Chapter 3

Changes in Land Use Pattern

The study of changes in agricultural land use pattern has prime importance because a little development in this sector may change the socio-economic scenario in a region. The type of economic activity and the consequent socio-economic development determines the proportion of net sown area, double cropped area and the gross cropped area in a region. Land resources provide means of livelihood for the population of a region. People depend on land resources for food and other requirements of their daily life. Land resources form the most important natural wealth of a country and it proper utilization is a matter of prime concern to its people (Hiremath and Karennavar, 1978). A plan for the development of agricultural resources depends upon information regarding the use of geographical area in a region (Day, Lahiri and Son Aung, 1988, p.73). The land use in an area is the results of the combined effect of five factors, such as- economic, technological, environmental, social and political (Young, 1975, p.6). Among these five factors natural environment and economic capacity have their prime importance (Ayyar, 1961, p.204). Natural environment particularly nature of terrain, soil character and water availability are the three main factors which determine the present pattern of land use in an area, while economic factors determine the uses of land in agriculture or non-
agricultural sector. Among the various uses of land resources, its use for food production is more wide and significant in the various parts of our country (Jain 1988, p.95).

The development of land use shows that with the increasing population and its capacity through technological development the land resources could be put to diversified uses of higher level (Zobler, 1962 and Verma, 1966). The existing land use pattern in Madhya Pradesh has been evolved as the result of the action and interaction of various natural and economic factors (Mishra, 2006). In the state, agriculture is the main and traditional occupation of the majority of the population. Nearly three-fourth of the total population lives in the rural areas and nearly three-fourth of the working population is directly engaged in agricultural sector in the state.

The Data and Method

The data for the present study are obtained from the Agricultural Statistics published by the Director of Agriculture, Bhopal and Commissioner of Land Records, Gwalior. The data for the year 1950-51 and 1956-57 have been obtained from the Statistical Abstract, published by the Director of Economics and Statistics, Bhopal; while the data for the year 2003-04 have been obtained from the Compendium of Agricultural Statistics, published by M. P. State Agricultural Marketing Board, Bhopal, 2005. Most of the data for present Madhya Pradesh have been calculated by subtracting the data of the districts of Chhattisgarh. The percentage has calculated on the basis of total geographical area (TGA) of the state or the district.
The Land use Classification

A systematic land use classification has been presented by the Ministry of agriculture, Government of India. Earlier, up to the year 1949-50 the land area was classified into five categories known as the five-fold classification: (i) Forest (ii) area not available for cultivation (iii) other uncultivated land excluding the current fallow land, (iv) fallow land, and (v) net sown area.

During the year 1948, the ministry of food and agriculture has recommended a nine-fold land use classification. These categories were: (i) forests,(ii) land put to non-agricultural uses(iii) barren and uncultivable land,(iv) permanent pastures and other grazing lands,(v) Miscellaneous trees, crops and groves,(vi) cultivable wasteland,(vii) old fallow lands,(viii) current fallow lands, and (ix) net sown area. The present analysis of land use pattern is based on the seven major categories and eleven sub-categories. These categories are as follows:

1. Area under Forests,

2. Land not available for cultivation:
   (i) Land under non-agricultural uses,
   (ii) Barren and uncultivable land.

3. Other uncultivated land excluding fallow land:
   (i) Permanent pastures and other grazing land,
   (ii) Land under miscellaneous trees, crops, groves.

4. Cultivable waste lands:
   (i) Land that can be brought under cultivation immediately,
   (ii) Land that can be brought under cultivation after some improvement,
   (iii) Uneconomic patches of large blocks of land which can be reclaimed after some improvement.

5. Fallow lands: (i) Current Fallows and (ii) Old Fallows.
6. Gross cropped area:

   (i) Net sown area and (ii) Double cropped area.

7. Total cropped Area.

Before Independence, the agricultural productivity and production was quite small in this state. After independence the efforts have been made for the development of agriculture through green revolution; consequently, the situation of agriculture has gradually improved and the state has become one of the surplus producer of food grains and other agricultural crops in the country (Mishra, 1989).

