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PHYSICAL AND CULTURAL SETTING

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CHAPTER II
PHYSICAL AND CULTURAL SETTING

2.1 Introduction:

Agriculture in a way is the answer of human efforts applied in the utilization of land resources towards the happiness of one of man’s basic require. The study of the manipulate of surroundings upon the nature and the distribution of crops and allied is of prime significance in agricultural geography. Nature with its diverse physical distinctiveness provides a host of possibilities for agriculture in different areas. Man with his prevailing level of scientific advancement has availed these opportunities for his preferred economic behavior. However, of all the economic activities, agriculture is in all probability one, on which the ecological control, is most crucial. While natural factors are far from explaining all slopes, soil, climate and hydrological conditions have extremely essential effects on the cultivation of crops and preference of a particular agricultural system.

2.2 Location and Extension

The south east part of the Ahmednagar district is selected as study region for the research work. This region is situated in the drought prone region in Western Maharashtra. This study region comprises the seven tahasils of the district namely Shevgaon, Pathardi, Nagar, Parner, Shrigonda, Karjat and Jamkhed. Physically this region is situated in $18^\circ 00'\ N.$ to $19^\circ 30'\ N.$ North Latitude and $74^\circ 30'E.$ to $75^\circ 30'E.$ East Longitude. Basically this area is rural area except Ahmednagar city. Total geographical area is 962990 hectares to be covered by this region. It is 57.06 percent of total geographical area of the district.

This study region is bounded by Georai and Ashti tahasil of Beed district, Bhum tahasil of Osmanabad district in the East part. Karmala tahasil of Solapur district and Dound tahasil of Pune district in the south part. Shirur tahasil in the south - west and Junnar tahasil of Pune district in the west side. Sangamner, Rahuri Newasa tahasil of the same district and Paithan tahasil of Aurangabad district on the northern side.
The major source of earnings is the agriculture. Agriculture is the most important economic activity and therefore the agricultural resources should be evaluated, thus, one reason for selection this topic. (Map No- 2.1)

2.3 Physiography:

The study region is the centrally situated part of Ahmednagar district of Maharashtra. According to agro climatic zone of Maharashtra the study area comes under rain shadow region of Sahyadries. The physiography of the study area has been understood with the help of comprehensive information regarding relief, drainage, soil, atmosphere, forest etc. The physical features of the study region are dominated by little undulating and greatly dissected topography. This area has an elevation between 400 to 900 meters above mean sea level. In the western part of study area of Parner tahasil has an average height of 800 meters where as Shevgaon tahsil, South part of Shrigonda and South West part of Karjat tahasil an average height of less than 500 meters above mean sea level. From West to East the height at mean sea level is decreased. The relief of the study region has huge variety

2.3.1 The Plain Region:

In the North East part of the study region the fertile alluvial plains of Shevgaon and part of Pathardi tahasil lying basin of the Godavary River. In the South there are the alluvial but less fertile plain of Shrigonda and Karjat lying in the basin of Bhima River.

2.3.2 The Plateau Region:

Plateau merges in to the other regularly through sharp crested ridges. These are mainly in the Parner, Nagar and part of Jamkhed Tahasil. The Western and central part of Parner Tahasil is lying undulating hilly area. The region is very irregular and hilly, consisting of the sequence of plateaus and table lands at different heights. (Map No. 2.2)
2.4 Drainage Pattern:

