CHAPTER - IV \*\*\*\*\*\*\*\*\*\*

CASE	STUDIES	(MICRO-LEVEL ANALYSIS OF VILLAGES)	
	• • • • • • • • •		
	4.1	Ner village	
	4.2	Vakeshwar village	
	4.3	Umbarmale village	
ť	4.4	Dalmodi village	
	4.5	Unchithane village	
	4.6	Holichagaon village	
	4.7	Summary	

References

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#### INTRODUCTION :

In the preceeding chapter the land capability classification of Khatav taluka is attempted. Present highlights plot wise analysis of land in case study villages on which different land capability categories are identified. The case study is a way of exploration at micro level. According to Mac Master (1962) this acts as an important suppliment to and check upon this broad picture and general conclusion outlined in the preceding discussion.

For the selection of case study villages stratified random sampling method is employed. The study area is divided into three zones and two villages from each zone are selected.

The soil data were collected by visiting every farm of the case study village for which the following procedure was adopted.

- i) Soil texture and slope is assessed by talling them with the model shown in Fig.1.3-A during the field observation.
- ii) Soil depth is identified by observing the profiles along the river, nala and stream banks and in some cases by digging the pits in the plot.
- iii) The estimation of soil erosion is made by considering the drainage density, slope and soil texture of the specific vertex plots.
  - iv) Soil drainage has been estimated by assessing the slope and texture whereas soil gravelness with the amount and size of gravels (Fig.1.4-A and B).

TABLE	4.1	:	Location	of	the	case	study	villages	in
		-							

Khatav taluka, 1988-89.

Sr.	Name of the	Ext	Extent						
NO •	Village	Latitudinal	Longitudinal		1981				
1	Ner	17°47' N to 17°49' N	74°17' E to 74°20' E	1310	2266				
2	Vakeshwar	17°37' N to 17°40' N	74°24' E to 74°26' E	770	1355				
3	Umbarmale	17°46' N to 17°48' N	74°21' E to 74°23' E	560	620				
4	Dalmodi	17°35' N to 17°38' N	74°28' E to 74°31' E	665	88 <b>7</b>				
5	Unchithane	17°25° N to 17°28° N	74°19' E to 74°21' E	400	555				
6	Holichagaon	17°25' N to 17°27'	74°24' E to 74°26' E	430	691				

SOURCE : Compiled by the Author from Toposheets 47 K/1, 47 K/3, 47 K/5, 47 K/6, 47 K/7, 47 K/10, 47 K/11 and the Socio-Economic Review and District Statastical Abstrict, Satara District, 1981.



FIG, 4.1

- v) The colour of the top soil is assessed by a careful observation in the field.
- vi) The soil moisture is assessed by 'Core Roll Molding method' in the field.

The villages viz. Ner, Vakeshwar, Umbarmale, Dalmodi, Unchithane and Holichagaon, from different capability classes, are selected for the study (Fig.4.1). The information regarding the soil properties and landuse was collected through field observations. The village cadestrial maps are used for reporting the information which has enabled to prepare land capability and landuse maps. The land capability classes were determined by considering the above mentioned properties. Moreover, these classes are determined by the degree of limitations in landuse together with the hazards involved (Gupta R.K., 1981).

# 4.1 NER VILLAGE

The areal extent of village land is shown in Table 4.1. Ner village is bounded by the areas of villages like Pusegaon on the south, Vetane on the east, Vardhangad on the west and Budh and Lalgun on the north (Fig.1.1). The village covers about 1310 hectares with the total population of 2266 in 1981.

The soil presents varied characteristics in this village. The clay and sandy-clay soils are confined to the western parts of the village (Fig.4.2-A). Whereas, sandy and sandy-clay-loam soils are found in the eastern parts. Moderate slope (5 to 15%)

		E) SOIL EROSION		High Erosion Mederate Erosion Lass Erosion	() LANDUSE	Wheat Vegetables Sugarcane Grassland Bajara
KA ®	/ILLAGE NER, 1989.	D DRAINAGE	A Contraction of the second se	High Drained Well Drained Well Drained Moderately Drained	П) САРАВІСІТУ	II Class V Class V Class
HATAV TALUI	AND LANDUSE V	C SOIL DEPTH	L'ING	Deep Medium Deep Shallow Very Shallow	H) SOIL MOISTURE	And and the Moisture Low Moisture
● ¥X	LAND CAPABILITY	B SLOPE		steep Moderate Sentle	Soil colour	Dark Brown Light Brown
S= SETTLEMENTS N1= NER TANK		Soil texture		Clay       Sandy Clay       Sandy Clay       Sandy	(E) GRAVELS	High Gra vels Modera te Gravels Le 55 Gravels

covers about 35.5 percent area whereas only 29.4 percent land has been occupied by gently sloping (below 5%) in the western parts (Fig.4.2-B). Deep soils (above 45 cms) covered 21.80% and 30% area by shallow soils (below 7.5 cms). The proportion of medium soil depth (22.5 to 45.0 cms) is about 31.4 percent (Table 4.2). The high erosion is observed in the eastern and southwestern parts. The region in the centre has experienced insignificant erosion especially along the river Yerala (Fig. 4.2-E). The well drained soils bever 35.5 percent area whereas moderately drained soils have occupied 29.4 percent area and are noted for good cultivation (Fig.4.2-D). The soils with high gravel content are found in the eastern parts and moderate gravel content is observed in the central parts. The less gravel content is confined to the western parts of the village (Fig. 4.2-F).