The total geographical area of Madhya Pradesh is 307.56 lakh hectares in the year 2002-03, which is 9.4 per cent of the country’s total geographical area. More than one-fourth (27.9 %) area is under forests, less than half (47.54%) of the total geographical area is under cultivation and the remaining one-fourth is under various agricultural and non-agricultural uses. During last five decades significant changes in the land use pattern have been recorded in Madhya Pradesh. The highest increase (181.2%) has been recorded in the area sown more than once, from 12.66 lakh hectares (1970-71) to 35.6 lakh hectares (2002-03). Similarly, the very high increase (109.7%) has been recorded in the current fallow land, from 4.75 lakh hectares (1970-71) to 9.96 lakh hectares (2002-03). The net sown area has also recorded significant increase, from 138.68 lakh hectares to 146.21 lakh hectares (47.54%), suggesting an increase of 5.4 per cent during the period. But, during the period 1956-57 to 2002-03 this growth in the net sown area has recorded 29.16 per cent, from 113.2 lakh hectares (36.81%) to 146.21 lakh hectares (47.54%), suggesting an increase of 29.16 per cent. Therefore, the total cropped area has increased from 126.7 lakh hectares to 181.8 lakh hectares, suggesting an increase of 43.5 per cent. On the other hand, the proportion of other uncultivated land, cultivable waste land, and old
Fallow land has been reduced from 86.08 lakh hectares to 32.34 lakh hectares during last five decades.

**Table 3.1**

**Madhya Pradesh: Changes in Land Use Pattern, 1970-71 to 2002-03**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>1970-71</th>
<th>2002-03</th>
<th>% change 1970-71 2002-03</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lakh Hectares</td>
<td>Lakh Hectares</td>
<td></td>
</tr>
<tr>
<td>1. Geographical Area*</td>
<td>307.56</td>
<td>307.6</td>
<td>100</td>
</tr>
<tr>
<td>2. Area under Forests</td>
<td>81.80</td>
<td>85.78</td>
<td>26.6</td>
</tr>
<tr>
<td>3. Land Not Available for Cultivation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) land under non-agri. uses,</td>
<td>34.40</td>
<td>33.07</td>
<td>11.1</td>
</tr>
<tr>
<td>(ii) barren and uncultivable land;</td>
<td>15.50</td>
<td>18.90</td>
<td>5.0</td>
</tr>
<tr>
<td>4. Other Uncultivated land:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Pastures and other grazing land,</td>
<td>29.41</td>
<td>14.14</td>
<td>9.5</td>
</tr>
<tr>
<td>(ii) under misc. trees, crops, groves;</td>
<td>22.61</td>
<td>13.95</td>
<td>7.3</td>
</tr>
<tr>
<td>5. Cultivable waste Lands:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) land that can be brought under cultivation immediately</td>
<td>17.14</td>
<td>12.13</td>
<td>5.6</td>
</tr>
<tr>
<td>(ii) land that can be brought under cultivation after some improvement,</td>
<td>8.07</td>
<td>5.45</td>
<td>2.6</td>
</tr>
<tr>
<td>(iii) uneconomic patches of blocks of land, can be reclaimed after some improvement</td>
<td>4.18</td>
<td>3.32</td>
<td>1.4</td>
</tr>
<tr>
<td>6. Fallow lands:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Current Fallows</td>
<td>10.89</td>
<td>16.22</td>
<td>3.5</td>
</tr>
<tr>
<td>(ii) Old fallows</td>
<td>4.75</td>
<td>9.96</td>
<td>1.5</td>
</tr>
<tr>
<td>7. Total cropped area:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Net sown area,</td>
<td>6.14</td>
<td>6.26</td>
<td>2.0</td>
</tr>
<tr>
<td>(ii) Double cropped area.</td>
<td>151.34</td>
<td>181.81</td>
<td>49.2</td>
</tr>
<tr>
<td></td>
<td>138.68</td>
<td>146.21</td>
<td>45.1</td>
</tr>
<tr>
<td></td>
<td>12.66</td>
<td>35.60</td>
<td>4.1</td>
</tr>
</tbody>
</table>

* The geographical area for the year 1970-71 has been calculated by subtraction of the area of the Chhattisgarh state.

Sharp spatial variations have been recorded in land use pattern in the state. Chhindwara district has the highest geographical area (11.85 lakh hectares) and Datia district has lowest geographical area (2.96 lakh hectares) with 3.85 per cent and 0.96 per cent area of the state respectively. The area under the forests is highest in Mandla district (61.4%) and lowest in Ujjain district (0.52%). The proportion of land not available for cultivation is highest in Morena district (26.5%) and lowest in Chhatarpur district (3.9%). The proportion of other uncultivated land excluding fallow land is highest in Chhatarpur district (18.1%) and the lowest in Barwani district (0.7%). Percentage of cultivable waste land is highest in Chhatarpur district (9.4%) and lowest in Khandwa district (0.11%), similarly, the percentage of fallow land is highest in Dindori district (18.8%) and lowest in Neemuch district (0.3%). The proportion of net sown area is highest in Ujjain district (79.5%) and lowest in Mandla district (22.3%). The percentage of double cropped area to the net sown area is highest in Harda district (70.8%) and it is lowest in Ratlam district (0.8%). Therefore, the total cropped area is the highest in the Harda district (122.2%) and it is the lowest in Sheopur district (22.7%).