The study area is drained by two major rivers, the Godavari in the North and Bhima a tributary of the Krishna in the South part of the study region. In the Western side of the study area Kukadi River flowing towards South which is tributary of river Ghod, Ghod River is a tributary of Bhima. In the middle part of region Sina River is flowing towards South part and lastly Sina is joined to the Bhima. Godawari is flowing from the North part of the study area. Godawari is most important River of the whole of peninsular India. Godawari raises in the Sahyadris ranges near Trimbakeshwar in Nashik district. The River enters in the Ahmednagar district as a major river near Wadgaon in Kopargaon Tahasil. It flows towards East direction through rich alluvial plains and forms an almost continuous boundary between Ahmednagar and Aurangabad district. The Prawara, the Adula, the Mahalungi and the Mula River these are the most important tributaries of Godawari flowing from right bank but these all tributaries flows besides of the study area. The Dhora River rises on the slopes of the hills east of the town of Ahmednagar. Dhora River flows towards North Easterly, and drained the Shevgaon and part of the Newasa sub-division and falls in to the Godawari at Paithan. Its total length is near about 56 K Ms. The whole of the southern part of the district lies in the Bhima basin. The Bhima however, passes only on the boundary between Ahmednagar and Pune district. The Bhima rises close to Bhimashankar in Pune district and enters in Ahmednagar district near village Sangavi Duma in Shrigonda tahasil and flows in the South East direction. The main tributaries of the Bhima are the Ghod and the Sina. Bhima River is having the length within Ahmednagar district is 56 K.Ms. The course of the Bhima is constantly to the South East. The Sina River has two major sources one is near Jamgaon 23 K.Ms West of the Ahmednagar in Parner tahasil and the other near Jeur16 K.Ms to the North East in Nagar tahasil. After flowing through the city forms a part of the boundary between Ahmednagar and Beed district. It joins the Bhima River in Solapur district a few miles South of Solapur city. Besides these rivers and tributaries many minor streams intersect the study area, but they contain water only during the rainy
period. Little has been complete towards storing the water that falls during the South West monsoon. (Map No-2.3)
2.5 Soil:

The soil development in every region depends on parent rock, climate, physiography, living organisms and time. Soil provides nutrients, water for the growth of plants. The crop growth depends on soil structure, colour thickness and texture etc. It is loose surface soil and rainfall which promotes penetration of rain or irrigation water, stores it and provides to plant when requires. The soil of the study area can generally classified in to four groups i.e. Deep black soil, Medium deep black soil, Gray soil, and Red soil etc. The Deep black soil appears on the banks of major rivers in study area. It is found Northern side of Shevgaon, Middle part of Pathardi, Shrigonda, Karjat and Jamkhed tahasil. The soil depth increases in Shevgaon tahasil. In Godawari and Bhima basin the soil are deep where Sugarcane, Wheat Soyabean and Fiber are cultivated by availability of irrigation. The Medium deep black soil are found in the plains region in Shevgaon, some part of Karjat and Jamkhed tahasils have comparatively a deep black soil. In Sina and Bhima basins the soils are comparatively deep where Sugarcane, Wheat, Soyabean, Fiber (Cotton) are cultivated by providing irrigation. Medium deep black soil is found in Northern and Southern part along with Bhima and Sina River basins and its tributaries. It is identified in part of Shrigonda, part of Nagar, Pathardi and Karjat tahasils. It is appropriate for Jowar cultivation.

Gray soils are found in plateau regions in study region. This soil is shallow as well as less fertile. The crop cultivation in this soil is supplemented by irrigation. This soil is appropriate for Bajara Jowar, Onion along with Pulses. It is notorious in the part of Parner, Western part of Nagar, South part of Pathardi, Eastern part of Shrigonda, and part of Jamkhed tahasil.

The Red soil is found in high rainfall area in West part of study region. This soil is formed in the area of high rainfall and alternate wet and dry period. It is suitable for cultivation of Bajara, Pulses Fruits and Vegetables in the study regions. Red soil is found in the central part of Parner tahasil which is a high elevated area. (Map No.2.4)
Map No. 2.4

Soil Map

Legend
- Deep Black Soil
- Gray soil
- Medium deep black soil
- Red Soil

25 12.5 0 25 50 Km

Map No. 2.4
2.6 Climate:  