Generally, the soil colour ranges from brown to dark brown covering 38.2 percent area. The light brown soils have occupied 29.4 percent land and red brown soils covers about 15.2 percent land (Fig.4.2-G). Deep and gentle sloping lands on the river banks, have attained high moisture holding capacity occupying 29.4 percent area. The poor moisture content is confined to the eastern steep sloping lands occupying 17.9 percent (Fig.4.2-H).

In view of the above analysis of soil properties, the land of the Ner village can be classified into four land capability classes. The land capability class II is observed in the

			Sett	Ner Ta	nk C	SC	SCL	S	Total
1	Texture	Area in hect.	10	215	5 370	315	285	115	1310
		Percent	0.8	16.4	28.2	24.8	21.8	8.8	100.0
		<u> </u>	Sett	Tank	Steep	Mode	rate G	entle	. Total
2	<u>0</u> ]	Area in	10	015	-	461	-	205	1 2 1 0
2	Stope	Percent	0.8	215 16.4	235 17.9	40: 35•	5	385 29 <b>.</b> 4	100.0
			Cott	Mark	Deep	( Doop	<u>ch</u>	TT CH	
		Area in	Sett	Tank	Deep M	1. Deep	Dug.	IG • V	a lotar
3	Depth	hect.	10	215	285	410	270	120	1310
		Percent	0.0	10.4	21.0	51.4	20.7	9.5	100.0
		Area in	Sett	Tank	High	Modera	ate	Low	Total
4	Erosion	hect.	10	215	235	465		385	1310
		Percent	0.8	16.4	17.9	35.5	2	9.4	100.0
		area in	Sett	Tank	High	Well	Moder	ate	Total
5	Drainage	hect.	10	215	235	465	38	5	1310
	-	Percent	0.8	16.4	17.9	35.5	29.	4	100.0
			Sett	High	Mode	rate	Less		Total
6	Gravele	Area in bect	10	235	16	5	285		1210
U	Gravers	Percent	0.8	16.4	17.0	2	29.4		100.0
	·····		Sett	Tank	DB	LB	RB		Total
7	Colour	Area in	10	215	500	205	200		1210
'	COTOUL	Percent	0.8	16.4	38.2	29.4	15.2		100.0
				Mank	uiah	Mada	rato	TOW	Tro+ - 1
		Area in	Secc	Taux	nıgn	Mode.	Lale	TO M	IULAI
8	Moisture	hect.	10	215	385	46	55 51	235	1310
<del></del>		Fercenc		10.9	23.4		•J I	1.9	100.0
		Area in	Sett	Tank	II	III	IV	VI	Total
9	Capability	hect.	10	215	285	410	270	120	1310
<del></del>		Percent	0.8	26.4	21.8	31.4	20.7	9.3	100.0
		Area in	Sett	Tank	V Whe	eat S	.Ca J	В	G Total
10	Landuse	hect.	10	215	5 70	0 40	5 52	<b>5 2</b> 85	<b>115 131</b> 0
		Percent	0.8	164 (	0.4 5.6	5 3.3	2 42	21.8	8.8 100.0

TABLE 4.2 : Area (hectares & percent) in different land capability categories in village Ner, 1989.

NOTE: C - clay, SC - Sandy clay, SCL - Sandy Clay Loam, S - Sandy SL - Sandy Loam, L - Loam, DB - Dark brown, LB - Light Brown, J - Jowar, B - Bajara, G - Grass, RB - Red brown S.Ca - Sugarcane, V - Vegetables

SOURCE : Compiled by the Author, 1989.

middle western parts along the river banks which registers about 21.8 percent. About 31.4 percent area is covered by land capability class III located on the western and eastern sides of class II (Fig.4.2-I). Land capability class IV records 20.7 percent and marking the areas in the east. These three land capability classes are suitable for cultivation. However, class VI (9.3 percent), located in the east, is not suitable for cultivation but offers possibilities for grazing and forestry. The Ner water percolating tank covers about 16.4 percent area.

The land capability classes II and III are devoted to foodgrains and sugarcane cultivation. Jowar, a main crop, cultivated as rabi and kharif, has occupied 42.00 percent area (Fig.4.2-J). Soils are suitable for the cultivation of foodgrains and sugarcane. The irrigation facilities are insufficient and irregular leading for poor cultivation of sugarcane and consequently larger parts are devoted to foodgrain cultivation. Some patches of vegetables are observed near by the settlement.

### 4.2 VAKESHWAR VILLAGE

The Vakeshwar village is located between 17°37' N to 17°40' N latitudes and 74°24' E to 74°26' E longitude (Fig.4.1). The total geographical area of the village is 770 hectares and the total population according to 1981 census is 1355.

