

1.1 LOCATION :

This region, part of Upper Krishna Basin lies between 17°45' N to 18°5' N latitudes and 73°35' E to 74°5' E longitudes. Territorially Wai taluka has district Poona to its northwest, taluka Khandala to its northeast, taluka Koregaon to its east, taluka Satara to its southeast, taluka Jaoli to its south, taluka Mahabaleshwar to its southwest and district Raigarh to its west (Fig.1.1). Administratively the taluka is divided into hundred villages and Wai is taluka headquarter, market place and educational centre.

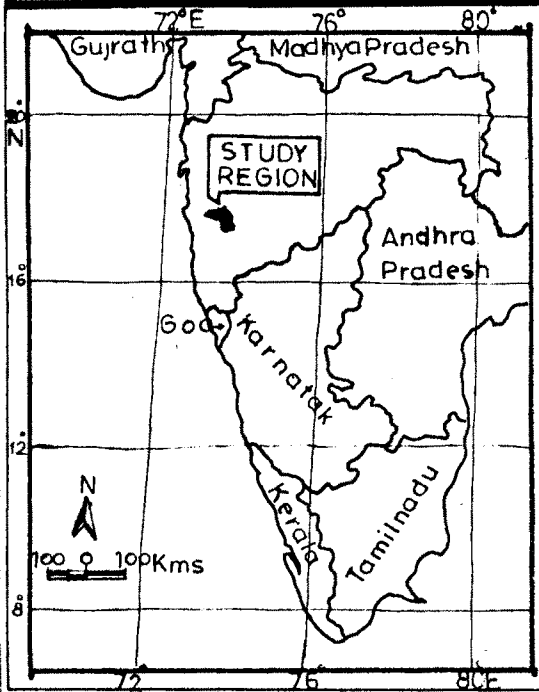
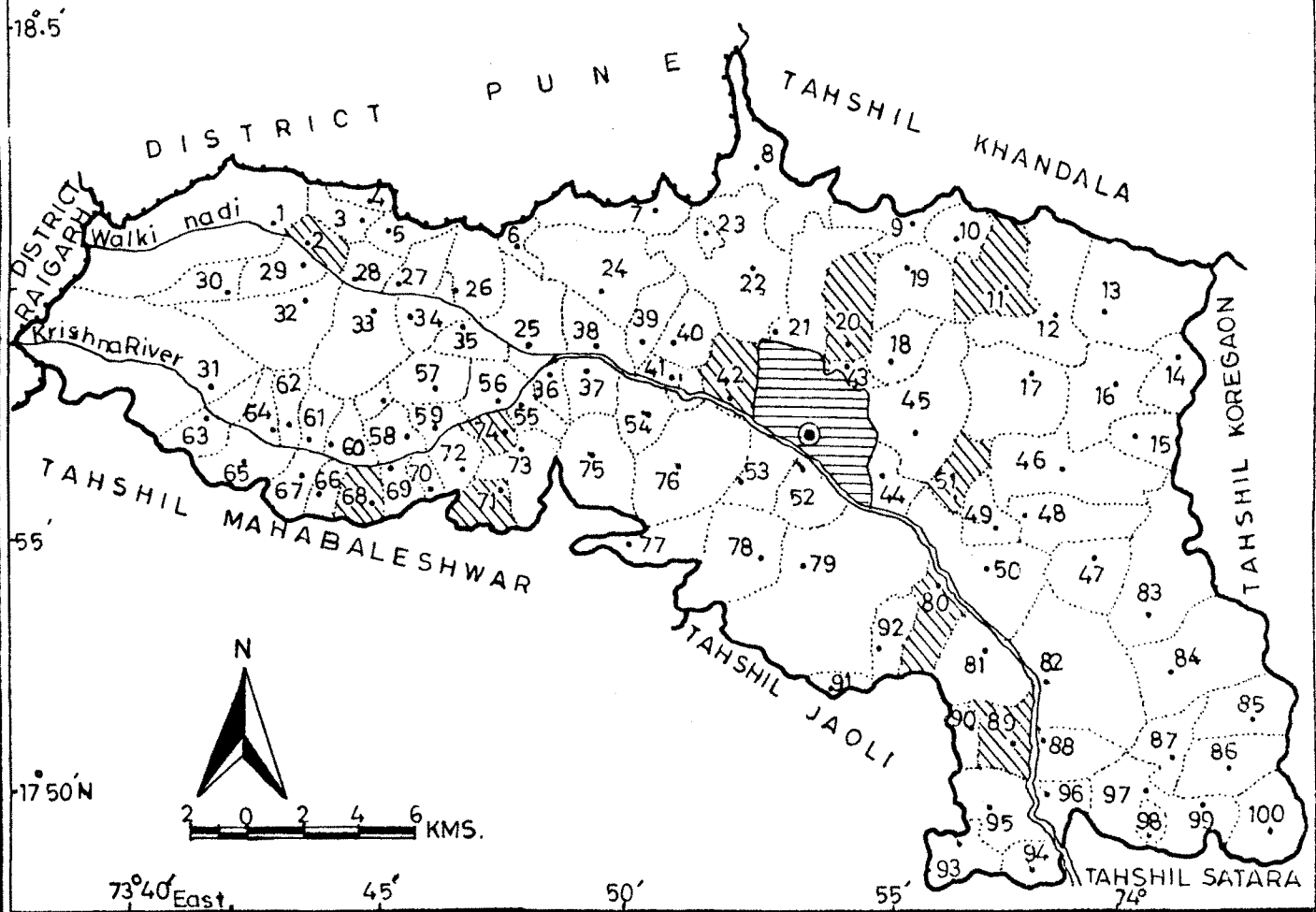
Located in the northwestern part of Satara district, geographical area of Wai taluka is 59,810.96 hectares of the total area of Satara district. According to 1981 census the total population of Wai taluka is 143,217. Over sixty percent of the population of this taluka is engaged in agricultural sector.