The climate of the study region is characterized by a hot summer and general dryness except during the South West Monsoon period. The whole year can be divided into four seasons. The cold season from December to February is followed by the hot season from March to the first week of June till the end of September there is a rainy season while October and November constitute the post Monsoon or retreating Monsoon season. The average annual rainfall of the study area is 578.8 mm. The distribution of the rainfall is very uneven and uncertain. The study area mostly lies in the rain shadow to the east of the sahyadries, September is the well known for rainiest month. About 77 percent of the annual rainfall is received during the South West Monsoon period. The variation in precipitation is huge. Seasonal disparity in temperature is quite large from March onward is a period of continuous increase in day temperature the nights remaining relatively cold. The month of May is the hottest of the year with the mean daily maximum temperature at 38.9 degree Celsius. On individual days temperatures occasionally rise to 43 degree Celsius to 44 degree Celsius. With the beginning of the South West Monsoon there is an appreciable drop in temperature and the water becomes pleasurable. With the departure of the monsoon daytime temperature increase but night temperatures progressively decrease from about middle of November day and night temperatures decline speedily. The month of December is the coldest month of the year with the mean daily minimum temperature at 11.7 degree Celsius. In association with the passage of Western disturbances across North India during winter period, the lowest temperature in the district sometimes drops to 2 or 3 degree Celsius. Except during the South West Monsoon, the air generally dry particularly so in the afternoons. Skies are normally apparent or lightly foggy most of the year. During the South West Monsoon period, the sky is closely clouded to overcast. Winds are generally light to moderate in force with some strengthening during the Monsoon period. Thunder Storms happen during the month of March to June and the September as well as October. In relationship with the Monsoon depression that form in the Bay of Bengal and move across the central parts of
the nation, the district experiences cloudy sky and wide spread heavy rain. (Figure No. 2.1 and Map No. 2.5)
2.7 Vegetation:

Forest is the important natural resource plays ecologically significant responsibility. Forest can help improving the quality of life of the rural community. Forest performs the protective, productive and esthetic functions for enhancing the quality of surrounding situation. The study region has an of 68452 hectares area under forest cover. The forest area makes 7.10 percent of the total geographical area of the study region. The forest in study area is of tropical dry deciduous. The tahasil wise sharing of area underneath forest is uneven. The highest percent of forest is found in Parner tahsil accounting 27.45 percent due to heavy rainfall and mountainous topography. Shevgaon Pathardi and Jamkhed tahasils have found less than ten percent forest cover, Nagar and Karjat have found 10 to 20 percent forest cover where as Parner and Shrigonda have more than 20 percent of forest cover. In Shevgaon and Jamkhed tahasil has observed only 1.53 and 1.10 percent forest area respectively. The forest of study region is of dry deciduous variety. The major varieties in forest are, namely, Teak, Neem, Babool, Sandalwood, Khair, etc. Among other trees are Hiwar, Herkal and Apta. Due to the insufficient rains and shallow soil the huge tropical grasslands are common in non-irrigated part in study areas. The part of Parner tahsil has evergreen diversity. The dry area has shrub forest consisting of Karvand, Tarwad, many types of Cactus. The growth of vegetation is poor due to poor soil and lack of sufficient humus. (Map No -2.6)

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Name of the Tahasil</th>
<th>Total Geographical Area (Ha)</th>
<th>Area Under Forest (Ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shevgaon</td>
<td>108713</td>
<td>1050</td>
<td>1.53</td>
</tr>
<tr>
<td>2</td>
<td>Pathardi</td>
<td>119947</td>
<td>6413</td>
<td>9.37</td>
</tr>
<tr>
<td>3</td>
<td>Nagar</td>
<td>150272</td>
<td>13165</td>
<td>19.23</td>
</tr>
<tr>
<td>4</td>
<td>Parner</td>
<td>186797</td>
<td>18792</td>
<td>27.45</td>
</tr>
<tr>
<td>5</td>
<td>Shrigonda</td>
<td>160481</td>
<td>15210</td>
<td>22.22</td>
</tr>
<tr>
<td>6</td>
<td>Karjat</td>
<td>149157</td>
<td>13068</td>
<td>19.10</td>
</tr>
<tr>
<td>7</td>
<td>Jamkhed</td>
<td>87623</td>
<td>754</td>
<td>1.10</td>
</tr>
<tr>
<td>8</td>
<td>Total</td>
<td>962990</td>
<td>68452</td>
<td>100</td>
</tr>
</tbody>
</table>