Area under Forests

Forests influence the physical, economic and cultural environment of a region to some extent. The distribution and density of forests affects the proportion of rainfall, which is essential factor for the agriculture of our country. Generally, the hilly and dissected land of the state is covered by the forests. More than one-fourth (27.9 %) of the geographical area of the state is under forests (85.78 lakh hectares) which is nearly ten per cent of the total forested area of the country. The area under forest ranges from 0.52 per cent in Ujjain district to 61.4 per cent in Mandla district. Ujjain district has recorded lowest area under the forest and therefore highest net sown area (79.5%). The area under
forest is increasing in Madhya Pradesh. It is evident from the fact that about 7.07 per cent increase has been recorded between 1956-57 and 2002-03, from 70.98 lakh hectares to 85.78 lakh hectares.

About 42 per cent districts of the state have recorded higher area under forests and the remaining 58 per cent have recorded lower area under forest in comparison to State’s average of 27.89 per cent. About 31 per cent districts of the state have recorded high and very high area (above 34.9 %) under forests, 22 per cent districts of the state have moderate area and 47 per cent districts of the state have recorded lower area under forests in the state.

Spatially, the Satpura hills, the Baihar plateau, the Sohagpur-Singrauli basin, eastern Bundelkhand plateau, and middle Narmada valley have recorded high and very high area under the forests. On the other hand, most of the Malwa region, the Madhya Bharat plateau, the Rewa plateau, and some parts of the eastern plateau region have recorded low and very low area under forests. The remaining areas of this state have recorded moderate area under forests. They are the Gwalior plain, the Satna plateau, the Sagar-Chhatarpur plateau, Dewas-Sehore plateau and the Narsimhapur plain (Map 3.1).

**Land not available for cultivation**

The land not is available for cultivation includes two type of land - (i) land under non-agricultural uses, and (ii) barren and uncultivable land. Land under non-agricultural purposes includes buildings, roads, railways, water bodies, etc. and some other land which may not be available for agricultural uses. The barren and uncultivable land includes hills, plateau, etc. which cannot be brought under cultivation under present economic conditions. This type of land is within the cultivated holdings or as isolated patches.
Nearly one-tenth (10.76%) of the geographical area (33.07 lakh hectares) of the state is classified as not available for cultivation. It has reduced by 16.29 per cent, from 39.51 lakh hectares (13.1%) in 1956-57 to 33.07 lakh hectares (10.76%) in the year 2002-03. This land ranges from 3.85 per cent in Chhatarpur district to 26.5 per cent in Morena district. About 47 per cent districts of the state have recorded higher proportion of area not available for cultivation, while the remaining 53 per cent districts have recorded low and very low proportion of land not available for cultivation.

The proportion of barren and uncultivable land (14.17 lakh hectares, 4.61%) is lower than that of the land under non-agricultural uses (18.9 lakh hectares, 6.15%). The proportion of barren and uncultivable land ranges from 0.2 per cent (1.03 thousand hectares) in Narsimhapur district to 18.59 per cent (93.3 thousand hectares) in Morena district. About 44 per cent districts of the state have recorded relatively higher area under this category in comparison to the state’s average (4.61%).

On the other hand, land put to non-agricultural uses ranges from 0.1 (30.7 thousand hectares) in Bhopal district to 13.1 per cent (72.3 thousand hectares) in Mandsaur district. About 47 per cent districts of the state have recorded relatively higher area under this category in comparison to the average of the State (6.14%).

Spatially, the land not available for cultivation is relatively high and very high 34 per cent districts, it is low in 35 per cent districts and it is moderate in the remaining 31 per cent districts of the state. The areas of high category are the northern Madhya Bharat plateau, the western Malwa plateau, the Orchha uplands, and the Rewa plateau. The areas of low category are entire Satpura region, the Narmada valley, and Sagar-Vidisha plateau. On the other hand, the eastern Madhya Bharat plateau, eastern plateau region, the Singrauli basin and some parts of the
Malwa plateau have recorded the moderate proportion of the land not available for cultivation in the state (Map 3.2).