The clay loam textured soils are observed in the southern



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and eastern and along the western boundary of the village covering 56.5 percent land area. Sandy clay textured soils are found in the central parts which register 22.7 percent (Fig.4.3-A). Sandy clay loam and sandy loam soils are confined to the northern parts occupying the area about 14.3 and 5.2 percent respectively. The area with steep slope is located in the northern parts of thevillage and has occupied about 11.7 percent area. The southern and south-western parts have been covered (49.4 percent) by gentle slope. Moderately sloping lands are found in the central parts of the village and they have occupied about 37.6 percent of the total (Fig. 4.3-B).

Deep soils (above 45 cms) are found along the eastern and western borders and southern parts of the village covering about 56.5 percent area. Shallow soils covers about 19.5 percent area located in the north (Fig.4.3-C). High drained soils are found along the northern border covering about 11.7 percent area. Moderately drained lands are confined to the eastern, western and southern borders of the village. It has registered 49.5 percent. Of the total 37.6 percent land is well drained and is confined to the central parts of the village (Fig.4.3-D). High erosion is observed in steep sloping lands along the northern borders (11.7 percent). Less eroded soils are found along the eastern, western borders and southern parts of the village. They have occupied about 49.7 percent of the total (Fig.4.3-E).

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		Area in	Sett	CL	SC SCI	L SL	Total			
1	Texture	hect. Percent	10 1.3	435 56.5	175 110 22.7 14.3	40 3 5.2	770 100.0			
			Sett	Steep	Moderat	e Gentle	Total			
2	Slope	Area in hect. Percent	10 1.3	90 11 <b>.</b> 7	290 37.6	380 49•4	770 100.0			
		Aros is	Sett	Deep	M.deep	Sha V.sha	Total			
3	Depth	hect. Percent	10 1.3	435 56.5	175 22.7	110 40 L4.3 5.2	770 100.0			
		Area in	Sett	High	Well	Moderate	Total			
4	Drainage	hect, Percent	10 1.3	90 11 <b>.</b> 7	290 37.6	380 49.4	770 100.0			
		Aros in	Sett	High	Modera	ate Low	Total			
5	Erosion	hect. Percent	10 1.3	90 11 <b>.</b> 7	290 37.6	380 49.4	770 100.0			
		Area in	Sett	High	Modera	ate Low	Total			
6	Gravels	hect. Percent	10 1.3	90 11 <b>.</b> 7	290 37.6	380 49 <b>.</b> 4	770 100.0			
		Area in	Sett	D	В	LB	Total			
7	Colour	Hect. Percent	10 1.3	61 79.:	0 : 2 19	150 9.5	770 100.0			
	<u>an to de la composition de</u>	Ares in	Sett	High	Modera	ate Low	Total			
8	Moisture	hect. Percent	10 1.3	380 49•4	290 37.6	90 11.7	<b>770</b> 100.0			
		Ares in	Sett	II	III :	IV VI	Total			
9	Capability	hect. Percent	10 1.3	435 56.5	175 1: 22.7 14	10 40 .3 5.2	770 100.0			
		Area in	Sett	J B	W Ve	SC Gra.	Total			
10	Landuse	hect. Percent	10 1.3	325 29 42.2 37.	0 30 10 6 3.9 1.3	15 90 2.0 11.7	770 100.0			
N	NOTE : DB - Dark brown, LB - Light brown, CL - Clay loam, SC - Sandy clay, SCL - Sandy clay loam, SL - Sandy loam, J - Jowar, B - Bajara, W - Wheat, Ve - Vegeta- ble, SC - Sugarcane									

TABLE 4.3 : Area (hect. & percent) in different land capability categories in village Vakeshwar, 1989.

SOURCE : Compiled by the Author, 1989.

whereas high gravel contents are recorded in the north (Fig.4.3-F). Notwithstanding, the soil colour varies from dark brown to light brown. Light brown soils are located in the northern covering about 19.5 percent area. Dark brown soils are observed in the south which have recorded about 79.2 percent area (Table 4.3). Soils have recorded more depth (above 45 cms), gentle slope (below 5%), less gravel content and high moisture holding capacity in the east and west. On the northern borders, soils have experienced poor moisture holding capacity whereas in the centre they have moderate proportion (Fig.4.3-H).

Based on the physical properties of soils, the land of this village can be classified into four land capability zones (Fig.4.3-I). Class II land occurs in southern, eastern and western borders covering 56.5 percent area. The central parts are occupied by class III recording 22.7 percent. Class IV land occurs in the north and occupies about 14.3 percent area. The total area of classes II, III, IV is about 93.5 percent offering suitability for cultivation. Class VI land is confined to the extreme northern parts of the village occupying 5.2 percent area which is not suitable for cultivation but suitable for grazing and forestry (Table 4.3).

Fig.4.3-J shows that the land of the village has been put to different crop uses viz. sugarcane and other food crops. Jowar is main food crop followed by other foodgrains. Irrigation facilities are insufficient and irregular leading to the limitation for sugarcane cultivation.