1.2 PHYSIOGRAPHY AND IRRIGATION FACILITIES :

The origin, distribution and utilization of water resources of any region are always affected by its physical features. The region is a part of the Deccan Plateau which lies to the east of Sahyadri. Several spurs and offshoots of Sahyadri enter the region and the topography of the region becomes uneven. The general slope is to the east and southeast. "Geologically, the region forms part of the Deccan traps containing extensive deposits of lava", (Shinde, Jadhav, Pawar 1978).

WAI TALUKA

INDEX MAP



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- DISTRICT BOUNDARY
- TALUKA BOUNDARY
- VILLAGE BOUNDARY
- TALUKA H.Q.
- URBAN AREA
- SAMPLE VILLAGE
- RIVER

FIG 1:1

- LIST OF VILLAGES -

Location Code No.	Name of Village	Location Code No.	Name of Village
1	Jambhali	26	Asare
2	Vadoli	27	Renawale
3	Gherakelanja	28	Khavali
4	Oholi	29	Washivali
5	Panas	30	Kironde
6	Duichiwadi	31	Jor
7	Veruli	32	Kondhavale
8	Mandhardeo	33	Vasole
9	Baleghar	34	Bhivadi
10	Chorachiwadi	35	Gove
11	Chandak	36	Boriv
12	Gulumb	37	Vyahali
13	Vele	38	Dhom
14	Mohodekarwadi	39	Varkhadwadi
15	Vahagaon	40	Pandewadi
16	Surur	41	Bhogaon
17	Kenjal	42	Menavali
18	Parkhandi	43	Shelarwadi
19	Mungasewadi	44	Sultanpur
20	Lohare	45	Shendurjane
21	Bopardi	46	Kawathe
22	Dhavadi	47	Anavadi
23	Gadhavewadi	48	Bopegaon
24	Abhepuri	49	Pande
25	Velang	50	Ozarde

Conti..

List of Villages conti..