Other uncultivable land

Other uncultivated land includes (a) permanent pastures and grazing land, and (b) land under miscellaneous trees, crops and groves. In Madhya Pradesh other uncultivable land is 14.14 lakh hectares which is 4.59 per cent of the total geographical area of the state. The proportion of other uncultivable land has ranges from 0.7 per cent of the total geographical area in Barwani district to 11.79 per cent in Rajgarh district.

About 44 per cent districts of the state have recorded relatively higher percentage under other uncultivable land, while the remaining 46 per cent districts of the state have recorded relatively lower percentage in comparison to the average of the state (4.59 %). Moreover, more than one-third districts (35 %) of the state have recorded high and very high percentage under other uncultivable land, about one-third (27 %) districts have recorded moderate proportion, and the remaining 38 per cent districts of the state have recorded low and very low percentage in comparison to the average of the state (4.59 %).

Spatially, the Malwa region, the Nimar uplands, the Sagar-Chhatarpur plateau, and the Seoni plateau have recorded high and very high area under the category of other uncultivated land. On the other hand, southern Madhya Bharat plateau, middle Narmada valley, the Raisen-Vidisha plateau, and the eastern plateau region have recorded low and very low area under this category. While the Chhindwara plateau, the Baihar plateau, the Narsimhapur plain, the Damoh plateau, the Orchha uplands and the northern Madhya Bharat plateau have recorded moderate area under this category (Map 3.3).
Cultivable Wastelands

This category includes those lands which is available for cultivation, whether taken up for cultivation or not; or taken up for cultivation once, but not cultivated during the last five years or more in succession. Such land may be either fallow or covered with shrubs and which are not put to any use. This land may lie in isolated blocks or within the cultivated land holdings. Cultivable waste lands include three types of land: (i) land that can be brought under cultivation immediately, (ii) land that can be brought under the cultivation after some improvement, and (iii) uneconomic patches of wastelands. This land cultivable but actually not cultivated on account of physical, agronomic, social and economic constraints (Jain 1988, p.101). The utilization of cultivable wasteland is one of the protective, productive and profitable measures of meeting the national food requirement (Singh, 1974, p.116).

The cultivable waste land was 12.13 lakh hectares which is 3.95 per cent of the total geographical area of the state in the year 2002-03. In other words, out of the total cultivable wastelands 5.45 lakh hectares (1.77) can be brought under cultivation immediately, 3.32 lakh hectares (1.08%) can brought under cultivation after some improvement and 3.37 lakh hectares (1.09%) is uneconomic land and cannot brought under cultivation. Thus, about 8.77 lakh hectares (2.17%) cultivable wasteland can be brought under cultivation after some improvement in the state. During the year 1956-57 the cultivable wasteland (including other uncultivated land and old fallow land) was 86.8 lakh hectares which was more than one-fourth (28.7%) of the total geographical area of the state. It has declined to 32.53 lakh hectares, which is 10.58 per cent of the total geographical area (2002-03). This decline in the cultivable waste land is because of agricultural development in the last five decades.
The cultivable wasteland ranges from 0.11 per cent in Khandwa district in the south-west to 9.43 per cent in Chhatarpur district in the north-central part of the state. About 47 per cent districts of the state have recorded relatively higher percentage under cultivable waste land, while the remaining 43 per cent districts of the state have recorded relatively lower percentage in comparison to the average of the state (3.95 %). Moreover, more than one-fourth districts (27 %) of the state have recorded high and very high percentage under cultivable waste land, about one-third (33 %) districts have recorded moderate proportion, and the remaining 40 per cent districts of the state have recorded low and very low percentage in comparison to the average of the state (3.95 %). Spatially, the Madhya Bharat plateau, Chhatarpur-Panna-Satna plateau, the Singrauli basin and the Baghelkhand plateau have recorded high and very high area under the category of cultivable waste land. On the other hand, the Satpura region and most of the central part of the state have recorded low and very low area under this category. While the middle Narmada valley, the Betul plateau, the Seoni plateau, and some parts of the Malwa plateau have recorded moderate area under this category (Map 3.4).

Fallow lands

The fallow lands include both the old and current fallow land. Old fallow lands include all land which were taken up for cultivation but are temporarily out of cultivation for a period of more than one year and less than five years. While, current fallow land is the cultivated land but temporarily out of cultivation in the current agricultural year. There are many reasons for keeping such land under fallow, such as (i) inadequate availability of water, (ii) dependency on the rain water, (iii) low fertility of soil, and (iv) poor economic condition of the farmers. The fallow land is useful land from the agricultural point
of view and this should be brought under cultivation to improve food situation in the country.

