IJBPAS, January, Special Issue, 2022, 11(1): 141-153
ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'
www.ijbpas.com

SITE ANALYSIS OF RURAL SETTLEMENTS IN KOLHAPUR DISTRICT, MAHARASHTRA

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Received 10th June 2021; Revised 11th July 2021; Accepted 20th Aug. 2021; Available online 15th Jan. 2022

https://doi.org/10.31032/IJBPAS/2022/11.1.1016

ABSTRACT

Each settlement has some specific feature on which it originated and developed known as site of that particular settlement. For the regional planning, site of the settlement play an important role, where hill and forest sites settlements needs special attention. In view of this, present paper aimes to study sites of rural settlements and the factors affecting on them. Kolhapur district of Maharashtra has been selected as a study area for the present investigation. The sites of the all rural settlements of the study area have been identified with the help of Google Earth images. The reference of District Planning Maps, Census of India tahsils wise maps (with village code) etc. has been taken to identify the village names of these images. The site wise percentage of rural settlements to the total rural settlements has been computed and depicted through graphs in ascending order. For the study of factors affecting on the sites of rural settlements with different elements Speornson's coefficient of correlation has been used. For this purpose the data have been taken from Socio-Economic Review and District Stastical Abstract, 2010. It is found that, river side rural settlements have high proportion followed by stream side. As western part of the study area is hilly and forested, the rural settlements are located on top, slope and bottom of hills and also on the edge and centre of forests. In the cultural sites, road is the major attraction to the rural settlements of the study area. Various attractions are combinly affects the siting of rural settlements and the selection of site is not the only effect pull factors but determined by the push factors also.

Keywords: Google earth images, Correlation, Physical Site, Cultural sites, Push factors

INTRODUCTION

Vidal de la Blache (1952) stressed that, the first element to be considered in the study of human establishments is the site, for it is the one which geographical influences seen

to stand out most prominently. Settlements have gradually grown up and evolved over along the period time and by studying the site patterns and arrangement of settlement. According to Dickinsons (1940), "site embraces precise features of terrain on which the settlement began and over which it spreads." This type of study is helpful for the best understanding of the settling process and evolution of human settlements. Geography is mainly engage to solve the question 'Where?'. Site is the relative location of settlement which determines the process of the development and distribution of infrastructural facilities also. Without the qualities of site man can not exist (Kniffen, 1960).

Objectives

Present paper aims to analysis the different sites of rural settlements and factors affecting on them in the Kolhapur district of Maharashtra.

Study Area

The Kolhapur district situated in the extreme southern part of Maharashtra. It lies between 15^0 43'north to 17^0 17' north latitude and 73^0 40' east to 74^0 42' east longitude. The Kolhapur district comprises 7685 sq. km area and administratively divided into 12 tahsils supporting 35, 23,162 population (2001). In general the physiography of the district may be grouped in three parts i.e.: (1) The Sahyadri hills in a north-south direction (2) The Plateau area situated to the east of the Sahyadri hills and (3) The eastern plain area. The average annual rainfall varies widely from about 600 mm in Shirol tahsil in the east to 6000 mm in Bavada tahsil in the west. The decadal growth rate (1991-2001) of population is 17.85 per cent. About 70.19 percent of total population lives in rural area.

REVIEW OF LITERATURE

Jordan (1966), Doxiadis (1968), Tiwari (1976) and Singh (1994) give stress on the study of settlement site not only to understand the man environment relation but also to discover other aspects of settlements. Bhattacharya (1966) studied the sites of rural settlements of Murshidabad district, West Bengal. Kulkarni (1983) used topographical maps to identify the sites of rural settlements of Sangli district. Price (1993) investigated the pattern of prehistoric settlement sites. Laquian (1983) relates the settlement sites to the different services and shelter. Kumbhar (1984), Naiknaware (1994) and Randive (2007) also identified the sites of rural settlements with the help of topographical maps. Sharma (1986) also studied rural settlements site by taking a case study of Lower Himalayas. Physical and cultural sites of rural settlements in Sindhudurg District have been identified by

the More (2000). Bhosale (2001) also analyse the siting of settlements of Koregaon tahasil of Satara District. While studying the fluvial- morphological impact of Pagladiya- Morapagladiya rivers on rural settlements Barman (2007) give importance to the site of rural settlements.