Location Code No.	Name of Village	Location Code No.	Name of Village
51	Khanapur	76	Pasarni
52	Songirwadi	77	Nagewadi
53	Sidhanathwadi	78	Kanur
54	Eksar	79	Bavdhan
55	Nahalewadi	80	Kadegaon
56	Asagaon	81	Asale
57	Akoshi	82	Bhuinj
58	Kondhawadi Bk.	83	Shirgaon
59	Kondhawadi Kh.	84	Degaon
60	Paratwadi	85	Lagadwadi
61	Nandgane	86	Belamachi
62	Balakawadi	87	Kikali
63	Golegaon	88	Chindhawali
64	Ulamb	89	Pachawad
65	Golewadi	90	Amuratwadi
66	Dahyat	91	Jambhulane
67	Vaigaon	92	Vyajawadi
68	Borgaon Bk.	93	Kalambhe
69	Borgaon Kh.	94	Virmade
70	Dhawali	95	Udatare
71	Chikhali	96	Khadaki
72	Malatpur	97	Jamb
73	Dasavadi	98	Nikamwadi
74	Mugaon	99	Kalangwadi
75	Kusgaon	100	Kholwadi

The framework of the physical setting of Wai taluka is simple. A vast plain area of Krishna valley slopping eastward and south-eastward is noted in the central part of the region. The plain area permits to develop the canal irrigation. Due to the plain area it is observed that the intensity of irrigation is high as compared to other parts of the region (Fig.2.5-A). The river valley is bounded by hill ranges. Spurs of these hill ranges enter the river valley. The western part of the region is mountainous with steep slopes, cliffs and ridges. Average height of this area is about 1,000 metres from the sea level. It is source region of Krishna. Several swift flowing streams are observed in the area, which provide a base to the private canal irrigation. The local streams are also used for irrigation purpose. Most of the western part of the region is irrigated by private canal irrigation. Private canal irrigation provides water to the kharif crops particularly to the rice cultivation.

The region has three hill ranges. The first is located in the northern part of the region and extends westeast parallel to the northern border of the taluka. Among these hill ranges there are three important peaks namely 'Pandavagad' (1,273.85 M) located to the south of village Dhavadi, which is highest in the Wai taluka; second one is 'Mandhardeo' (1,252.8 M) located to the north of Pandavgad, near village Mandhardeo, and the third one is 'Dhamani Dongar' (1,186.56 M) located in the northeastern part of the region to the west of village Parkhandi.