In Madhya Pradesh, 16.22 lakh hectare area is under fallow land which is 5.27 per cent of the total geographical area of the state in the year 2002-03. The fallow land ranges from 0.29 per cent in Dewas district to 18.81 per cent in Dindori district. About 44 per cent districts of the state have recorded relatively higher percentage under fallow land, while the remaining 56 per cent districts of the state have recorded relatively lower percentage in comparison to the average of the state (5.27 %). Moreover, about 40 per cent districts of the state have recorded high and very high percentage of the fallow land, about 9 per cent districts have recorded moderate proportion, and the remaining 51 per cent districts of the state have recorded low and very low percentage in comparison to the average of the state (5.27 %).

Spatially, the proportion of fallow land is higher in the south-eastern and northern parts of the state. It is high and very high in the Baghelkhand plateau, the Satpura region, the northern Bundelkhand upland and the Madhya Bharat plateau. The higher proportion of fallow lands in the Baghelkhand plateau and the Satpura region may be because of undulating terrain and poor quality of soil, low availability of water for agriculture, and poor economy of the farmers. The fallow land is low and very low in the entire Malwa region, the Narmada valley and southern Bundelkhand plateau; while it is moderate in the Chhindwara plateau, the Panna-Satna plateau and the Morena plateau (Map 3.5).

The proportion of current fallow land (9.97 lakh hectares, 3.24%) is higher than that of the old fallow lands (6.26 lakh hectares, 2.03%) in the state. The current fallow land has decreased by 21.5 per cent, from 12.7 lakh hectares (1956-57) to 9.97 lakh hectares (2002-03). This has been possible because of agricultural development in the last five decades. The proportion of current fallow land ranges from 888
hectares (0.1%) in Dewas district in the west to 1.29 lakh hectares (15.5%) in Sheopur district in the north.

The old fallow land has decreased by 2.19 per cent from 6.4 lakh hectares (1968-69) to 6.26 lakh hectares (2002-03). The proportion of old fallow land ranges from 526 hectares (0.1%) in the Neemuch district to 52.9 thousand hectares (8.9%) in Dindori district. The proportion of old fallow land has determined by duration and variability of rainfall, availability of water for agriculture, soil fertility and finally the economic condition of the farmers.

Net Sown Area

Generally, higher proportion of net sown area is an indicator of quality of land and the economic capacity of the farmers in a region (Mishra, 2006). The proportion of net sown area in a region is determined by three factors: (i) physical (ii) economic and (ii) institutional (Ayyar, 1961). Less than half of the geographical area (47.54%) of Madhya Pradesh is under cultivation (NSA) which is slightly higher (0.94%) that that of the national average of 46.6 per cent. The net sown area increased by 29.16 per cent during last five decades, from 113.2 lakh hectares (37.5%) in 1956-57 to 146.21 lakh hectares (47.54%) in the year 2002-03. This increase in net sown area is the result of decrease in the cultivable wastelands and fallow lands. The highest net sown area (79.5%) is recorded by Ujjain district in the west and the lowest (7.64%) by Sheopur district in the north. The lowest net sown area in Sheopur district is because of the ravines and undulating land. The state may be divided into following three categories in terms net sown area (Map 3.6).

About 31 per cent districts have recorded high and very high proportion of net sown area (above 57 %). Out of these about 16 per cent districts have recorded very high and 16 per cent districts have recorded higher proportion of net sown area.
Spatially, the Malwa region, the Narsimhapur plain, the Vidisha plateau, the Rewa plateau and the eastern parts of Madhya Bharat plateau have recorded high and very high proportion of net sown area. These parts of the state have lowest area under forests, very low proportion under fallow and cultivable wastelands. Therefore, maximum geographical area is under cultivation.

About 20 per cent districts have recorded low and very low net sown area (below 38%). These areas spread over the Singrauli and Panna hills in the north-east, the Bhaihar & Maikal plateau in the south-east, the western part of the Nimar uplands in the west, and the Sheopur- Shivpuri plateau in the north. These parts have higher area under forests, low fertility of soils and lower availability of water for agriculture are the responsible factors for lower net sown area. Moreover, the Satpura region has very high area under forests; therefore the proportion of net sown area is small.

Nearly half of the districts (49 %) have recorded moderate percentage of net sown area (between 38 % and 57 %). These areas extend over the Satpura region, the Bundelkhand uplands, the Satna plateau, Gwalior-Morena plateau and some other parts. The Bundelkhand upland has higher area under forests and other uncultivated land, therefore area under cultivation is relatively small. Morena-Gwalior region has higher area under cultivable wastelands and moderate area under forests, therefore percentage of net sown area is moderate.