DATABASE AND METHODOLOGY

Most of settlement geographers used topographic maps for the identification of sites of settlement. Some part of the study area is restricted and the topographical maps of 1:50,000 scale is difficult to get. These maps are also not recent. In these circumstances, the sites of the settlements have been identified with the help of Google Earth images. These images allow observing the settlements sites with large scale by computer programming. These images are of recent period i.e. of the year 2010. The identification of topography, forest, cultural aspects etc. is also become possible through these images. The reference of District Planning Maps, Census of India's tahsil maps (with village code) etc. has been taken to identify the village names of these images. By the definition 'site is immediate feature on which settlement grows'. So settlement originated after site. Hence, not much problems face to identigy the physical sites through this method but it is necessary to verify whether the cultural feature originated before the settlement or not. 'When the road was constricted?' verify from PWD department. For the identificationof spring location hydrological and topographical maps are used. The cross checking of sites of rural settlements has been made through fieldwork wherever possible. The site wise percentage of rural settlements to the total rural settlements has been computed and depicted through graphs in ascending order. For the study of factors affecting on the sites of rural settlements with different elements Speornson's coefficient of correlation has been used. For this purpose the data have been taken from Socio-Economic Review and District Stastical Abstract, 2010.

Classification Of Sites

Both physical and cultural features attracts to the human settlements. So, the sites of the rural settlements of the study area are broadly classified in to physical sites and cultural sites. Physical sites are related to hydrological features like river, stream, tank, lake, dam etc. and relief features like hill top, hill slope and hill bottom and forest edge also become site of the rural settlements of the study area. The classification of settlements according to the suitability of site assists in highlighting the various kinds of geographical advantages which lead to origin and growth

of rural settlements (Cain, 1963).

Sites Related To Water Bodies

All activities on the globe are directly or indirectly related to water availability and its quality (Survase, Pore, et.al.). Hence the proximity to water source is the main attraction of human settlements. Saure (1952) focus the importance of water as a main factor in the selection of sites by stating that, 'as professional camper, he chose camp first by water and next by the available fuel'. The hydrological sites are observed throughout the whole region.

1. River side rural settlements: The edge of river attracts the various rural settlements of the study area. About 18.17 per cent rural settlements of the study area are located along the river. The river site rural settlements have been observed in all parts of the study area. Most of the river side rural settlements are located in Shirol, Karvir, Panhala and Radhanagari tahsils (Fig. 1.A & Table 1). The rural settlements like Khidrapur, Shedshal, Krundwad, Ghalwad are located along the Krishna river. Panchanga river also become the site of serval rural settlements of Karvir, Hatkangale and Shirol tahsils such as Chandur, Ingli, Varange, Ambevad, etc. Besides this, the rural settlements like Bid, Kundgaon, Borgaon, Purnal, Ukarbakla, Hanmantwadi are also sited along the river. It is observed that, the river side rural settlements of eastern plain part of the study area are little away and from the river due to flood risk. Normally the agricultural practice done nearer to the river and farmers are tending to live little away from the river. The situation is reverse in western part, where the rural settlements are closely attached to river due to low flood risk.

2. Stream side rural settlements: In those parts where the river is not available, the rural settlements are settling along the small streams. Kumbhar (1997) also stated that, since the supply of water from stream is inadequate, wells are constructed at the stream site settlements. Most of the rural settlements (19.15%) of the study area are located along the streams. In Kagal, Hatkangale, Shirol and Bavada tahsil the proportion of stream side rural settlements is high (Fig. 1.B). As a matter of fact, in the western part of the study area the availability of both stream and road is became attraction point to the rural settlements. Chikli Kasba, Dhamapur, Kadalge, Pilani, Karanhjoshi, Nivade Patgaon, Ungaon, Kodal etc. are stream side rural settlements.

