crop was introduced in India from Brazil in the middle of 16th century. Groundnut can be grown successfully in an area with 50 to 70 cms rainfall and 20° to 30°C temperatures and this crop is raised during the kharif season. Sowing is done in the month of June/July and harvesting takes place during the month of October/November. Red, Sandy Loams, Loams as well as Black soils are suitable for groundnut cultivation. It can be cultivated in summer provided there is an irrigational facility.
Table-5.5
Koppal District
Talukawise Area under Different Crops and Percentages 1999-2000

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Paddy</th>
<th>Jowar</th>
<th>Bajra</th>
<th>Wheat</th>
<th>Maize</th>
<th>Minor Millets</th>
<th>Bengal Gram</th>
<th>Tur</th>
<th>Other Pulses</th>
<th>Groundnut</th>
<th>Sugarcane</th>
<th>Cotton</th>
<th>Total Sown Area to District Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>65505</td>
<td>18470</td>
<td>7527</td>
<td>558</td>
<td>509</td>
<td>640</td>
<td>1912</td>
<td>1873</td>
<td>4976</td>
<td>6321</td>
<td>1527</td>
<td>3743</td>
<td>113561</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>89.03</td>
<td>22.08</td>
<td>14.91</td>
<td>5.28</td>
<td>4.44</td>
<td>11.62</td>
<td>20.90</td>
<td>14.40</td>
<td>15.63</td>
<td>10.31</td>
<td>69.60</td>
<td>19.66</td>
<td>30.55</td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>7163</td>
<td>19196</td>
<td>9812</td>
<td>1247</td>
<td>5906</td>
<td>1295</td>
<td>1064</td>
<td>2865</td>
<td>9271</td>
<td>21076</td>
<td>667</td>
<td>5929</td>
<td>85491</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>9.74</td>
<td>22.95</td>
<td>19.43</td>
<td>11.80</td>
<td>51.50</td>
<td>23.52</td>
<td>11.63</td>
<td>22.02</td>
<td>29.12</td>
<td>34.39</td>
<td>30.40</td>
<td>31.14</td>
<td>23.00</td>
</tr>
<tr>
<td>3</td>
<td>Kushtagi</td>
<td>191</td>
<td>22607</td>
<td>22619</td>
<td>2213</td>
<td>1753</td>
<td>936</td>
<td>2156</td>
<td>4791</td>
<td>9504</td>
<td>14476</td>
<td>-</td>
<td>1068</td>
<td>82314</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.26</td>
<td>27.03</td>
<td>44.79</td>
<td>20.95</td>
<td>15.29</td>
<td>17.00</td>
<td>23.57</td>
<td>36.83</td>
<td>29.85</td>
<td>23.61</td>
<td>-</td>
<td>5.61</td>
<td>22.14</td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>717</td>
<td>23367</td>
<td>10540</td>
<td>6546</td>
<td>3298</td>
<td>2635</td>
<td>4016</td>
<td>3480</td>
<td>8087</td>
<td>19430</td>
<td>-</td>
<td>8297</td>
<td>90413</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.97</td>
<td>27.94</td>
<td>20.87</td>
<td>61.97</td>
<td>28.76</td>
<td>47.86</td>
<td>43.90</td>
<td>26.75</td>
<td>25.40</td>
<td>31.70</td>
<td>-</td>
<td>43.58</td>
<td>24.32</td>
</tr>
<tr>
<td>Dist. Total</td>
<td>73576</td>
<td>83640</td>
<td>50498</td>
<td>10564</td>
<td>10564</td>
<td>11466</td>
<td>5506</td>
<td>9148</td>
<td>13009</td>
<td>31838</td>
<td>61294</td>
<td>2194</td>
<td>19037</td>
<td>371770</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>19.80</td>
<td>22.50</td>
<td>13.58</td>
<td>2.84</td>
<td>3.08</td>
<td>1.48</td>
<td>2.46</td>
<td>3.50</td>
<td>8.56</td>
<td>16.49</td>
<td>0.59</td>