Sources: - Socio- Economic Abstract Ahmednagar District, 2010-11.
2.8 Crops:

Cropping pattern in each region depends upon socio-economic, physical and climatic situation. The agriculture plays a significant role in the economy of the study area. The Figure No. 2.2 reveals that it dominated by cultivation of cereal crop on the total cultivated land of the study area, the percentage of almost 73.03 percent. In the cropping pattern other crops like Fiber and fodder occupy second rank and shared 11.20 percent of cultivated land. The third rank was occupied by Pulses almost 10.60 percent of total cropped area. Nearly 2.1 percent of total cultivated area was under fruits, Vegetables and Spices, 1.85 percent area under Oil Seeds and 1.22 percent area occupied with Sugarcane.

2.9 Population Density:

Economic development of every region depends upon human wealth. Population influences the economic activity and determines the level of consumption and workforce. The study area has 2181181 populations (2011 Census). It is 47.81 percent of total district population. In 1991 population was 1592615. The population is 47.21 percent of district. It is observed that the highest population density for 1991 was recorded at Nagar tahasil (307 persons). There are five tahsils having 100 to 150 persons per square kilometer population density. These tahasils are Pathardi, Parner, Shrigonda, Karjat and Jamkhed, whereas Shevgaon tahasil have 156 people per square kilometer.

Table No-2.2 Density of Population

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shevgaon</td>
<td>156</td>
<td>238</td>
<td>5</td>
<td>Shrigonda</td>
<td>145</td>
<td>197</td>
</tr>
<tr>
<td>2</td>
<td>Pathardi</td>
<td>144</td>
<td>212</td>
<td>6</td>
<td>Karjat</td>
<td>124</td>
<td>148</td>
</tr>
<tr>
<td>3</td>
<td>Nagar</td>
<td>307</td>
<td>426</td>
<td>7</td>
<td>Jamkhed</td>
<td>135</td>
<td>180</td>
</tr>
<tr>
<td>4</td>
<td>Parner</td>
<td>114</td>
<td>142</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: District Census Handbook in 1991 & 2011, Ahmednagar

In 2011 highest density of population was recorded in Nagar tahsil (426 persons). Shevgaon and Pathardi tahsils have 200 to 250 persons per square kilometer population density. Shrigonda and Jamkhed tahsils having 150 to 200
peoples per square kilometer. The two tahsils in study area have 100 to 150 persons population density, namely, Parner, Karjat.

2.10 Occupational Structure:

The India’s population has classified in to three groups by Planning Commission of India in 1995. These categories are, specifically, main workers, marginal workers and non-workers. Main workers are persons who work at least six months in one year preceding. Marginal workers are persons who work for some time but not for the period more than six months in the preceding year.

The main workers are further classified into three categories, that is, cultivators, agricultural labourers, and other workers. The agricultural activity in south east part of Ahmednagar district depends on cultivators and agricultural labourers. Other workers are persons who are busy in primary occupations as well as manufacturing, processing, servicing, construction, trade, commerce etc.