3. Spring side rural settlements: Serval perennial springs observed in the study area, but only some of them are selected as a site of settlements. Only 1.5 per cent rural settlements of the study area are sited along the spring (Fig. 1.D). Due

their remote location and existence of other attraction, all springs are not associated with rural settlements. But in some cases, springs attracted the settlers and the attraction has negated the repulsive influences of other ecological factors. For example, the Borbet village of Bavda tahsil located in deep forest and remote area due to spring attraction. Besides this, mention may be made of Kitwadi, Madhavgiri, Gacthanwadi, Aptal, Phaye, Bolavi, Amashi, Dugewadi etc. rural settlements as a spring site settlements. It is observed that some wadis (hamlets) near Lakikutter, Dukkarwadi, Tamtewadi, Upawade villages are also developed along the spring and it is estimated that, those hamlets will grow and will known as separate village in the course of time.

4. Tank/Lake side rural settlements: Tanks or lakes as a water body, attracts serval rural settlements of the study area. About 3.6 per cent rural settlements of the study area are tank or lake side rural settlements. These settlements are mostly observed in Kagal, Hatkangale, Shahuwadi and Radhanagari tahsils **(Fig. 1)**. The water bodies like tanks and lakes were constructed in ancient time and are the sites of rural settlements and new rural settlements also developed along newly constructed dams. The villages like Chandoli, Gadmudshingi, Ispurli, Kalunge, Malage, Rendal, Talsande, Sarnobatwadi, Kalamba Tarf Thane, Yenechiwadi, Uttur, Atyal, Belgundi etc. are tank or lake site rural settlements.

Table 1: Kolhapur District: Sites of Rural Settlements

Sr. No.	Tahsils ↓	Sites →	Sites Related to Water Bodies				Hill Sites			Forest	Cultural Sites			Total
			River	Stream	Tank	Spring	Hill Top	Hill slope	Hill Foot		Road	Farm	Other	
1.	Shahuwadi	No.	17	29	6	2	9	10	20	18	19	2	1	133
		%	12.78	21.81	4.51	1.50	6.77	7.52	15.04	13.53	14.29	1.50	0.75	100
2.	Panhala	No.	32	23	0	1	5	9	13	11	13	21	2	130
		%	24.62	17.69	0.00	0.77	3.85	6.92	10.00	8.46	10.00	16.15	1.53	100
3.	Hatkanangle	No.	9	14	3	0	0	2	1	0	12	17	0	58
		%	15.52	24.14	5.17	0.000	0.00	3.45	1.72	0.00	20.69	29.31	0.00	100
4.	Shirol	No.	21	13	0	0	0	0	0	0	11	9	0	54
		%	38.89	24.07	0.00	0.000	0.00	0.00	0.00	0.00	20.37	16.67	0.00	100
5.	Karvir	No.	38	22	5	3	1	2	7	3	19	25	0	125
		%	30.40	17.60	4.00	2.40	0.80	1.60	5.60	2.40	15.20	20.00	0.00	100
6.	Bavda	No.	5	9	0	1	2	3	7	8	4	0	0	39
		%	12.82	23.08	0.00	2.56	5.13	7.69	17.95	20.51	10.26	0.00	0.00	100
7.	Kagal	No.	14	21	12	1	1	1	3	2	17	14	0	86
		%	16.28	24.42	13.95	1.16	1.16	1.163	3.49	2.33	19.77	16.28	0.00	100
8.	Bhudargad	No.	14	24	2	2	3	6	18	13	28	3	1	114
		%	12.28	21.05	1.75	1.75	2.63	5.26	15.79	11.40	24.56	2.63	0.88	100
9.	Ajra	No.	14	19	3	2	2	6	15	12	20	3	0	96
		%	14.58	19.79	3.13	2.08	2.08	6.25	15.63	12.50	20.83	3.13	0.00	100
10.	Gadhinglaj	No.	12	17	3	1	7	12	16	9	13	0	1	91
		%	13.19	18.68	3.30	1.10	7.70	13.18	17.58	9.89	14.29	0.00	1.10	100
11.	Chandgad	No.	20	22	4	2	9	19	27	18	29	4	2	156
		%	12.82	14.10	2.57	1.28	5.77	12.18	17.31	11.54	18.59	2.56	1.28	100
12	Radhanagari	No.	21	16	5	3	6	11	19	20	13	0	0	114
		%	18.42	14.04	4.39	2.63	5.26	9.65	16.67	17.54	11.40	0.00	0.00	100
Study Area		No.	217	229	43	18	45	81	146	114	198	98	7	1196
		%	18.14	19.15	3.60	1.50	3.76	6.77	12.21	9.53	16.56	8.19	0.59	100

Source: Based on observation of Google Earth Images(www.googleearth.com) and Field Work.