## 4.3 UMBARMALE VILLAGE

The total geographical area of the village is 560 hectares and the total population according to 1981 census is 620. The locational aspects are given in Table 4.1.

Fig.4.4-A shows the distribution of soil texture which varies from clay loam to sandy clay, sandy clay loam and sandy loam. The high proportion of sandy clay loam (38.4 percent) is observed in the central parts of the village. Sandy loam soil is found along the northern border occupying 28.6 percent (160 hect.). The soils on moderately sloping (5 to 15%) lands recording 39.3 percent (220 hect.) area are located around the gentle sloping lands (Fig.4.4-B). The steep slope is observed in the north and southeastern parts of the region which has registered 38.4 percent (215 hect.) area. Medium deep soils, in the central parts, have covered about 41.00 percent land area. Shallow and very shallow soils are located along the northern and southeastern borders of the village (Fig.4.4-C).

Well drained soils have occupied 39.3 percent (220 hect.) land area in the centre. High drained soils are located in the northern and southeastern parts of the region recording 215 hect. (Fig.4.4-E). Moderate gravel content soils have occupied about 220 hect. (39.3 percent) in the middle parts of the village. The high gravel contents are observed in the northern parts with the proportion of 38.4 percent. Along the stream, in the central parts, the gravels content is insignificant (Fig.4.4-F). About

S SETTLEMENTS	39. 100 0 100 - 100 Merres	DRAINAGE	High Drained Well Drained Moderately Drainec	) LANDUSE	Vegetables Wheat Grass Land	
₽®	AGE UMBARMALE, 198	DSOIL EROSION	High Moderate Less	DLAND CAPABILITY	Class II Class II Class II Class VI	
HATAV TALUK	ND LANDUSE VILLA	© SOIL DEPTH	Deep Moderate Deep Shallow Very Shallow	H) MOISTURE	High Moderate Low	FIG. 4.4
<ul><li>∑</li></ul>	ND CAPABILITY AN	B SLOPE	Steep Moderate Gentle	Soil Colour	Dark Brown Light Brown	
z		SOIL TEXTURE	Clay Loam Sandy Clay Loam Sandy Clay Loam Sandy Loam	(E) GRAVELS	High Moderate Less	

		λ	Sett	С	CL	SC	SCI	L SL	Total
1	Texture	Area in bect	5	15	60	105	215	5 160	560
-	· · · · · · · · · · · · ·	Percent	0.9	2.7	10.7	18.8	38.4	28.6	100.0
			Sett	ste	Pep	Modera	ate (	Gentle	Total
		Area in	5000		F				
2	Slope	hect.	5	21	15	220		120	560
		Percent	0.9	38,	<b>.</b> 4	39.3		21.4	100.0
		Area in	Sett	Deep	p Me	dium	Sha	V.Sha	Total
3	Depth	hect.	5	10	5	230	115	105	560
		Percent	0,9	18.8	3 4	1.0	20.5	18.8	100.0
		Area in	Sett	Hiç	gh i	Modera	te 1	jess	Total
4	Erosion	hect.	5	2:	15	220		120	560
		Percent	0.9	38.	.4	39.3		21.4	100.0
	<u> </u>	Area in	Sett	Hig	gh	Well	Mod	lerate	Total
5	Drainage	hect.	5	2:	15	220		120	560
		Percent	0.9	38.	• 4	39.3	2	21.4	100.0
	<u>, 1997</u> , 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1	area in	Sett	Hig	gh	Moder	ate	Less	Total
6	Gravels	hect.	5	2:	15	220		120	560
		Percent	0.9	38	• 4	39.3		21.4	100.0
		Area in	Sett	]	DB	R	В	LB	Total
7	Colour	hect.	5	1:	20	22	0	215	560
		Percent	0.9	21.	• 4	39.	3	38.4	100.0
		Area in	Sett	]	High	Mode	rate	Low	Total
8	Moisture	hect.	5		120	2	20	215	560
		Percent	0.9	:	21.4	39	• 3	38.4	100.0
		Area in	Sett		II	I	II	VI	Total
9	Capability	hect.	5		120	2	20	215	560
	_	Percent	0.9	2	1.4	39	• 3	38.4	100.0
		Aros in	Sett	J	В	G	W	Veg	Total
10	Landuse	hect.	5	105	220	215	12	3	560
		Percent	0.9	18.9	39.6	38.7	2.4	0.5	100.0
NC	ምም • ሮ	Clay CT	1 -		m. co		dy al		Candy
INC		CIUY, CL	- $  -$	ay roa	m) 30	- 2an	uy cr	al scr .	. Panal

TABLE 4.4 : Area (hect. & percent) in different land capability categories in village Umbarmale, 1989.

NOTE : C - Clay, CL - Clay loam, SC - Sandy clay, SCL - Sandy clay loam, SL - Sandy loam, DB - Dark brown, RB - Red brown, LB - Light brown, J - Jowar, B - Bajara, G - Grass land, W - Wheat, Veg - Vegetable SOURCE : Compiled by the Author, 1989. 38.5 percent area in the northern parts have experienced high erosion. Whereas central parts with gentle sloping lands have less erosion covering 120 hect. area (21.4 percent). Moderately eroded soils are observed in around the gentle sloping lands in the centre (Fig.4.4-D).

