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CHAPTER-V

TYPES AND PATTERNS OF RURAL SETTLEMENTS

5.1 Introduction

In the present chapter types of rural settlements and their format have been studied in the study area. To identify types of rural settlement dispersal index statics method had been used. Indian toposheet has been used to analyse format of rural habitat.

“Various types of settlement are divided based on the number of houses and distance-relationship between them, independent geographical existence of a rural habitat can be viewed through its structure” (Aursseau 190), Perpillu (1966). A rural settlement is established near farming. Primarily for agricultural related works and protection of agricultural farm. Farming work, agricultural technique and method of using soil these are the factors related with structure of size of most of the settlement creation.

There are various factors behind classification of rural habitat. Some Geographical experts have given significance to types and format while classifying settlement while some scholars have underlined significance of place of settlement.

We can see classification of rural habitat in various perspectives. Some of the geographical experts have underlined importance of types and formats while some of them consider place of settlement as significant “Natural factors including surface nature, source of water supply, water system, type of soil etc. matters while some social structures includes utility of land, productivity of agriculture, crop organization and density of population etc. factors are responsible” (Kumbhar 1986) Demojon (1962) has expressed his views on rural settlement centralization and decentralization. In his opinion rural settlement in ground region is wealth and it is less wealthy in hilly or high or low region.

There is a basic difference in the types and format of rural habitat. Types of rural settlement are decided the basis of number of
houses and distance in it. While format of a habitat is decided considering geometrical size or external size is called format. Natural, cultural, economic, historical factors are directly or indirectly influenced by the types and format of a settlement.

A group of small houses develop in favourable environment and which acquires a particular size that size is called format of a rural settlement. Format of a rural settlement is called size also. Natural place and cultural conditions also are important in creation of a rural settlement.

Natural factors affect and create a new settlement. This is characteristics or special format of that settlement. This factor also determines internal and external nature of a habitat.

Up and downs in a land, stream of a river, water reservoir, types of soil, creeks, plantation, size of agriculture area, geographical factors etc. are responsible giving a special figure to each of rural settlement. Alongwith geographical factors economic, historical, cultural, factor also influence format of a rural settlement. Economic factors include agricultural system, animal husbandry, market, leaf collection, fishing, mining, land utility, factor etc. while cultural factors include forts, places, camps, Gadhi. The size of a habitat cultural factors also affect which include religious places, social characteristics, likes and dislikes, tradition, customs etc.

Geographical factor is the prime factor which controls all the settlement if compared with all other factors. Rich settlement are centralized towards the valley of a river because there is fertile land, water etc are distributed equally there while the distribution of resources is unequal in hilly areas therefore the habitat also are scattered.

Population density, protection, nature of traffic root, productivity of farming etc social and economic factors controls type of rural habitat or distribution. A centralized settlement is created to fulfill the need of protection and face calamities. Population densed regions are trended towards creating a centralized habitat.
i) Isolated or scattered rural settlement

ii) Clustered rural settlement

These are the two types of rural settlement according to Finch and Triwartha, Hudson says, Centralized rural settlement and scattered rural settlement are the two formats of rural habitat. “Format is related with geometrical size and picture of a rural habitat.” It proves us that there are various types of formats. Types of rural habitat make clear number of houses in it as well as their interrelations. (Singh, 1994)

5.2 Types of Rural Settlements in Akola District

Maximum settlements in study area are clustered in nature. The level is high at some place while it is low at some places. Where there are large settlement in the study region road transportation is comfortable there size of agricultural field, type of soils, land system, traffic and transportation facilities etc. overall factors affect size and development of a settlement. Besides it occupation and caste etc. also affected format of a settlement. R.B. Mandal’s statistic method has been used to classify types of rural settlement in target region and collect data list and map accordingly. Based on distance and size of a rural settlement a dispersal index has been prepared. When a habitat is spread it is called dispersal. There are various methods of preparing dispersal. Dispersal between Ganga-Yamuna settlements have been made clear by Dr.Jai Ram Yadav by using linear line distance.