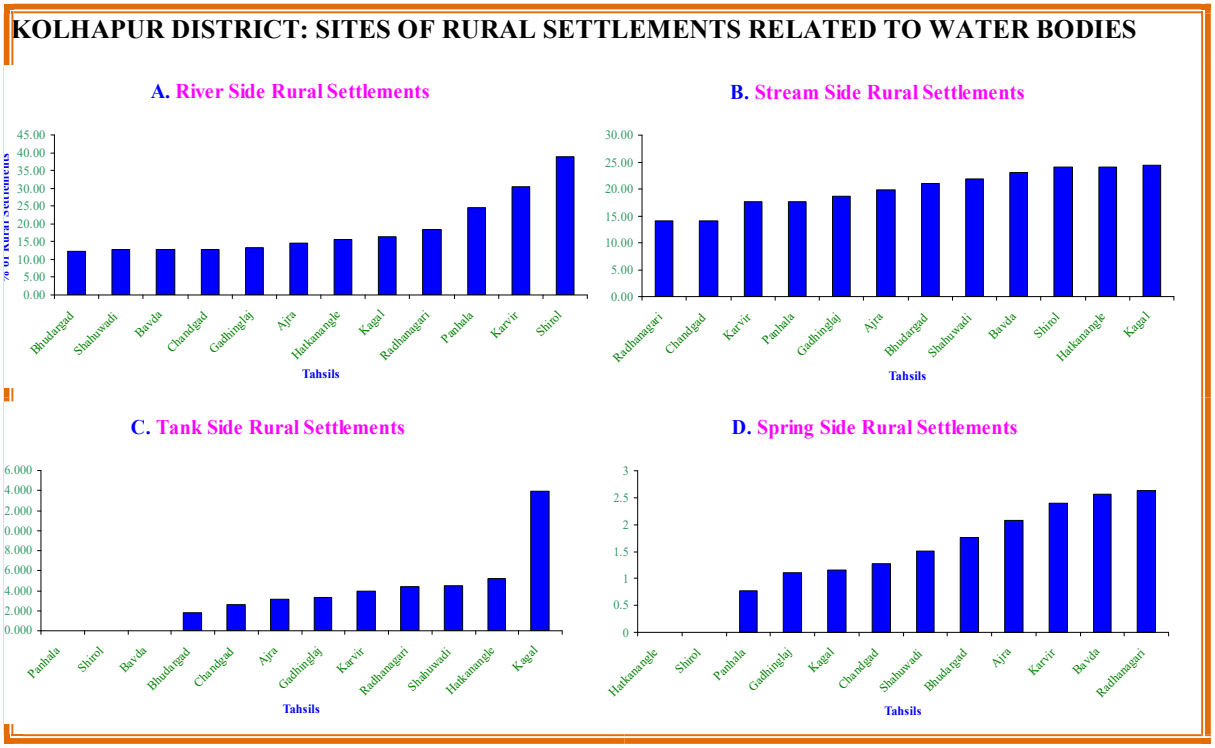

Fig. 1

Hill Site Rural Settlements

About 45.64 per cent area of the study area is hilly and undulating. The sites of various rural settlements of the study area are related to hills.

1. Hill top: Hill top was ideal place for security in historical time. Kolhapur district has long history and hence, some old settlements have hill top location. Some hill tops are also become religious places. Only 3.76 rural settlements of the study area are located on hill top which are mostly observed in Gadhinglaj, Shahuwadi, Chandgad, Radhanagari and Bavda tahsils. The hill top settlements are absent in Shirol and Hatkangale tahsils. The rural settlements viz. Isapur, Panhala (rural), Wakoli, Kevarde etc. are the best examples of hill top rural settlements. The shape of these hill top rural settlements is laying the shape of hill top on which they are located.

2. Hill slope: About 6.77 per cent rural settlements are located on the slope of hill. These hill slope rural settlements are mostly observed in Gadhinglaj, Chandgad, Radhanagri, Bavda and Shahuwadi tahsils. The rural settlements viz. Piral, Apti, Navligaon, Tarale Kh., Ukhalu, Jambur, Shirgaon, Nutakeshwar, Salvan, Umbarwadi and Pal are the best examples of hill slope rural settlements. These hill slope rural settlements have terrace farming.