<td>5.12</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Koppal District at a Glance 2000-01
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Talukas</th>
<th>Paddy</th>
<th>Jowar</th>
<th>Bajra</th>
<th>Wheat</th>
<th>Maize</th>
<th>Minor Millets</th>
<th>Bengal Gram</th>
<th>Tur</th>
<th>Other Pulses</th>
<th>Groundnut</th>
<th>Sugarcane</th>
<th>Cotton</th>
<th>Total Sown Area to District Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gangavati</td>
<td>69955</td>
<td>10021</td>
<td>6194</td>
<td>154</td>
<td>3607</td>
<td>594</td>
<td>4292</td>
<td>2781</td>
<td>3586</td>
<td>7773</td>
<td>291</td>
<td>1583</td>
<td>110831</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>89.53</td>
<td>16.41</td>
<td>9.26</td>
<td>1.68</td>
<td>7.49</td>
<td>20.59</td>
<td>10.45</td>
<td>21.94</td>
<td>11.03</td>
<td>16.54</td>
<td>12.93</td>
<td>7.41</td>
<td>26.19</td>
</tr>
<tr>
<td>2</td>
<td>Koppal</td>
<td>7869</td>
<td>10283</td>
<td>17153</td>
<td>2010</td>
<td>27555</td>
<td>563</td>
<td>10482</td>
<td>2365</td>
<td>8090</td>
<td>11511</td>
<td>1945</td>
<td>4539</td>
<td>104365</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>10.07</td>
<td>16.84</td>
<td>25.64</td>
<td>21.95</td>
<td>57.18</td>
<td>19.51</td>
<td>25.52</td>
<td>18.66</td>
<td>24.89</td>
<td>24.50</td>
<td>86.44</td>
<td>21.24</td>
<td>24.66</td>
</tr>
<tr>
<td>3</td>
<td>Kushtagi</td>
<td>203</td>
<td>18328</td>
<td>29108</td>
<td>1771</td>
<td>5884</td>
<td>760</td>
<td>8581</td>
<td>4622</td>
<td>10404</td>
<td>10832</td>
<td>-</td>
<td>4248</td>
<td>92970</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.26</td>
<td>30.00</td>
<td>43.51</td>
<td>19.34</td>
<td>12.21</td>
<td>26.34</td>
<td>20.89</td>
<td>36.46</td>
<td>32.00</td>
<td>23.05</td>
<td>-</td>
<td>19.88</td>
<td>21.97</td>
</tr>
<tr>
<td>4</td>
<td>Yelburga</td>
<td>107</td>
<td>22446</td>
<td>14442</td>
<td>5221</td>
<td>11141</td>
<td>968</td>
<td>17719</td>
<td>2909</td>
<td>10429</td>
<td>16885</td>
<td>14</td>
<td>10997</td>
<td>113278</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.14</td>
<td>36.75</td>
<td>21.59</td>
<td>57.02</td>
<td>23.12</td>
<td>33.55</td>
<td>43.14</td>
<td>22.95</td>
<td>32.08</td>
<td>35.92</td>
<td>0.62</td>
<td>51.47</td>
<td>26.77</td>
</tr>
<tr>
<td>Dist. Total</td>
<td></td>
<td>78134</td>
<td>61078</td>
<td>66897</td>
<td>9156</td>
<td>48187</td>
<td>2885</td>
<td>41074</td>
<td>12677</td>
<td>32509</td>
<td>47001</td>
<td>2250</td>
<td>21367</td>
<td>423215</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>18.46</td>
<td>14.43</td>
<td>15.81</td>
<td>2.16</td>
<td>11.93</td>
<td>0.68</td>
<td>9.71</td>
<td>3.00</td>
<td>7.68</td>
<td>11.11</td>
<td>0.53</td>
<td>5.05</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Koppal District at a Glance 2010-11
In the year 1999-2000, the study region had an area of 16.49 percent (61294 hectares) land under groundnut crop. It is also grown in all talukas of the district. In this period Koppal taluka occupied highest land under this crop i.e., 24.65 percent (21076 hectares) and it is followed by Yelburga with 21.50 percent (19430 hectares), Kushtagi with 17.59 percent (6321 hectares) of land under Groundnut crop.