Theoretical distance in region is depend on density of a rural habitat. Robinton Atnay and J.R. Barnas (1940) tried to calculate region format occupancy of a rural habitat and its nature. A.B. Mukherjee has studied internal aspects of a rural settlement while Walter Christaller studied settlement in Hexagon order. When distance of a settlement is close then settlement is clustered. If distance is equal then distribution format is uniform in nature or regular. If distance is irregular then distribution format is random.

Following formula has been used for preparing dispersal index.
Dispersal Index = \frac{\text{Average Population Size of Settlements}}{\text{Average Spacing of Settlements}}

A) \quad \text{Average Population} = \frac{\text{Total Rural Population}}{\text{Numbers of Settlements}}

B) \quad \text{Average Spacing} = \sqrt{\frac{\text{Average Rural Area}}{\text{Numbers of Settlements}}}

Table 5.1: Talukawise Major Settlement Types in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Taluka</th>
<th>Average spacing</th>
<th>Average population size</th>
<th>Dispersal Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telhara</td>
<td>2.84</td>
<td>1498.74</td>
<td>527.72</td>
</tr>
<tr>
<td>2</td>
<td>Akot</td>
<td>1.58</td>
<td>905.01</td>
<td>572.79</td>
</tr>
<tr>
<td>3</td>
<td>Balapur</td>
<td>2.67</td>
<td>1477.73</td>
<td>553.45</td>
</tr>
<tr>
<td>4</td>
<td>Akola</td>
<td>1.69</td>
<td>1230.09</td>
<td>727.86</td>
</tr>
<tr>
<td>5</td>
<td>Murtijapur</td>
<td>1.72</td>
<td>824.26</td>
<td>479.22</td>
</tr>
<tr>
<td>6</td>
<td>Patur</td>
<td>2.78</td>
<td>1238.26</td>
<td>445.41</td>
</tr>
<tr>
<td>7</td>
<td>Barshitakli</td>
<td>1.67</td>
<td>939.38</td>
<td>562.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2.08</strong></td>
<td><strong>1109.70</strong></td>
<td><strong>533.50</strong></td>
</tr>
</tbody>
</table>

Source: Compiled by Researcher

Based on the mean and quartile deviation gained after using dispersal index, it is divided into 4 groups. The value of dispersal index in study area is between 727.86 to 445.41. Extra value is dispersal index is an indicator of rich settlement. While low value belongs to sprinkled settlement. Based on dispersal index value regional rural settlement are distributed in 4 types.

1) Compact Settlement
2) Semi Compact Settlement
3) Semi Sprinkled Settlement
4) Sprinkled Settlement
AKOLA DISTRICT
TYPES OF SETTLEMENT
(BASED ON DISPERSAL INDEX)

COMPACT SETTLEMENT, ABOVE 572.79
SEMI COMPACT SETTLEMENT, 572.79 TO
SEMI SPRINKLED SETTLEMENT, 552.70
SPRINKLED SETTLEMENT, BELOW 479.22

Map 5.1

Source: Compiled by Researcher
1) **Compact Settlement**

Geographical experts have referred compact settlement by various names. Finch and Triwartha called it as centered compact habitat while Jean Bruhans called it centralized while Blash call it capitalistic settlement while some subject scholars call it compiled settlement. According to E. Ahmad, “Prime speciality of a compact society is all the settlements are centralized towards a center.” Houses in this settlement are close to each other, road and lane are narrow, walls of houses are very close. Local material is used for constructing houses. People of various caste and religion are united here for religious and financial purposes.

Natural factors, cultural factors and economic factors are responsible creating a compact settlement. Dispersal index of this group is more than 572.79. Compact habitats are more found in Akot and Akola taluka of study area. Because of Purna river and her tributaries this area is full of fertile soil, farming land, good rainfall, irrigation facility and the most important thing transport and transportation facility in this taluka is good. Compact settlement are 37.53% while average population is 10675. It includes Kaulkhed, Khadki, Shivpur, Shivni, Palsod, Devarda, Balegaon, Varul are important compact habitat.