3. Foot hill: In the hilly part of the study area, most of the rural settlements are

located on the base of hills. Comparatively the proportion of hill top and hill slope rural settlements is less because, there is fertile soil, water availability and other advantages at the base of hills. There are 12.21 per cent rural settlements of the study area located on the foothill. These foothill rural settlements are mostly observed in Bavada, Gadhinjlaj, Chandgad, Radhanagari, Bhudargad, Ajara and Panhala tahsils. The rural settlements such as Lelewadi, Morewadi, Mirwel, Mahilewadi, Giroli, Manewadi, Gudewadi, Barve, Dele, Madilge, Mhasarang, Kode Bk., Longe, Rajputwadi are the best examples of foothill rural settlements. The rural settlements like Apti, Jeeur, Kerle, Anuskara, Warliwadi etc. are also located on the bottom of hill. It is observed that, most of foothill rural settlements takes curved shape like the bottom of hill.

The presence of forests and the efforts to preserve, use, subdue and remove them have constituted a major theme of man's occupance of land down the centuries (Sharma, 1986). The western part has dense forest and these forests are became site of some rural settlements of the study area. About 9.5 per cent rural settlements of the study area are sited of forest. These rural settlements are mostly observed in Bavda, Radhanagari, Shahuwadi, Ajara, Chandgad, Bhudargad, Gadhinglaj and Panhala tahsils **(Fig. 2)**. Forest site rural settlements are absent in Shirol and Hatkangale tahsils. The edge of forest is the site of the rural settlements like Digas, Asane, Mohare, Kitanwadi, Chafodi, Tarf Angol, Dubalewadi, Satewate, Bhutalwad, Sheloshi, Jargi, Chandel, Vdgari, Chivale, Dele, Antivade, Badewadi, Hidaldugi, Haldi, Humbarwadi.

Forest Site Rural Settlements

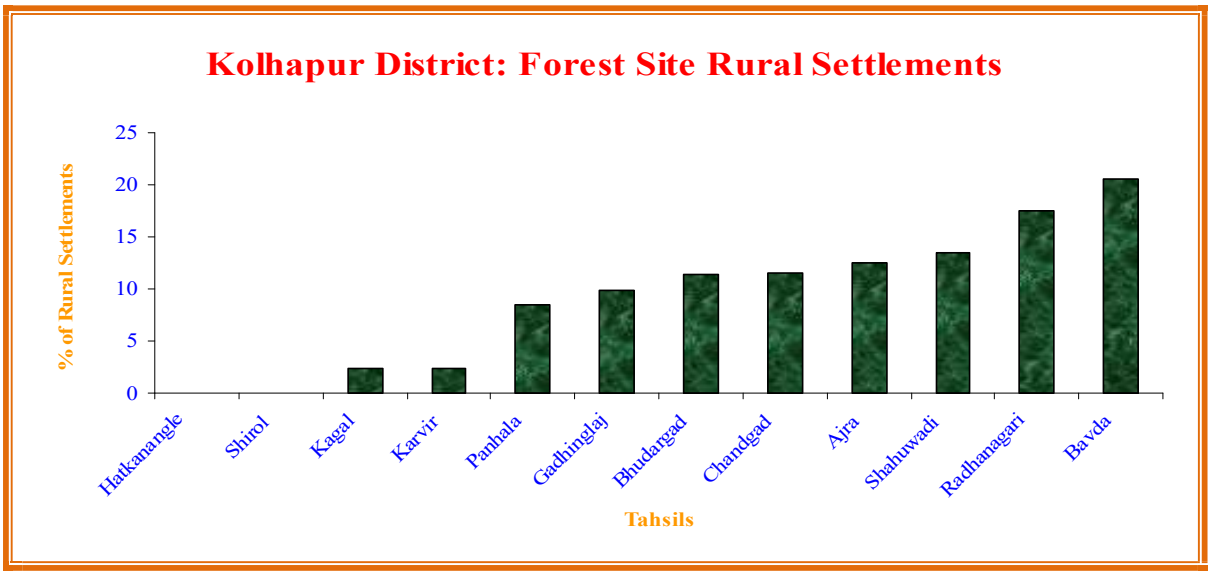

Fig. 2

Cultural Site Rural Settlements

The siting of rural settlements is not only determined by physical factors but by cultural factors also. That's why not all rural settlements of the study area are sited on physical features. Sharma (1986) admitted the difficulty to discover the cultural sites of settlements and further stated that, "the physical sites was initially selected primarily for the purpose of establishing a cultural features, around which as settlement would grow in later periods". It is observed that, the cultural feature attracts to 25.33 per cent rural settlements of the study area. The cultural features like road, farms, forts etc. attract the rural settlements of the study area. These cultural features have economic importance.