In the year 2010-11, the district had an area of 11.11 percent (47001 hectares) land under this crop. About 5.38 percent (14293 hectares) land is decreased during the period of twelve years due to concentration of land under other crops. And non favourable physical conditions for this crop. Yelburga taluka occupied largest area under groundnut crop i.e., 14.91 percent (16885 hectares) and it is followed by Kushtagi with 11.65 percent (10832 hectares), Koppal with 11.03 percent (10184 hectares) and lastly Gangavati taluka with 7.01 percent (7773 hectares) of land under Groundnut crop of the study region.

**Sugarcane**

This crop is not grown in all talukas of the study region during both the study periods. The Sugarcane crop can be grown very successfully in an area of tropical regions with 100 to 150 cms of rainfall well distributed throughout the year. It requires hot and humid weather throughout the year. It requires 15°C to 40°C average annual temperatures. It is a long period crop, maturing in 10 to 14 months, it depends upon climate and variety of cane. Well manure
medium and heavy soils of good fertility are preferred for Sugarcane cultivation. Also, the crop can be grown on black cotton soil, brown or reddish loams and laterite soils with irrigation facilities.

During 1999-2000, the district had only 0.59 percent (2194 hectares) of land under this crop. Kushtagi and Yelburga talukas are not grown or cultivating of this crop. Gangavati taluka had largest area under this crop i.e., 1.34 percent (1527 hectares) and remaining one taluka i.e., Koppal with 0.78 percent (667 hectares) of land under Sugarcane crop.

In the year 2010-11, the district had 0.85 percent (2250 hectares) of land under Sugarcane with 0.24 percent (56 hectares) of land is increased under this crop within a period of twelve years. In the irrigated areas like Koppal taluka 1.86 percent (1954 hectares) of land being highest in the study region. It is followed by Gangavati taluka with 0.26 percent (291 hectares) and Yelburga taluka with 0.01 percent (14 hectares) of land under Sugarcane cultivation.

**Cotton**

Cotton is the main commercial crop and it is cultivated in almost all talukas of the study region. Cotton is grown in tropical and sub-tropical region with an annual rainfall of 75 to 150 cms and temperature between 21°C to 45°C. This crop is need sufficient rainfall in the early stages of its growth, but sunny and dry weather is required after flowering. Most of the crop is raised in kharif season. The deep and medium black soil is most suited for Cotton cultivation.
Cotton is also grown in alluvial and laterite soils with fertilizers and irrigational facilities.

During 1999-2000, the district had 5.10 percent (19037 hectares) of land under this crop. Yelburga taluka occupied highest area i.e., 9.18 percent (8297 hectares) and it is followed by Koppal with 6.94 percent (5929 hectares), Gangavati with 3.30 percent (3743 hectares) and Kushtagi taluka with 1.30 percent (1068 hectares) of land under this crop.

During 2010-11, the district had 5.05 percent (21367 hectares) of land under this crop. Yelburga and Kushtagi talukas occupied the largest area i.e., 9.71 percent (10997 hectares) and 4.57 percent (4248 hectares) respectively. Similarly, Koppal taluka occupied 4.35 percent (4539 hectares) followed by Gangavati taluka with 1.43 percent (1583 hectares) of land under Cotton cultivation. Yelburga and Kushtagi talukas are increased their Cotton growing land and Gangavati and Koppal talukas have decreased their Cotton growing land in this period. It is mainly because of fall of prices, scarcity of rainfall and shifting to food grains from cash crops.

5.9 Sample Study Villages

Cropping pattern will not be the same in all places but it differs from region to region and one place to another. It is because of geographical and social and particularly environmental conditions. Here the research has surveyed sample study of four villages from each taluka of the district.
The researcher has selected four villages as a sample study for the present research work, which is purely based on random selection and also the convenience of the researcher in terms of accessibility and acquaintances of the villages.

1) Waddarhatti Village (Gangavati Taluka)

This village is in Gangavati taluka of Koppal District and it is located in between 15° 37’ north latitude and 76° 10’ east longitude. It is at the distance of 4 kms from taluka and 46 kms from the district headquarter. It is receiving about 690 mm annual rainfall during South-West monsoon season.

There are 372 agricultural families and 68 families are landless, which indirectly help to the agriculture of the village. The total population of the village as per 2011 census is 9113. The village is connected with road and cart tracks.

There are three types of land holders, namely Marginal, Small and Large farmers, with up to 2.20 acres, 2.21 to 5 acres and more than 5 acres respectively. In all 1195.36 acres of land is under cultivation distributed in the above said land holdings or farmers. The highest percentage of family are in marginal holdings (176) and the least is seen in small holdings (97) families.

The soil of village has been classified into two groups. Black and Red mixed Black soils. Good quality soil locally known as Yeri (Black) and Kempu Yeri, it has poor moisture content. The good quality soil is around the vicinity of the village and it is good for cultivation of jowar and cotton, but in this village almost all farmers have grown paddy. It
is because of in Kharif and summer season almost all area is irrigated. The highest area of the village is under good quality of soil. It is good for maize, jowar and paddy.