2) **Semi Compact Settlement**

Such type of settlement have compact and half fettered characteristics. Its dispersal index is between 572.79 to 552.70 there are 26.06% settlement of this type. Average population is 1947.5 good agricultural land, facility of transportation, stream system, availability of geographical water level etc. factors leads to creation of semi compact settlement. This type of settlement can be found in Balapur and Barshitakli taluka of study area. For example Katkheda, Rustumabad, Dagapurwah, Titwan, Kasarkhed, Savargao, Kolsa, Mandwah Bu, Khirpuri Bu etc.
3) **Semi Sprinkled Settlement**

This type of settlement has mixed characteristics. It includes characteristics of semi compact settlement and sprinkled settlement. Settlement of this type are recovered primarily at low rainfall, rocky land, due to social and cultural factors size of these settlement is small. Telhara and Murtijapur are the sources of this category settlement. Its dispersal index is between 552.70 to 479.22. It covers 26.78% size of total area.

4) **Sprinkled Settlement**

Sprinkled rural settlement are located where agricultural land area is less and rainfall is more. Average population and size of this rural settlement is less. Dispersal index value of this category settlement is less than 479.22. Patur taluka in study region covers this type of settlement. It has the size of 9.63% of total target region. It means comparatively there are very less settlement here.

R.B. Mandal (1977) used scattered index in his 'Planned Development of Rural Settlement in North Bihar’ research thesis to study types of rural settlement.

Any settlement is divided under two categories based on the centralized and decentralized factors. These factors trends to create centered or scattered settlement. (Mandal 1977) Following formula had been used to the calculate value of scattered index.

\[ DI = \frac{Rpi \times Vi}{Ai^2} \]

- **DI** = Scattered Index
- **Rpi** = Total rural population in a taluka
- **Vi** = Total rural settlement in a taluka
- **Ai^2** = Total area of a taluka

By using this formula a mean and quartile deviation value of scattered list of rural settlement was decided. Based on mean and quartal deviation the settlement are divided in 4 types to classify an order.
Table 5.2 : Types of Settlements Based on Scattered Index Value in Akola District (2011)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Value of Scattered Index</th>
<th>Types of Settlements</th>
<th>Covered Area Sq.km.</th>
<th>Percentage of covered area %</th>
<th>Number of rural settlement</th>
<th>Percentage of Rural Settlement</th>
<th>Average Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Above 572.79 (Q3 &lt;)</td>
<td>Compact</td>
<td>1849.5</td>
<td>34.07</td>
<td>370</td>
<td>37.53</td>
<td>1067.5</td>
</tr>
<tr>
<td>2</td>
<td>572.79 to 552.70 (Q3 to mean)</td>
<td>Semi compact</td>
<td>1460.49</td>
<td>26.90</td>
<td>257</td>
<td>26.06</td>
<td>1947.5</td>
</tr>
<tr>
<td>3</td>
<td>552.70 to 479.22 (Mean to Q1)</td>
<td>Semi Scattered</td>
<td>1417.75</td>
<td>26.12</td>
<td>264</td>
<td>26.78</td>
<td>1911</td>
</tr>
<tr>
<td>4</td>
<td>Below 479.22 (Below Q1)</td>
<td>Scattered</td>
<td>701.01</td>
<td>12.91</td>
<td>95</td>
<td>9.63</td>
<td>1238</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>5428.84</strong></td>
<td><strong>100%</strong></td>
<td><strong>986</strong></td>
<td><strong>100</strong></td>
<td><strong>1110</strong></td>
</tr>
</tbody>
</table>

Source : Compiled by Researcher

5.3 Regional Analysis

Based on the value of scattered list, rural settlements are divided further.

1) Centralized Rural Settlements

If value of scattered settlement is more than 36074.18 such type of settlement is centralized rural settlement. They are found in Akot and Akola taluka of study region. Centralized structured settlement cover 34.07% of study area. Out of it 37.53% area is covered by rural settlement with average rural population of 1067.5. These settlement are located around fertile soil area of Purna river and its tributaries. Traffic and transportation facility also is good there.

2) Composite Rural Settlements

This settlement is also known as combined settlement. This type of settlement is located around a main settlement or small settlements around it, these small settlements are called composite rural settlements.
AKOLA DISTRICT
TYPES OF SETTLEMENTS
(BASED ON SCATTERED INDEX)
(2011)

Map 5.2

Source: Compiled by Researcher

(133)
It covers area of a main settlement or some small settlement around agricultural land. This type of settlement create a composite settlement.