1. **Road side rural settlements:** It is observed that, about 16.56 per cent rural settlements of the study area are road side settlements which are frequently observed in Bhudargad, Ajara, Hatkangale and Shirol tahsils **(Fig. 3)**. The importance of road is high in less accessible part of the study area and hence it is interesting to note that, the rural settlements of hilly part are located along the road rather than nearer river.

2. **Farm site rural settlements:** Farm site rural settlements are mostly found in the irrigated part of the study area. These settlements are directly attached with agricultural land. These farm site rural settlements originated in the form of one or more farm houses locally known as wadi (suffix) and the prefix of the name of these settlements is mostly the surnames of the peoples resides in these rural settlements. About 8.19 per cent rural settlements of the study area are farm site settlements. The farm site rural settlements are mostly observed in Hatkangale, Karvir, Shirol, Kagal and Panhala tahsils **(Fig. 3)**. Kapurwadi, Shelakewadi, Ghungurwadi, Shankarwadi, Birdevwadi, Latwadi, Amatewadi, Atkirwadi, Badewadi, Bongewadi, Chalanwadi, etc. villages are farm site rural settlements. There is small size of these farm site rural settlements because; primarily these rural settlements were the hamlets of large village and in the course of time they got separate identity.

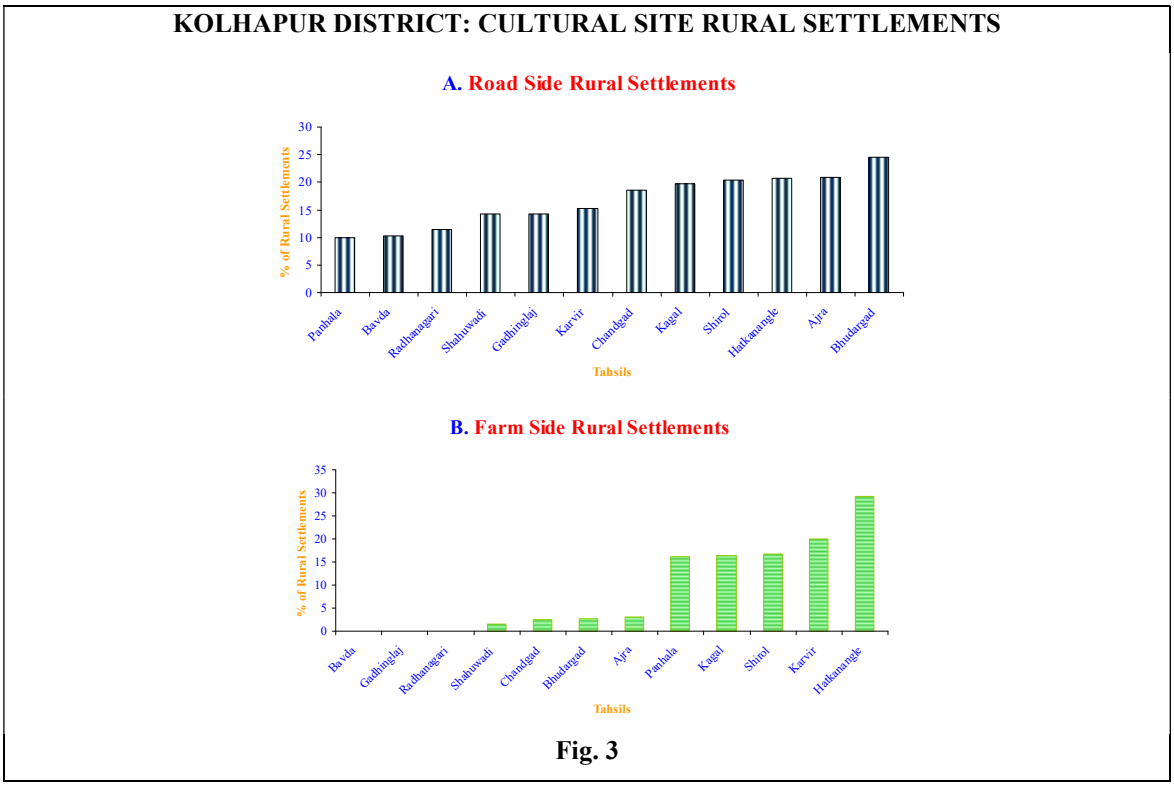

Fig. 3

3. Other cultural sites of rural settlements: Besides the road side settlements, other cultural sites are also observed but they are less in number. The rural settlements like Vishalgad, Gandharvgad, Malgad, Mahipalgad, Gajapur etc. are the fort site rural settlements. These fort site settlements are small in size. The facilities and infrastructure are less available in these settlements mostly on the foot of fort. There is need to develop these settlements as tourist spots. Generally the development of agro-industry offered new sites for the location of rural settlements and such sites are known as 'industrial sites'. But in the study area, only one settlement called Bhairwadi is industrial site settlement. The Varana Sugar Factory offers site to this settlement. Other sugar factories not become site, only the colony of working peoples of these factories is originated after the installation of sugar factory. For example, Mahninagar colony originated due to new Dhudhganga - Vedhganga Sugar Factory, Bidri.

Factors Affecting On Sites Of Rural Settlements

The Classification Of Settlements According To The Suitability Of Site Assist In Highlighting The Varies Kinds Of Geographical Advantages Which Leads To