Changes in Net Sown Area

Before 1951, the proportion of net sown area in Madhya Pradesh was relatively small, while the percentage of cultivable wastelands, fallow lands and other cultivable land was relatively high. Some agricultural land was under permanent pastures and grazing
lands. With the implementation of First Five Year Plan some cultivable wasteland, fallow land and other cultivable land has been reclaimed and therefore the net sown area has increased during 1956-57 to 1970-71. In this state, the net sown area has been increased by 44.9 per cent, from 113.2 lakh hectares in 1956-57 which has increased to 138.7 lakh hectares in 1970-71, it was an increase of 37.5 per cent. In the next twenty years, about 7.35 per cent increase has been recorded in the net sown area, from 138.7 lakh hectares in 1970-71 to 148.9 lakh hectares in 1990-91. Since then in spite of increase it has recorded fluctuations in the next ten years. About 1.81 per cent decrease has recorded in net sown area from 148.9 lakh hectares in 1990-91 to 146.21 lakh hectares in 2002-03. There are many reasons responsible for this stability. The fallow land and cultivable wasteland has been reclaimed to maximum possible limit and the net sown area is now almost stable in the state. The state is facing a problem of water shortage which has an impact on the agriculture. The proportion of fallow lands is either constant or increasing due to insufficient rains and shortage of water for irrigation.

In recent years, a decrease of about 5 lakh hectares (3.36%) in net sown area has been recorded in the state between 1998-99 and 2002-03. This is due to an increase in fallow lands, from 11.75 lakh hectares (1998-99) to 12.13 lakh hectares (2002-03). About 3.23 per cent increase in the fallow land has been recorded during last five years. The present trend in the state is the result of the failure of Monsoon rains and shortage of water for agriculture. There are many reasons responsible for this stability. The fallow land and cultivable wasteland has been reclaimed to maximum possible limit during last five decades. The state is facing a problem of water shortage which has an impact on the agriculture. The proportion of fallow lands is either constant or increasing due to insufficient rains and shortage of water for irrigation.
Area Sown more than once

The higher proportion of double cropped area in a year is an indication of agricultural development in a region. Area under double cropping is associated with the sufficient storage of water in the reservoirs due to proper rains and therefore extension in the irrigation facilities, use of fertilizers and improved varieties of seeds, size of land holdings and financial condition of the farmers. In Madhya Pradesh about 35.6 lakh hectares (24.35 % of NSA) area is under double cropping. More than 32 times increase in the double cropped area has been recorded during last forty-five years, from 1.11 lakh hectares in 1956-57 (9.8 % of NSA) to 35.6 lakh hectares (24.35 %) in 2002-03. This increase in area sown more than once has been possible because of extension in irrigation facilities, use of fertilizers, improved varieties of seeds and mechanization in agriculture. The highest percentage of double cropping area is recorded in Harda district (1.2 lakh hectares, 70.8 % of NSA) and the lowest by Ratlam district (2.83 thousand hectares, 0.8 % of NSA).

Spatially, the Narmada basin, the Betul plateau, the Singrauli basin, the Rewa plateau, the Orchha uplands, and the Sagar plateau have recorded high and very high area under double cropping. On the other hand, the Madhya Bharat plateau in the north, the Nimar uplands and in the Malwa region and the Chhindwara plateau have recorded low and very low area under double cropping. While, the eastern Satpura region, the Shivpuri plateau, the Vidisha plateau, the Sagar -Chhatarpur plateau, the Satna plateau and Dhar upland have recorded moderate area under double cropping in the state (Map 3.7). The low and moderate area under double cropping is due to low availability of water for irrigation, lower fertility of soil, and poor
financial condition of farmers. The low and very low area under double cropping in the Malwa region is because of the scarcity of water during last few years.

**Gross Cropped Area**

Gross cropped area includes net sown area and area sown more than once. In Madhya Pradesh about 47.54 per cent area is under net sown area and 24.35 per cent area is under double cropping, therefore the gross cropped area is about 71.89 per cent during the year 2002-03. There is direct relation between the proportion of gross cropped area and the development of agriculture in a region. The higher proportion of gross cropped area is an indication of overall agricultural development of a region.

The gross cropped area in the state has increased by 43.5 per cent during last five decades, from 126.7 lakh hectares to 181.81 lakh hectares in the year 2002-03. This increase in gross cropped area is the result of extension in the net sown area and double cropped area and decrease in the cultivable waste lands and fallow lands. The highest gross cropped area is recorded by Harda district (122.2 %) of the Narmada valley and the lowest gross cropped area is recorded by Sheopur district (22.7 %) in the northern part of the state.