The total population of the village is 9113. The total workers are 3703, of them 186 cultivators, 1434 are agricultural labourers and 2071 are other workers. Besides, there are about 1368 marginal workers and 5410 are non workers. The role of child labour and female workers in agriculture is also present in this village.

Waddarhatti village has a post office, 2 primary schools and 1 high school. Out of the total population, 4541 are males and are 4572 females. There are 5729 literates, 1360 SC and 1146 ST population in the village. The village has 2 adult education institutions, 6 Anganawadis, 1500 Gobar Gas plants and 7 Rice Mills.

The village has 1316.17 acres of total geographical area and 1195.36 acres were cultivated area. The farmers of Waddarhatti village of Gangavati taluka grow crops twice in a year as in Kharif and summer season. The important crops of Kharif are Jowar, Onion, Maize and Paddy. In summer season Paddy, Cotton and Wheat are the important crops.

2) Mangalapur Village (Koppal Taluka)

This village is in Koppal taluka and it is located in between 15° 20’ north latitude and 76° 07’ east longitude. It is at the distance of 3 kms from taluka and district. It has a population of 1340 residing in 228 houses. The total geographical area is 467.05 acres covered with Red and Black soil. Out of these lands, 375.36 acres area is
cultivated. There are about 5 bore-wells distributed in farms of the village. In Kharif 40.36, Rabi 21.16 and in Summer 10.23 acres land are irrigated by this water source. No tanks are noticed in the farms of this village.

In the Mangalapur village there are 103 agriculturist families and 15 agricultural labourers families. In this village there are four types of land holders, in all land holdings, 375.36 acres of land is under cultivation, distributed into four types of land holdings. The highest percentage is found in medium (114.29) land holdings and the least is found in marginal (53.05) farmers.

The soil of the village has been classified into two groups Red and Black soil. Good quality soil locally known as Yeri medium quality soil, Red soil is locally called Masari red soil. The good and medium quality soil can be found around the village. The Yeri soil is good for groundnut and jowar cultivation, whereas, Red soil is good for jowar, groundnut, tur and sunflower cultivation. In the northern and western part of the village, the poor quality of soil is found, which is not good for irrigation therefore the farmers grow green gram, jowar and wheat in this soil.

The farmers of Mangalapur village grow crops in three seasons as mentioned above. Out of the total population (1340) of the village, the total workers are 595 of them 102 are cultivators, 152 are agricultural labourers and 339 are other workers. Besides, there are about 13 marginal workers and 745 are non-workers. The role of child labour and female worker in agriculture is also present in this village.
Amongst the total population 737 peoples are literates, 603 are illiterates, 129 and 89 are SC and ST population respectively.

Mangalapur village has one primary school and one anganawadi there is no other facilities in this village. It shows us it is one of the backward villages in the Koppal taluka. Yet, Tractor, Harvesting Machine and Pesticide Sprayers are used by the farmers in this village.

3) Ganganhal Village (Kushtagi Taluk)

This village is in located Kushtagi taluka and it is located in between 15° 32’ north latitude and 76° 18’ east longitude. It is at the distance of 9 kms from taluka 64 kms from district. It has a population of 998 and residing in 202 houses. The total geographical area of the Ganganhal village is 1394.37 acres covered with Red and Black soil. Out of 1394.37 acres of land, 1345.15 acres cultivated area and out of this cultivated area 499.5 acres of land is irrigated. No canal irrigation and well irrigation is seen in this village. In summer season, the farmers face shortage of bore-well water for irrigation.

There are 249 agricultural families and 38 families are of agricultural labourers families. The village is connected with metalled roads. There are four types of land holders namely, Marginal, Small, Medium and Large scale farmers, with less than 2.20 acres, 2.21 to 5 acres, 5.01 to 10 acres and more than 10 acres respectively. In all 1345.15 acres of land is under cultivation distributed in the above said land holdings/farmers. The highest percentage (59.44) of family
are in large holdings and the lowest is seen in marginal holding i.e. 4.01 percentages of families in this village.

The soil of the village has been classified into two groups. Good quality soil locally known as Yeri (Black) and medium quality soil is called Masari (Red) soil. The good quality soil is around the village and it is good for cultivation of Jowar, Sunflower, Maize, Wheat and Pulses crops. Farmers also grow vegetables like brinjal, ladies finger, bitter gourd and green leaves.