Red brown soils are confined to the central parts around the belt of dark brown soils. The light brown soils have occupied 38.4 percent (215 hect.) land which are found in the northern and southeastern borders of the village (Fig.4.4-G). The high moisture holding capacity of soils is found in the central area where deep and gentle sloping soils are existing recording 120 hect. (21.4 percent). The high gravel content of soils is observed in the northern parts have low moisture capacity covering about 38.4 percent area (Fig.4.4-H).

Thus, the land of the village can be classified into three land capability classes (Fig.4.4-I). Class II land has registered 21.4 percent land which occurs along the stream banks. Class III land covers 39.3 percent area in the central parts i.e. around the class II land. Both classes cover about 60.7 percent area and are suitable for cultivation. Class VI land covers an area about 215 hect. which is located in the northern parts (Fig.4.4-I). This is not suitable for cultivation but offers suitability for grazing and forestry.

The agricultural land of the village has been used for

cultivation of different crops. The soils of the village seem to be suitable for foodgrains mainly for jowar and bajara.

### 4.4 DALMODI VILLAGE

Table 4.1 shows the extent and location of Dalmodi village. The total geographical area is 665 hectares with the population of 887 according to 1981 census.

Sandy loam textured soils cover about 50.4 percent area existing in the eastern and western parts of the village. The texture ranges from clay to sandy clay and sandy clay loam in north-south direction. Clay soils are located along the stream banks (Fig.4.5-A) which has registered 16.5 percent proportion. The soils on moderately sloping (5 to 15%) lands have occupied 57.1 percent (380 hect.) area. Gentle sloping (below 5%) land is found in the central parts occupying about 23.0 percent land. A thin layer of soils is observed on moderately steep sloping lands in the border areas of the west and east occupying about 18.8 percent proportion (Fig.4.5-B).

Shallow soils are examined in the east and west which have occupied 50.4 percent land. However, the stream banks have been characterised by the occurances of deep soils covering about 16.5 percent land (Table 4.5). The lands are moderately eroded in two zones in the centre. It has occupied 57.1 percent land. The gentle sloping land in the centre have experienced



TABLE 4.5 : Area (hect. & percent) in different land capability categories in village Dalmodi, 1989.

			Sett	С	SC SC	L SL	Total			
1	Texture	Area in hect. Percent	7 1.1	110 1 16.5 1	118 9 7.7 14	5 335 .3 50.4	665 100.0			
	ar - 200 - 920-920-920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 920 - 92		Sett	Steep	Moderat	e Gentle	Total			
2	Slope	Area in hect. Percent	7 1.1	125 18.8	380 57.1	153 23.0	665 100.0			
	nan dije dan dile for an an an an an an an	3 in	Sett	Deep	M.D.	Sha V.Sha	Total			
3	Depth	hect. Percent	7 1.1	110 16.5	118 17.7	95 335 14.3 50.4	665 100.0			
		ares in	Sett	High	Moder	ate Less	Total			
4	Erosion	hect. Percent	7 1.1	125 18.8	38 57.	0 153 1 23.0	665 100.0			
		- 1	Sett	High	Wel	1 Moderate	Total			
5	Drainage	Area in hect.	7	125	380	153	665			
		Percent	1.1	18.8	57.1	23.0	100.0			
		Area in	Sett	High	Moder	ate Less	Total			
6	Gravels	hect.	7	125	38	10 153	665			
<del></del>		Percent	T • T	10.0	57.	1 23.0	100.0			
		Area in	Sett	DB	RE	B LB	Total			
7	Colour	hect.	7	203	105	5 350 54 1	665			
		Fercent		JU+2	Modor		Total			
-		Area in	Sect	nign	Moder		TOCAL			
8	Moisture	hect. Percent	1.1	153 23.0	380 57,1	125 . 18.8	665 100.0			
*****			Sett	II	IJ	I VI	Total			
9	Capability	Area in hect.	7	153	38	125	665			
		Percent	1.1	23.0	57.	1 18.8	100.0			
		Area in	Sett	Ve W	J	B P G	Total			
10	Landuse	hect. Percent	7 1.1	7 2	1 82 1 3 12.1 1	18 95 335 7.7 14.3 50.4	665 100.0			
NO	NOTE : C - Clay, SC - Sandy clay, SCL - Sandy clay loam, SL - Sandy loam, DB - Dark brown, RB - Red brown LB - Light brown, Ve - Vegetable, J - Jowar, B - Bajara, P - Pulses, G - Grassland									

SOURCE : Compiled by the Author, 1989.

less erosion covering about 23.00 percent land area. Eastern and western border areas have been dominated by steep slopes leading to high drainage and erosion (Fig.4.5 D and E). The lands in the central parts are moderately drained covering about 15.3 hect. (23.0 percent) area. Well drained soils have occupied high proportion (57.1 percent), (Table 4.5).