About 42 per cent of the total districts have recorded higher gross cropped area and the remaining 48 per cent of the total districts have recorded lower gross cropped area in comparison to the State’s average of 71.89 per cent. Spatially, the Narmada valley, the Malwa plateau, the Orchha upland, and the Rewa plateau have recorded higher proportion of gross cropped area; while the Satpura region, the Nimar uplands and Baghelkhand plateau has recorded low and very
low proportion of gross cropped area. Madhya Pradesh state may be divided into three categories in terms of gross cropped area (Map 3.8).

1. Areas of relatively high and very high proportion of GCA (Above 79.1%): About one-third (33 %) districts of the state have recorded high and very high percentage of gross cropped area. Out of these 20 per cent districts have recorded very high gross cropped area (above 86.3 %) and remaining 13 per cent districts have recorded high percentage of gross cropped area between 79.1 and 122.2 per cent. These districts extend over the Malwa plateau, the Narmada valley, the Rewa plateau and the Bundelkhand upland.

Seven districts of Malwa plateau have recorded high and very high proportion of gross cropped area. The percentage of net sown area and double cropped area is very high in this plateau. Area under forests, fallows and cultivable wasteland is low and very low. Development of irrigation, use of agricultural inputs and mechanization is relatively higher in this region. Consequently, the proportion of both net sown area and double cropped area is very high. The high and very high proportion of gross cropped area is because of higher proportion of net sown area and double cropped area, development of irrigation, consumption of fertilizers, use of high improved varieties of seeds and mechanization in agriculture.

The Narmada valley is another important part of this category. The level land and availability of water for irrigation is the main cause of high proportion of double cropped area and therefore total cropped area in this part of the state. The similar conditions have also recorded in the Orchha uplands, Sagar plateau and the Rewa plateau.
2. Areas of relatively low and very low proportion of GCA (below 64.7%): More than one-third (37.8%) districts of the state have recorded low and very low proportion of gross cropped area (below 64.7%). Out of them 11 per cent districts have recorded lower proportion (between 57.5% and 64.7%) and 27 per cent districts have recorded very low proportion of gross cropped area (below 57.3%). The areas of low percentage of gross cropped area are extend over the Madhya Bharat plateau, the Satpura region, the Nimar Uplands and Jhabua, the Chhatarpur-Panna hills, the Baghelkhand plateau in the east. The hilly terrain, poor quality of soil higher proportion of area under forests, other uncultivated land, and fallow lands, has resulted in lower proportion of net sown area and double cropped area in these parts. Therefore, the proportion of gross cropped area is low and very low in these districts. The Satpura region and the Nimar uplands have higher proportion of area under forests and fallow land, therefore the net area sown and double cropped area is low. Lower availability of water for agriculture has reduced the development of irrigation which has resulted in lower proportion of gross cropped area. The similar situation has also recorded in the other areas of this category.

3. Areas of moderate proportion of GCA (between 64.7 and 79.1%): More than one-fourth districts of the state have recorded moderate gross cropped area between 64.7 per cent and 79.1 per cent. They extend over the Madhya Bharat plateau, parts of the Bundelkhand uplands, the Singrauli basin, Seoni-Betul plateau and three districts of the Malwa plateau. These districts have higher proportion of area under forests, moderate to higher area under the fallow lands, and lower proportion of double cropped area. Therefore, they have registered moderate gross cropped area. Some of these parts have poor quality of soil and lower availability of water for irrigation. These conditions have resulted in moderate proportion of gross cropped area in these parts of the state.
Conclusions

1. The total geographical area of new Madhya Pradesh is 307.6 lakh hectares in the year 2002-03, which is 9.4 per cent of the country’s total geographical area. More than one-fourth (27.9%) area is under forests, less than half (47.54%) of the total geographical area is under cultivation and the remaining one-fourth is under various agricultural and non-agricultural uses.

2. During last five decades significant changes in the land use pattern have been recorded in Madhya Pradesh. The highest increase (80.06%) has been recorded in the double cropped area, from 11.1 lakh hectares (1956-57) to 35.6 lakh hectares (2002-03). Similarly, the net sown area has also recorded significant increase in from 113.2 lakh hectares to 146.21 lakh hectares (47.54%), suggesting an increase of 29.16 per cent during the period. Therefore, the total cropped area has increased from 126.7 lakh hectares to 181.8 lakh hectares, suggesting an increase of 43.5 per cent.

3. On the other hand, the proportion of other uncultivated land, cultivable waste land, and old fallow land has been reduced from 86.08 lakh hectares to 32.34 lakh hectares during last five decades.