The Origin And Growth Of Rural Settlements (Cain, 1963). These Geographical Advantages Are Mainly Physical, Which Attract The Early Rural Settlements. In The Study Area Rivers And Streams Are Become The Major Geographical Advantages. The Correlation Of Percentage Of River Side Rural Settlements And The Percentage Of Density Of River Is Positive (R = 0.54). The Percentage Of Stream Side Rural Settlements Is Positively Correlated (R = 0.61) With Stream Frequency. There Is Positive Relationship (R = 0.42) Between Frequency Of Springs And Spring Site Settlement. It Means, The Availability Of Water Is The Main Attraction Of The Rural Settlements Of The Study Area. The Percentage Of Hill Site Rural Settlements Is Positively Correlated (R = 0.81) With The Percentage Of Hilly Area. The Relation Between Percentage Of Forest Site Rural Settlements And The Percentage Of Forest Area Is Necessarily Positive (R = 0.78). It Is Interesting To Note That, The Percentage Of Road Side Rural Settlements Is Less Positively Correlated (R = 0.12) With The Density Of Road. It Is Due To The Rural Settlements Of Less Assesible Area Attracted Towards The Road And On The Other Hand In High Assesible Area Road Is Not That Much Attracts To Rural Settlements And Rural Settlements Are Attracted To Other Attractions Like Water Body, Farm Etc. Rather Than The Road. The Farm Site Rural Settlements Are Positively Correlated (R = 0.59) With The Percentage Of Irrigated Area. It Is Observed That, The Comparison Of All Available Attraction Has Been Made By The Settler And The Intensity Of Attraction To The Rural Settlements Is Not Merely Depend Upon The Attraction Point But Also On The Push Effect Of Surrounding Area. That's Why, Rightly Stated By Sharma (1986) That Similar Type Of Sites Occur Repeatedly In Many Regions. Hence, Some Attractions Frequently Attract Rural Settlements In Some Specific Parts Of The Study Area.

CONCLUSION

It is water which attracts most of rural settlements of the study area. River side rural settlements have high proportion followed by stream side. As western part of the study area is hilly and forested, the rural settlements are located on top, slope and bottom of hills and also on the edge and centre of forests. In the cultural sites, road is the major attraction to the rural settlements of the study area. In the irrigated part of the study area the farm site rural settlement are also observed. Besides this, some fort site rural settlements are also observed in study area. It is found that, the various attractions are combinly affects the siting of rural settlements and the selection of

site is not the only effect pull factors but determined by the push factors also.

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