Light brown soils are found in the eastern and western parts of the village occupying about 54.1 percent area. Dark brown soils are located in the central parts of the village which cover about 30.2 percent area (Fig.4.5-G). High moisture holding capacity is observed in the centre where gentle sloping (23%) lands have dominated the landscape. Moderately moisture holding capacity of the soils is confined to two zones in the centre occupying about 57.1 percent land. Along the eastern and western borders the soils have poor moisture holding capacity due to high proportion of gravel content occupied about 18.8 percent land area.

The lands of this village can be grouped into three land capability classes (Fig.4.5-I). Class II land occurs in the central part of village which covers 23.00 percent area. Class III land has occupied major portion of the village (57.1 percent). It is located into two zones of which one is observed in the east whereas another one is found in the west. Class VI land has occupied about 18.8% area located in the eastern and western border areas. It is not suitable for cultivation (Fig.4.5-I). Though

this class is suitable for grazing and forestry the vegetation cover is almost absent. The foodgrain crops are mainly cultivated in the village lands. But the proportion of land under grassland is high (50.4 percent).

## 4.5 UNCHITHANE VILLAGE

Table 4.1 indicates the locational aspects of Unchithane village. With 400 hectares of land the village has recorded 555 population as per 1981 census.

As far as soil characteristics are concerned, the sandy clay loam textured. They cover 37.5 percent in the interior parts near the eastern and western border areas. Clay soils are confined to the banks of streams in the central parts with 84 hect. (21.0 percent) area. Clay loam is located between the clay and sandy clay loam soil zones (Fig.4.6-A). Moderately sloping lands are found in the central parts stretching in two zones (Fig.4.6-B). It has occupied about 51.0 percent land area. The central part has possessed gentle sloping land with an area of 105 hect. (26.2 percent). The soils on the steep slopes are also observed in the eastern and western borders occupying 21.3 percent land area (Table 4.6).

Deep soils (above 45 cms) are observed in the central parts whereas shallow soils (below 7.5 cms) are found in the eastern and western border areas (Fig.4.6-C). Along the stream banks, in the centre, less erosion, moderately drained and less

S= SETTLEMENT	.6	E) DRAINAGE	High Drained Well Drained Moderately Drainee	<ol> <li>LANDUSE</li> </ol>	Vibrat Grassland
	UNCHITHANE, 198	D SOIL EROSION	High Erosion Less Erosion		Closs II Closs II Closs V
<ul><li>KHATAV TALUKA</li></ul>	LANDUSE VILLAGE	© SOIL DEPTH	Deep Moderate Deep Shallow very Shallow	H MOISTURE	High Moderate
	D CAPABILITY AND	B SLOPE	Steep Bentle	Soil colour	Dark Brown Light Brown
SCALE	200.9 200 Kms LAN	Soil Texture	Clay Loam Sandy Clay Loam	(F) GRAVELS	High Gravels Moderate Gravels Less Gravels

TABLE 4.6 : Area (hect. & percent) in different land capability categories in village Unchithane, 1989.

make a second second as			and the second se		Manual and a second sec	and the second	and the statement of the	
		Area in	Sett	С	CL	SCL	SL	Total
1	Texture	hect.	6	84	95	150	65	400
		Percent	1.5	21.0	23.8	37.8	16.2	100.0
, ««««»»			Sett	Steep	Mode	rate Ge	entle	Total
2	Slope	Area in bect.	6	85	2	04	105	400
~	0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	Percent	1.5	21.3	51	.0 2	26.2	100.0
			Sett	Deep	M.dee	p Sha	V.sha	Total
•	Dowth	Area in	E.	0.4	0.5	1 5 0	65	400
3	Depth	Percent	1.5	84 21.0	23.8	37.5	16.2	100.0
•••••						- 1 - 7		
		Area in	Sett	High	Moder	ate 1	ess.	Total
4	Erosion	hect.	6	85	204		105	400
		Percent	1.5	21.3	51.0	2	26.2	100.0
			Sett	High	Well	Mode	erate	Total
5	Drainage	Area in hect.	6	85	204	1	05	400
-	<u>D-01.09</u> 0	Percent	1.5	21.3	51.0	26	5.2	100.0
			Sett	High	Moder	a <b>te</b> I	ess	Total
e		Area in	c	0.5	204		105	400
o	Graveis	Percent	1.5	21.3	51.0	26	·2	100.0
-			Sott	סת				Total
		Area in	Sell	DB	KĐ	Ŧ	D	TOCAT
7	Colour	hect.	6	180	160	1	54	400
		Percent	1.5	15.0	40.0	: L	5.5	
		Area in	Sett	High	Moder	ate	Low	Total
8	Moisture	hect.	6	180	<b>16</b> 0		54	400
		Percent	1.5	45.0	40.0	1	13.5	100.0
		3	Sett	II	III	IV	VI	Total
9	Capabilitv	Area in hect.	6	84	95	150	65	400
	-	Percent	1.5	21.0	23.8	37.5	16.2	100.0
			Sett	Veg	W J	В	G	Total
10	Landuco	Area in	£	E	20 00	204	0 E	400
10	nannase	Percent	1.5	1.3 5	.0 20.	0 51.0	21.2	100.0
NO	TE : C	- clay, C	L - Cl	ay loam	. SCL -	Sandy o	lay loa	m, SL -

sandy loam, DB - Dark brown, RB - Red brown, LB - Light brown, Veg - Vegetable, W - Wheat, J - Jowar, B - Bajara G - Grassland