4. Nearly one-fourth (24.7%) of the geographical area of the state is under forests (76 lakh hectares) which is nearly ten per cent of the total forested area of the country. The area under forest ranges from 0.52 per cent in Ujjain district to 61.4 per cent in Mandla district. Ujjain district has recorded lowest area under the forest and therefore highest net sown area (79.5%).

5. The area under forest has recorded 7.07 per cent increase d between 1956-57 and 2002-03, from 70.98 lakh hectares in 1956-57 to 76 lakh hectares in the year 2002-03.
6. About 49 per cent districts of the state have recorded higher area under forests and the remaining 51 per cent have recorded lower area under forest in comparison to State's average of 24.7 per cent.

7. Nearly one-tenth (10.76%) of the geographical area (33.07 lakh hectares) of the state is classified as not available for cultivation. It has reduced by 16.29 per cent, from 39.51 lakh hectares (13.1%) in 1956-57 to 33.07 lakh hectares (10.76%) in the year 2002-03. This land ranges from 3.85 per cent in Chhatarpur district to 26.5 per cent in Morena district. About 47 per cent districts of the state have recorded higher proportion of area not available for cultivation, while the remaining 53 per cent districts have recorded low and very low proportion of land not available for cultivation.

8. In Madhya Pradesh other uncultivable land is 14.14 lakh hectares which is 4.59 per cent of the total geographical area of the state. The proportion of other uncultivable land has ranges from 0.7 per cent of the total geographical area in Barwani district to 11.79 per cent in Rajgarh district.

9. The cultivable waste land was 12.13 lakh hectares which is 3.95 per cent of the total geographical area of the state in the year 2002-03. In other words, out of the total cultivable wastelands 5.45 lakh hectares (1.77) can be brought under cultivation immediately, 3.32 lakh hectares (1.08%) can brought under cultivation after some improvement and 3.37 lakh hectares (1.09%) is uneconomic land and cannot brought under cultivation. Thus, about 8.77 lakh hectares (2.17%) cultivable wasteland can be brought under cultivation after some improvement in the state.

10. During the year 1956-57 the cultivable wasteland (including other uncultivated land and old fallow land) was 86.8 lakh hectares which was more than one-fourth (28.7%) of the total geographical area of the state. It has declined to 32.53 lakh hectares, which is 10.58 per cent of the total geographical area (2002-03).
11. In Madhya Pradesh, 16.22 lakh hectare area is under fallow land which is 5.27 per cent of the total geographical area of the state in the year 2002-03. The fallow land ranges from 0.29 per cent in Dewas district to 18.81 per cent in Dindori district.

12. The proportion of current fallow land (9.97 lakh hectares, 3.24%) is higher than that of the old fallow lands (6.26 lakh hectares, 2.03%) in the state. The current fallow land has decreased by 21.5 per cent, from 12.7 lakh hectares (1956-57) to 9.97 lakh hectares (2002-03).

13. The old fallow land has decreased by 2.19 per cent from 6.4 lakh hectares (1968-69) to 6.26 lakh hectares (2002-03).

14. Less than half of the geographical area (47.54%) of Madhya Pradesh is under cultivation (NSA) which is slightly higher (0.94%) that that of the national average of 46.6 per cent. The net sown area increased by 29.16 per cent during last five decades, from 113.2 lakh hectares (37.5%) in 1956-57 to 146.21 lakh hectares (47.54%) in the year 2002-03.

15. In recent years, a decrease of about 5 lakh hectares (3.36%) in net sown area has been recorded in the state between 1998-99 and 2002-03. This is due to an increase in fallow lands, from 11.75 lakh hectares (1998-99) to 12.13 lakh hectares (2002-03). About 3.23 per cent increase in the fallow land has been recorded during last five years. The present trend in the state is the result of the failure of Monsoon rains and shortage of water for agriculture. The state is facing a problem of water shortage which has an impact on the agriculture.

16. About 35.6 lakh hectares (24.35% of NSA) area is under double cropping. More than 32 times increase in the double cropped area has been recorded during last forty-five years, from 1.11 lakh hectares in 1956-57 (9.8% of NSA) to 35.6 lakh hectares (24.35%) in 2002-03.

17. The gross cropped area in the state has increased by 43.5 per cent during last five decades, from 126.7 lakh hectares to 181.81 lakh
hectares in the year 2002-03. The highest gross cropped area is recorded by Harda district (122.2 %) of the Narmada valley and the lowest gross cropped area is recorded by Sheopur district (22.7 %) in the northern part of the state.

References