Scattered value of composite rural settlement is between 36074.18 to 28328.33. Such type of composite rural settlement can largely be found at Barshitakli taluka in the study region. It covers 14.22% area. Out of total rural settlement, composite rural settlement covers 16.13%. Its average population is very less up to 939.

3) **Scattered Rural Settlement**

Scattered rural settlement has the scattered value between 28328.33 to 20618.25 in the study area. It includes Telhara, Murtijapur, Balapur these 3 talukas. This type settlement covers 38.79% area of total rural settlement. This also has rural settlement upto 36.71 area. Where average rural population is 126%. This kind of settlement can be seen on the bank areas of Purna river valley in the region and Northern hilly part of the district around pond and agricultural area.

4) **Lonely Rural Settlements (Fragmented / Hamleted)**

When homes of a settlement are located on some distant places or settled irregularly this type of settlement is called lonely rural settlement. Dr. Kaushiq has named it is fragmented settlement while R.L. Singh calls it Hamleted settlement. Land structure, water supply, availability of agricultural land, social or commercial decentralization etc factors are responsible for creation of such type of settlement.

Scatter value of this type of settlement is less than 20618.25. Patur taluka in the study area has highest lonely rural settlements. This kind of settlement covers very less 12.92% area. It has the less 9.63% contribution in overall settlement. This group has 1238 average population.

**The Patterns of Rural Settlements**

Natural and cultural factors are responsible for giving a special type of size to external structure of a settlement. Natural factors primarily include high low level of land, stream of river, agricultural
area, sea coast etc. farming system, animal husbandry, market, mining, fishing, road, canal, religious places, forts etc. cultural, financial and historical factors affect the pattern of a settlement other than natural factors. All these factors affect simultaneously or independently to determine pattern of a settlement. Rural settlement have been studied with both i) the external size and ii) the internal size perspective.

According to Sinha (1976) availability of services and facilities affects the size of a settlement. Size of an area, soil type, road, temple etc. factors affect the pattern of a settlement (Singh 1955). The cultural landscape and format off a settlement changes based on time.

### 5.4 Pattern of Rural Settlement in the study area

The pattern of rural settlement have been studied by using Indian toposheet. For this purpose, 1:50,000 Indian toposheet has been used. The formats of rural settlement in the study area is as follows:

1) **Rectangular Pattern**

Due to rectangle size of agricultural land the size of rural settlement is shaping in rectangle size. Rectangle size of agricultural land is useful and comfortable for cultivation related works. A rectangular rural settlement has East-West or North-South straight roads. Sometimes there are long houses along with the side of a road where it is connecting another road. There are comparatively less number of homes to the secondary land. It leads to creation of rectangular settlement. A house is built considering air, light, solar power etc.

Following Indian toposheet maps are used to the study $55\frac{D}{14}$

Masod, $55\frac{D}{15}$ Alegaon, Kalakanta, $55\frac{G}{4}$, Bori, $55\frac{H}{1}$, Dahigaon $\frac{H}{2}$

Titwa, Chandpur $\frac{H}{3}$ Kini Raja, $55\frac{H}{5}$ Sanguwa etc. rural settlement are formatted in rectangular structure.

(135)
AKOLA DISTRICT
RECTANGULAR PATTERN
(ALEGAON)

IMAGE 5.1

Source: Google Earth

(136)
AKOLA DISTRICT
HALLOW RECTANGULAR PATTERN
(CHIPI)

IMAGE 5.2
Source: Google Earth
2) **Hallow Rectangular Pattern**

When a ground, spaces, waterfall, well, pond, temple, mosque, church etc. are located at the centre of a settlement, a rectangular settlement will develop around it. This type of settlement is called rectangular settlement. Sometimes there is ground, market, school, panchayat, monastery, chawadi a common place to seat etc. are at the centre of a settlement. There is an empty space after destruction of a fort, palace or an old large house, it gives a hallow size to its settlement. In the study area Indian toposheet map like \( \frac{C}{16} \), Belura, Chipi, Daonilakher, \( \frac{D}{13} \), Haturn, \( \frac{G}{4} \) Popatkhed (Net), \( \frac{H}{1} \) Palso Bk. Are used to show hallow rectangular rural settlement in the study area.