SOURCE : Compiled by the Author, 1989.

gravels content are observed such zone occupies about 105 hect. (26.2 percent) area. Contrasting to this, the eastern and western border areas have been characterised by high erosion rather more drained soils and high gravel content occupying 21.3 percent land of the village. Two patches in the centre are having moderate erosion and well drained occupying major portion (51.0 percent) of the village (Fig. 4.6 - D, E, F).

Dark brown soils are located in the central parts of the village covering 45.0 percent (180 hect.) land. The red brown soils are found around the dark brown zone covering 40.0 percent land area. Light brown soils are located in the eastern and western border areas which have occupied about 13.5 percent land area (Fig.4.6-G). The soils have high moisture holding capacity in the central parts covering about 180 hectares (45.0 percent) area. The low moisture holding capacity is, however, observed in the eastern and western border areas with an extent of about 54.0 hect. (13.5%). Moderate moisture holding capacity is observed into two zones located between the above mentioned zones (Fig.4.6-H).

In view of the above characteristics the land of this village can be classified into four land capability classes (Fig.4.6-I). Class II occurs in the central part of the village covering 21.0 percent land. Class III is observed in the central parts i.e. around the class II. It covers about 23.8 percent

land area. Class IV land has occupied about 37.5 percent land area which is located in the interior parts. Thus total coverage of class II, III, IV is about 82.3 percent. These land capability classes are suitable for cultivation. Land capability class VI has recorded 16.2 percent area in the eastern and western hilly border areas of the village (Fig.4.6-I).

Fig.4.6-I shows that the land of the village has been devoted to different crops like sugarcane and other food crops. However, class VI land is suitable for grazing and forestry where different limitations have restricted the cultivation of crops.

### 4.6 HOLICHAGAON VILLAGE

With the total geographical area of 430 hectares and 691 population (1981 census), the village Holichagaon is located in the south-eastern parts of the region (Fig.4.1). The location and extent of the village is shown in Table 4.1.

The soil properties and land capability classes of the village seem to be significant from the view point of agricultural planning. Sandy loam soils cover about 68.6 percent area and they are located in the north and south. Clay loam soils have occupied only 9.3 percent area located in the central parts. Loam soils cover about 20.9 percent and they are observed around the zone of clay loam soils in the central part (Fig.4.7-A). The areas having steep slope (above 15%) are located in the northern and



TABLE 4.7 : Area (hect. & percent) in different land capability categories in village Holichagaon, 1989.

		Arps in	Sett	CL	L	SL	Total
1	Texture	hect.	5	40	90	295	430
<b></b>		Percent	1.2	9.3	20.9	68.6	100.0
			Sett	Stee	ep Mode	rate Gentle	Total
2	Slope	Area in hect.	5	175	5 15	5 95	430
-		Percent	1.2	40.7	36.	0 22.1	100.0
	<del> </del>		Sett	Deep	M. Deep	Sha V.sha	Total
		Area in		200			
3	Depth	hect.	5	30	95 22 1	175 125	430
-		Fercenc	1.62	/•0	~~ <del>_</del>	40.1 23.0	100.0
		Area in	Sett	High	Moder	ate Less	Total
4	Erosion	hect.	5	175	155	95	430
		Percent	1.2	40.7	36.0	22.1	100.0
			Sett	High	Well	Moderate	Total
5	Drainage	Area in hect.	5	175	155	95	430
5	Drainage	Percent	1.2	40.7	36.0	22.1	100.0
	· · · · · · · · · · · · · · · · · · ·		Cott	III ab	Madara	to Tone	 ™+_1
		Area in	Sett	High	Modera	· Less	IOCAL
6	Gravels	hect.	5	175	155	95	430
-		Percent	1.2	40.7	36.0	22.1	100.0
			Sett	DB	RB	LB	Total
7	Colour	Area in hect.	5	40	90	295	430
•	001041	Percent	1.2	9.3	20.9	68.6	100.0
			Sett	High	Moder	ate Low	Total
_		Area in		j ···			
8	Moisture	hect.	5	95 22 1	155		430
<b>Alase 1999 second</b>		rercent	+ • 4	4 4 2 2			10000
		Area in	Sett	II	III	IV VI	Total
9	Capability	hect.	5	30	95	175 125	430
	~ ~ ×	Percent	1.2	7.0	22.1 4	0.7 29.0	100.0
		nin Tin Shikarar sa si Akhinaké na ka	Sett	Ve	W J	B G	Total
• •	T	Area in	-	~	-		
TÜ	⊔anduse	nect. Percent	5 1.2	3 0 <b>.7</b> 1	7 115	175 125 40,6 29,1	430
-	<u></u>		- •				
	NOTE :	CL - Cla	y loam,	, L - Lo	oam, SL -	- Sandy loam,	DB - Dark
		brown, L	B - Lig	ght brow	wn, Ve -	Vegetable, W	- Wheat
		J - Jowa	r, B -	Bajara,	, G - Gra	ssland	

SOURCE : Compiled by the Author, 1989.

southern sections covering 40.7 percent. Gentle sloping (below 5%) lands are observed along the stream banks in the centre occupying 22.1 percent area. Moderately sloping (5 to 15%) lands cover 36.0 percent land which are located in areas between the steep slope and gentle sloping lands (Fig.4.7-B).