Table No-2.3: Occupational Structure in Percentage

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Year</th>
<th>Cultivator</th>
<th>Agricultrueal Labourer</th>
<th>Other Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1991</td>
<td>51.40</td>
<td>22.38</td>
<td>26.22</td>
</tr>
<tr>
<td>2</td>
<td>2001</td>
<td>50.26</td>
<td>18.24</td>
<td>31.50</td>
</tr>
<tr>
<td>3</td>
<td>2011</td>
<td>51.26</td>
<td>20.66</td>
<td>28.08</td>
</tr>
</tbody>
</table>

Source: District Census Handbook, Ahmednagar

Above Table No. 2.3 shows, the occupational composition in south east part of Ahmednagar district from 1991 to 2011. It is observed from figure No.2.7 that percent of cultivator has decreased from 51.40 percent to 51.26 percent during study period having totaled decreased by 0.14 percent. The percent of agriculture laborers decreased by 1.72 percent during study period whereas percent of other workers has found improved by 1.86 percent in study region.
Figure No. 2.1

Figure No. 2.2
Figure No. 2.3

Population Density

Figure No. 2.4

Occupational Structure

46
Figure No. 2.5

Distribution of Cultivator

Figure No. 2.6

Distribution of Agricultural Labourer

47
2.10.1 Spatial Distribution of Cultivators:

According to census a cultivator is a human being who is busy in cultivation of land or supervision of cultivation. In 1991 total cultivators were 349585 persons accounting for 51.40 percent of total population in study area. The cultivators are 47.35 percent of total population of study area. Parner tahsil has maximum percentage of cultivators (66.83 percent) while lowest cultivators are found in Nagar tahsil (27.78 percent). Shevgaon, Pathardi, Shrigonda, Karjat and Jamkhed have 50 to 65 percent cultivators.

Table No. 2.4: Distribution of Cultivator

<table>
<thead>
<tr>
<th>Tahsil</th>
<th>Percentage of Cultivator 1991</th>
<th>Percentage of Cultivator 2001</th>
<th>Percentage of Cultivator 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shevgaon</td>
<td>52.49</td>
<td>53.92</td>
<td>52.63</td>
</tr>
<tr>
<td>Pathardi</td>
<td>65.08</td>
<td>61.23</td>
<td>64.49</td>
</tr>
<tr>
<td>Nagar</td>
<td>27.78</td>
<td>23.96</td>
<td>25.68</td>
</tr>
<tr>
<td>Parner</td>
<td>66.83</td>
<td>68.04</td>
<td>65.93</td>
</tr>
<tr>
<td>Shrigonda</td>
<td>55.99</td>
<td>58.34</td>
<td>59.26</td>
</tr>
<tr>
<td>Karjat</td>
<td>60.93</td>
<td>60.31</td>
<td>62.74</td>
</tr>
<tr>
<td>Jamkhed</td>
<td>52.86</td>
<td>56.26</td>
<td>52.75</td>
</tr>
<tr>
<td>District</td>
<td>47.35</td>
<td>47.10</td>
<td>47.51</td>
</tr>
</tbody>
</table>


In 2011 total cultivators were 59.26 percent of total population in south east part of Ahmednagar district and it is 47.51 percent of total population of Ahmednagar district.

The highest percentage of cultivators is found in Parner taluka (65.93 percent), whereas lowest percentage of cultivators is recorded in Nagar tahsil (25.68 percent). Jamkhed, Shevgaon, Karjat, Pathardi and Shrigonda tahsils have found more than 50 percent of cultivators. Fig.2.8 shows that highest decrease in cultivators was recorded in Nagar tahsil (2.1 percent). While Pathardi, Parner and Jamkhed tahasils has less than 1.00 percent decrease. Maximum increase is identified in Shrigonda tahsil accounting (3.27 percent) followed by Karjat (1.81 percent) whereas Shevgaon tahsil have less than 1.00 percent increased (0.14) of cultivators in study area.
2.10.2 Spatial Distribution of Agricultural Labourers:

According to census, human being who works on another person’s land for earnings in money or kind is regarded as agricultural labourer. Table-no 2.5 indicates that the highest percentage of agricultural labourer in 1991 was in Shevgaon tahsil (32.51 percent) and lowest was found in Nagar taluka (14.84 percent). In Pathardi, Parner, Shrigonda, Karjat and Jamkhed tahsils have 19 to 28 percent agriculture labourers.