3) **Circular Pattern**

Circular settlement is created generally because of water supply facility, protection, historical factors etc. If there is a pond, large well, fort, large tree, house of rural administration head at the centre of a settlement and giving it a size of circular pattern. This is called circular settlement.

In the study region Indian toposheet map numbered \( \frac{C}{16} \), Adgaon Kd., \( \frac{D}{14} \), Wayala, \( \frac{D}{15} \) Marsul, Mungda, Pimpaldora, \( \frac{H}{1} \) Kavasa Kd., Dahihande, \( \frac{H}{2} \) Rajanda, \( \frac{G}{4} \) Pamoj, Akot etc. are the examples of circular pattern size settlement.

4) **Triangular Pattern**

Triangular format rural settlement can mostly be found at confluence, hill, canal, road and agriculture. Due to all these things and restrictions on 3 sides of a settlement, it groups on in triangular size. In the target region Indian toposheet map \( \frac{D}{13} \), Nizampur, \( \frac{D}{14} \) Kapsi, \( \frac{D}{15} \) etc. rural settlement structured in triangular format.

(138)
AKOLA DISTRICT

CIRCULAR PATTERN

(ADGAON Kh.)

IMAGE 5.3

Source: Google Earth
AKOLA DISTRICT

TRIANGULAR PATTERN

(KAPSHI TALAV)

 IMAGE 5.4

Source : Google Earth

(140)
5) **Square Pattern**

Such type of settlement is developed around a place where there are 2 roads or a canal is divided by other canal. There develops a settlement around it in a square pattern. These things generally are centered nature. In the study region Indian toposheet map numbered 55$\frac{C}{16}$, Jitapur (Argaon), Shahpur, 55$\frac{D}{13}$, Talegaon, Manatki, 55$\frac{D}{14}$, 55$\frac{D}{14}$ Kapsi Road, 55$\frac{D}{15}$ Bhildury, 55$\frac{G}{4}$, Punda, Punoti Bk., 55$\frac{H}{6}$ Bembla etc. are used for rural settlement patterned as square.

6) **Hallows Square Pattern**

While square patterned settlements develops there is a disturbance of natural source at the center of the settlement. This natural disturbance may include hill, small pond, wet land, and old building, fort etc. such places considered as bad luck or not suitable for settlement. It gives a hallow size to the size. In the study area Indian toposheet map no. 55$\frac{D}{14}$ Degaon, 55$\frac{D}{13}$ Bambheri, Roundala, Parla Phutkar, 55$\frac{G}{4}$ Bordi, Raikhed, 55$\frac{H}{2}$ Vani Rombnapur, 55$\frac{H}{6}$ Hatgaon, Patur, Nandurbar etc. are used as examples of hallow square pattern settlement.

7) **Linear Pattern**

If the external size of a settlement is structure like a line this rural settlement is called linear pattern. Such type of settlement are largely found at the bank of a river, road side, sea coast, and surrounding a canal. The doors of linear pattern settlement are located towards either canal or a river. Most of the doors are opposite to each other. They may be close to each other or distantly located.
AKOLA DISTRICT

SQUARE PATTERN

(KAPSHI ROAD)

IMAGE 5.5

Source: Google Earth
AKOLA DISTRICT

HALLOW SQUARE PATTERN

(HATGAON)

IMAGE 5.6

Source: Google Earth
AKOLA DISTRICT

LINEAR PATTERN

(DANAPUR)

IMAGE 5.7

Source: Google Earth

(144)
In the study area, Indian toposheet map no. 55\(\frac{C}{16}\), Danapur, 55\(\frac{G}{4}\) Aroli, 55\(\frac{H}{6}\) Murtijapur, Katepurna 55\(\frac{H}{2}\) Kanyni, Somthana, 55\(\frac{H}{3}\) Mahun etc. as example of rural settlements of linear patterned.