Out of the total population (998) of the village, the total worker are 550, of them 199 are cultivators, 282 are agricultural labourers and 34 other workers. Besides, there are about 517 marginal workers and rests of the 448 people are non workers, 35 workers in household industries. 507 persons are literates and 491 persons are illiterates. Amongst the total population there are 137 SC and 679 ST populations in the village.

The people of this village go to pilgrimage places once or twice in a year like Hulagi, Hampi, Yellammanagudda and Anegundi by which they are also recreated. Though the following facilities weekly market, health care centre, veterinary hospital and higher education facilities does not exist in this village. With its primary school, one high school and Anganawadi facilities are available in Ganganhal village.

4) Sankanur Village (Yelburga Taluk)

This village is in Yelburga taluka and it is located in between 15° 41′ north latitude and 75° 52′ east longitude. It is at the distance of 17 kms from Yelburga town, 54 kms from district headquarter. It
has a population of 2193, residing in 672 houses. The total geographical area of the Sankanur village is 2687.34 acres covered with black and red soils. Out of these lands 2495.25 acres are cultivated area. There are 631 agricultural families and 41 families are of landless which indirectly help to the agriculture of the village. The village is connected with footpath, cart tracks and metalled road from the surrounding village.

In Sankanur village four types of land holdings as we seen in the previous villages, less than 2.20, 2.21 to 5, 5.01 to 10 and more than 10 acres Marginal, Small, Medium and Large land holders respectively. The highest percentages (33) of the families are in large landholdings and lowest land is seen in Marginal (12.90%) land holdings. The soil of the village has been classified into two categories. Black and Red soil, the good quality soil is around the vicinity of the village and it is good for cultivation of Jowar, Cotton, Wheat, Groundnut and Kusubi (Linseed) crops.

The farmers of Sankanur village grow crops thrice in a year as Kharif (mungari), Rabi (hingari) and summer. The important crops of Kharif season are Jowar, Groundnut, Green gram, Chillies and Sunflower. In Rabi season they grow White Jowar, Wheat and Linseed and in Summer Groundnut, Maize, Chillies and Vegetables are the important crops. The farmers of the village practice the old methods of cultivation with the help of animal power. Main source of irrigation is bore-wells; there are 15 bore-wells in the village.
Out of total population of the village, the total workers are 1129, of 445 are cultivators, 611 are agricultural labourers, 67 are other workers and 831 are main workers. Besides, there are about 298 marginal workers, 6 workers in household industries and rest of the population, 1064 are non workers. About (594) more than 50 percent of male population workers and (535) less than 50 percent female workers are engaged in agriculture in the total working force.

The village has a primary and one Anganawadi. Out of the total population only 1315 people are literates, in this 752 males and 563 females are literate persons, 875 persons are illiterates, 312 males and 566 female persons. 18.65 percentage SC and 3.37 percentages belong to ST population. The people of this village go to pilgrimage places like Hampi, Hospet, Anegundi, Hulagi and Kalakappa temples, by which they are also recreaded. People are visit Yelburga or Gajendragad town once or twice in a week to purchase domestic commodities and goods.

5.10 Conclusion

The problems of agriculture existing in each village are related to erosion of soil, mismanagement of irrigation, under fragmentation of land, disputes within the family or from one farmer to another leading to formation of waste land and poverty of farmers, leading to low inputs in farm management. The farmers need high prices for their products and stability in the prices. The financial and other technical awareness know-how aids are to be distributed to the farmers without politics and castism. The farmers of Koppal District
have witnessed ecological and environment changes over the past six decades leading to low agricultural productivity. Therefore they are to be helped to reconstruct of the ecology.

The visit of these four villages and discussions with farmers revealed that, they are need of bank loan with high subsidy. High prices for their agricultural products, supply of fertilizers, pesticides at subsidized price from the government and also modern agricultural utensils with very low cost. The people of these villages also need primary health centre, veterinary hospital, depot for purchase of fertilizers, pesticides and new variety of seeds and location of commercial bank in their villages. This type of micro level sampling study will give the general clue to understand the landuse and agricultural aspects of the study in particular villages, the taluka, the district and the state in general.
References


8) Khoshoo (1986): “Environmental Priorities in India and Sustained Development”. Indian Science Congress Association, p. 11.