<table>
<thead>
<tr>
<th>Tahasil</th>
<th>Percentage of Agricultural Labourer</th>
<th>Tahasil</th>
<th>Percentage of Agricultural Labourer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shevgaon</td>
<td>32.51</td>
<td>27.89</td>
<td>30.71</td>
</tr>
<tr>
<td>Nagar</td>
<td>14.84</td>
<td>9.4</td>
<td>11.07</td>
</tr>
<tr>
<td>Parner</td>
<td>19.00</td>
<td>14.96</td>
<td>18.85</td>
</tr>
</tbody>
</table>


In 2011 highest percentage of agricultural labourer was found in Shevgaon tahsil (30.71 percent) and lowest was in Nagar Tahsil (11.07 percent). Figure No. 2.5 indicates that maximum decrease in cultivators was recorded in Nagar taluka (3.77 percent) followed by Shrigonda (3.33 percent). While Shevgaon Pathardi tahsils has less than 2.00 percent decrease whereas Parner and Karjat tahsils has less than 1.00 percent decreased of agricultural labourers in study area. In Jamkhed tahasil the agricultural labourers are increased by 1.97 percent in the study area.

2.11 Transportation:

Roads are the significant system of every region. Development of agriculture depends on transport, fertilizers, agricultural implements, seeds etc. A study region of the Ahmednagar district has national and state highways, main district roads, other roads, village roads and railway route. In the study area of
the Ahmednagar district one highway known as "Manmad-Daund Road". It begins from Manmad in Nasik district and it enters northern boundary in Ahmednagar district and joins to Daund in Pune district. This road connects linkage between the three districts and runs almost corresponding to Daund-Manmad railway line. The road runs from north to south direction and passes through the middle of this district. The national highway No-222 connects Maharashtra state with Andhra Pradesh. This national highway passes through Parner Nagar and Pathardi tahsil.

The state highways are interior roads of state connecting other highways, head-quarters of district and cities. The study region has more state highways having 1642 kilometers length. Amongst these Ahmednagar-Paithan highway connects Ahmednagar city to Paithan in Aurangabad. The second important state highway is Ghoti-Shevgaon road running from west to east connecting important places like Akole, Sangamner, Shrirampur, Newasa and Shevgaon tahsils. This road has a length of 180 kilometers which runs through the rich sugarcane belt. The third important state highway is Pune-Ahmednagar-Aurangabad road. The total length of this road is 115.8 kilometers. Another important state highway is Ahmednagar-Solapur state highway of having 93 kilometers length in study area. This highway runs through Nagar, Shrigonda, and Karjat tahsils. (Map No.2.7)
2.12 Resume:

In this present chapter tried to make the aware of study area very sincerely. In this tries to introduce significance of agriculture and status of agriculture in India, agriculture condition in study region, agriculture potential and regional inequality etc. The physical and geographical aspect of the study region has discussed with importance of the study. In the study area the average rainfall is 578 mm the temperature ranges from 40.6 degree to 9.8 degree celcious. In Deep black soil is identified in the eastern side of the study area. Gray soil is identified in the central part of the study area. Red soil is identified in the middle part of Parner. The remaining part there is identified the medium deep black soil. There are not available economically important natural resources in the study region. There are available some commercial important variety natural variety of plants in forest area i.e. Neem, Teak etc. In the study region these part is separated naturally in two main rivers. Northern part of study area consist the basin of Godawari and its tributaries and southern part in consist the tributaries of Bhima River. Sina is the flowing from the central part of the study area. Agriculture is a most important source of income but the agriculture is completely depending on the Monson. Most of the communities are engaged in the agriculture. Jowar is main crop of the region. Sugarcane and Fiber is the most important cash crop. Generally the food grain is the major crop of the study area.
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7. Socio-Economic Review and statistical Abstract of Ahmednagar District, Ahmednagar, 1980-81
10. District Gazetteer, Ahmednagar, 1976