Deep soils (above 45 cms) are located in the central parts of the village whereas shallow soils are observed in the northern and southern sections (Fig.4.7-C). In the central parts, along the stream banks, soils are having less erosion. Moderately drained with less gravel content soils have covered about 22.1 percent land area. Generally, southern and northern portions of the village and western border areas have been characterised steep slope (above 15%), high erosion, high drainage, and high gravel contents. This zone has occupied 40% land area. Central parts of the village are well drained, moderately eroded with moderate gravel content covering about 36.0 percent land area (Table 4.7).

Light brown soils are located in the north and south occupying 68.6 percent area. Dark brown soils have covered 9.3 percent land observed along the banks of stream in the centre. Red brown soils are stretching around the zone of dark brown soils in the centre which have covered 20.9 percent area (Fig.4.7-G).

Along the banks of stream the soils are having high moisture holding capacity and they cover about 22.1% land area.

The low moisture holding capacity is observed in the northern and southern parts of the village occupying 40.7 percent area. Moderate moisture holding capacity is confined to the central parts (Fig.4.7-H).

As per the soil properties the land of the village may be classified into four land capability groups. Land capability class II is observed in the central parts covering 7.0 percent land area. Class III covers 22.1 percent land in the centre. Class IV land covers an area about 40.6 percent located in the north and south. The land capability classes II, III, IV cover 67.7 percent land and they are suitable for cultivation. The land capability class VI land is located in the southern, western and northern border areas with 29.1 percent area. It is, however, not suitable for cultivation. Moreover, they are suitable for grazing and forestry (Fig.4.7-I).

The land of this village has been used for different crops. Food crops are dominent in the cropping pattern i.e. jowar and bajara.

## 4.7 SUMMARY :

The six villages namely Ner, Vakeshwar, Umbarmale, Dalmodi, Unchithane and Holichagaon are considered here as case study representing the land capability at micro level. From this analysis different land capability classes have emerged out. <sup>T</sup>he proportion of clay textured soils is 28.2 percent in Ner village. The slope is moderate whereas deep

and moderately deep soil covers 53.2 percent land area. The moderate erosion, well drained soils, moderate gravel content and moderate moisture holding capacity of soils with 35.5 percent area have led for the existence of classes II and III covering about 53.2 percent land. Most of the land has been devoted to jowar crop.

The Vakeshwar village is representative of the land capability class II which has covered about 56.5% area. The clay deep soils have covered 56.5 percent land. The slope is gentle and the soils are well drained, moderately eroded with less gravel content and moderate moisture holding capacity covering 37.6 percent land. The proportion of dark brown soils is about 79.2 percent mainly devoted to jowar.

The texture of soils in Umbarmale ranges from clay to clay loam, sandy clay, sandy clay loam and sandy loam. Slope varies from steep to moderate occupying 77.7 percent area. About 38.4 percent land has been characterised by high gravel content, high drainage, significant erosion with poor moisture holding capacity of soils. The class VI has covered 38.4% land which is devoted to foodgrain crops like jowar, bajara, wheat, vegetables etc.

The Dalmodi village is representative of the land capability class III. The texture is sandy loam and slope is moderate covering 57.1% land area. The proportion of shallow soil is about 64.7 percent. The moderate erosion

with well drainage and moderate proportion of moisture are other characteristics. Light brown soils have dominated major part of this village. Foodgrains are grown in this class.

The proportion of sandy clay loam and sandy loam soils in Unchithane village is about 53.7 percent. Shallow soils on the moderate slopy lands have covered 53.7 percent area. Moderate erosion, well drained soils and moderate gravel content cover about 51.0 percent area. Land capability class IV has covered 37.5 percent area. Foodgrains like jowar, bajara, wheat and vegetables etc. are cultivated.

Major portion of lands (40.7%) in Holichagaon village falls under IV land capability class. Their properties are clay loam, loam and sandy loam textured soils. Sandy loam soils have, however, acquired about 68.6 percent area. Steep slope (above 15%) has covered 40% area.

The land capability classification of all the villages indicates that the lands in the class VI seem to be suitable for grazing and forestry. However, presently, insignificant proportion of vegetation cover is observed. Mention should be made from the above analysis that irregular rainfall and consequent inadequate irrigation facilities have restricted the use of land as per the land capability classes in the region. In general, the entire region is deprived of the sufficient rainfall and irrigation facilities.

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