8) **Double Nucleation Pattern**

If a main settlement is separated due to natural or cultural factors such type of rural settlement is called ‘decentralized’ settlement. Due to a river, road or canal a settlement is scattered such type of settlement is called double nucleation pattern settlement. This double nucleation is created because of hill, ponds, canal, road, railway root, drainage etc. This 2 centres are classified on main and sub centre. Main centre is called Budruk and sub or secondary is called Khurd. Budruk means big or old and Khurd means small or new. 

In the study region toposheet map no. 55\(\frac{C}{16}\) Adgaon Bk, Adgaon Kh., 55\(\frac{D}{13}\) Ththgaon, 55\(\frac{D}{14}\) Goregaon Kh., Goregaon Bk, 55\(\frac{G}{4}\) Manchanpur, 55\(\frac{H}{1}\) Apot Kh., Apoti Bk., 55\(\frac{H}{2}\) Kanjvni, Rohit, 55\(\frac{D}{15}\) Malsuga, Warangaon, Charangaon, 55\(\frac{G}{4}\) Mirzapur etc. are used for rural settlement under double nucleation pattern.

9) **Fan Pattern Settlement**

Fan pattern settlement is rarely found in the study region. This kind of villages have been developed near some focal points like temple, ghat and on the bank of a river. These characteristics attract habitations in various directions following a convenient system of roads, lanes or footpaths convergence on such points. Due to convergence of lanes or footpaths on the focal point to avail amenities, the settlement assume the shape of fan. The due ring develop along the cart tracts and lanes.
AKOLA DISTRICT
DOUBLE NUCLEATION PATTERN
(KANSHIVNI)

IMAGE 5.8

Source: Google Earth

(146)
AKOLA DISTRICT

FAN PATTERN

(WADI ADAMPUR)

IMAGE 5.9

Source: Google Earth
Indian toposheet map no. \(55_{13}^D\) Wadi Adampur, \(55_{15}^D\), Deshi, \(55_{2}^H\) Anjani Bk, \(55_{6}^H\), Shivakhed, \(55_{4}^G\) Akoli, Janagie are some examples of such type of main settlement resembles a fan pattern.

10) **English Alphabet Patterns**

Special natural or cultural factor restricts development of a settlement. A particular settlement affects in its development due to such factor and takes a shape like any English alphabet Y.T.L.S.X. such type of shape occurs because of a road or river or sometimes combined influence of both.

In the study region Indian toposheet map no. \(55_{2}^H\) Borgaon, Man (O), Wadad Bk (L), \(55_{4}^G\) Ladegaon (L), \(55_{6}^H\) Goregaon (J) etc. settlement are shaped like an English alphabets.

11) **Amorphous Pattern**

When a settlement is centralized due to various combined factors it has no particular shape. Such type of settlement are known as Amorphous settlement. When some people migrate from a centralized rural settlement they set up homes at any place and these new homes are disorganized and shapeless in format. Settlement here are created before the roads.

In the study region Indian toposheet map no. \(55_{16}^C\), Havarkhed \(55_{13}^D\) Agar, Ugwa, \(55_{2}^H\), Shindkhed, \(55_{5}^H\) Lakhpuri etc. rural settlements of amorphous.
AKOLA DISTRICT

ENGLISH ALPHABTS PATTERN

(“T” GOREGAON)

IMAGE 5.10

Source: Google Earth
AKOLA DISTRICT

ENGLISH ALPHABTS PATTERN

(WADAD Bk. “L”)
AKOLA DISTRICT
AMORPHOUS PATTERN
(HIVARKHED)

IMAGE 5.12

Source: Google Earth
Regional Distribution Pattern of Rural Settlement

On observation of toposheet map of study area and format of rural settlement as well as earlier analysis makes it clear that format of a rural settlement is affected by various geographical factors like characteristics of a place, road facility and internal facilities. Square, rectangular and linear format rural settlement can be seen all across the study region.

Examination of types of settlement and their format makes it clear that the growth and development of rural settlement has changed due to new internal functional service facilities. It has also changed the condition, type and format of rural settlement.
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