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PHYSIOGRAPHY

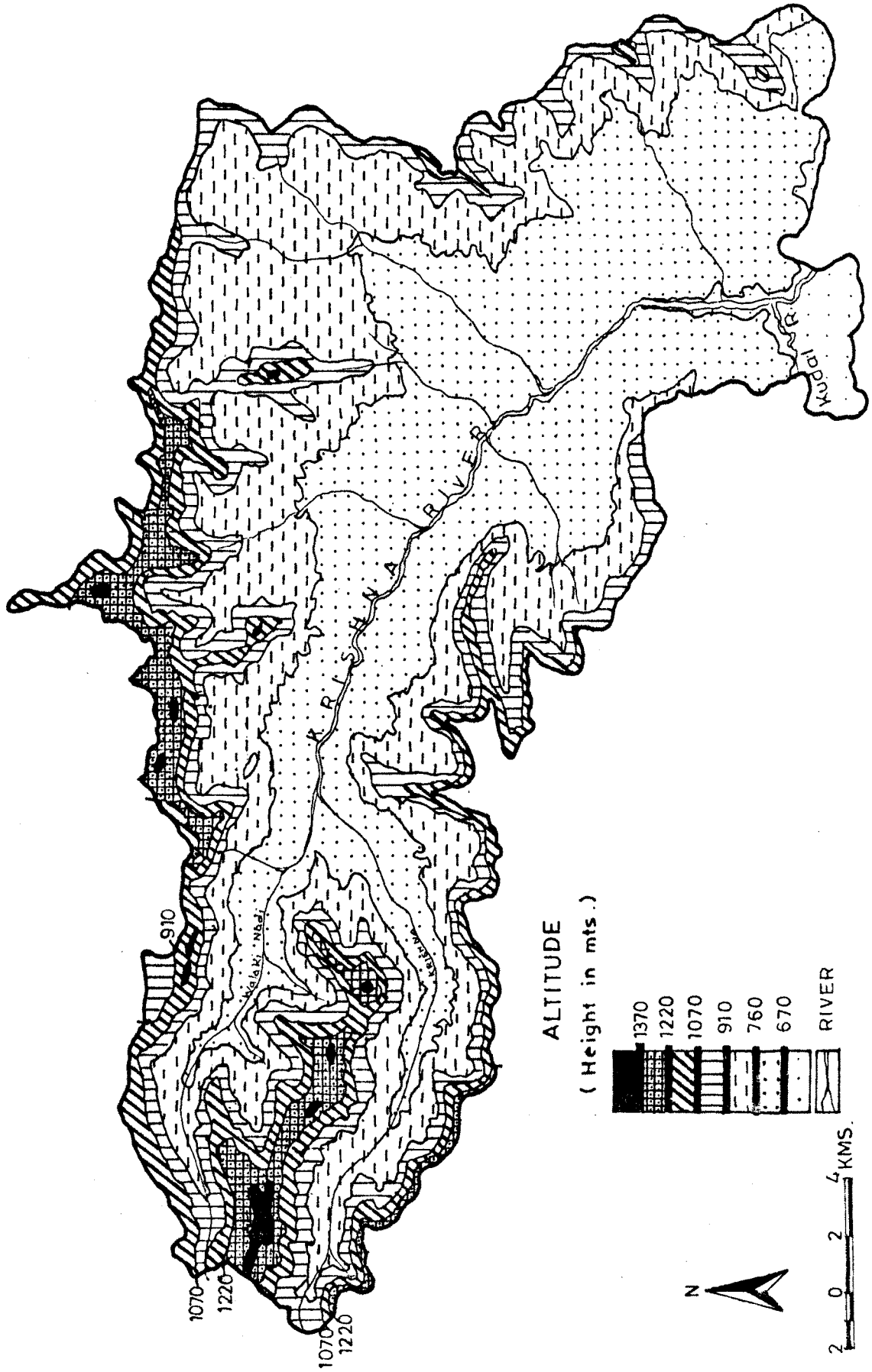


FIG. 1:2

The second important hill range lies to the south of the river Krishna and extends westeast upto the village Amrutawadi. Near Pasarni village the range is known as Pasarni Ghat. An important ancient fort 'Vairatgad' (1,198.68 M) is located in the range to the east of village Jambhulane.

The third hill range is in the eastern part of the region which runs in the north-south direction parallel to the eastern border of Wai taluka. In this range there are two important peaks viz., 'Chavaneshwar Dongar' (1,140 M) located to the east of the village Kawathe and 'Chandangad Fort' (1,123 M) located in the south-eastern part of the region to the east of the village Belamachi. Spurs of the above mentioned hill ranges extend in the region. Two important spurs of hill ranges enter the region at village Dhom, one from northern side and another one from southern side. Further, it provides a natural site for Dhom dam which plays an important role in transforming the cropping pattern of the region and per hectare yield.

It is observed that the hill ranges are remarkably flat topped tablelands which have more or less steep flanks. Vertical erosion is high in the hilly area. The above cited ranges act as a water divider and form source of several streams. Terraced slope is used for rice cultivation. In Krishna Valley, due to its gentle slope, canal irrigation is practised. The well irrigation is observed in the area of high elevation. It can be observed that sources of irrigation are determined by the topography of the region.

1.3 DRAINAGE :

The Krishna is the main river of the Wai taluka. The Krishna has its source in the eastern slopes of the Mahabaleshwar plateau, at the height of about 1,500 M. Number of small swift flowing streams join the Krishna river from all sides in the region (Fig.1.2). All these streams are full of water in rainy season and become dry in the summer. The Walki Nadi is a small tributary of Krishna, which originates in the north-western part of the region and joins the Krishna near village Velang. Locally it is known as 'Kamandalu Nadi'. The river Krishna flows west to east village Dhom, then it turns its direction and flows north-west to upto southeast. Kudal is the only perennial right bank tributary of the Krishna river. It flows for very short distance in the southwestern part of Wai taluka and joins the Krishna river at the south of village Khadaki.

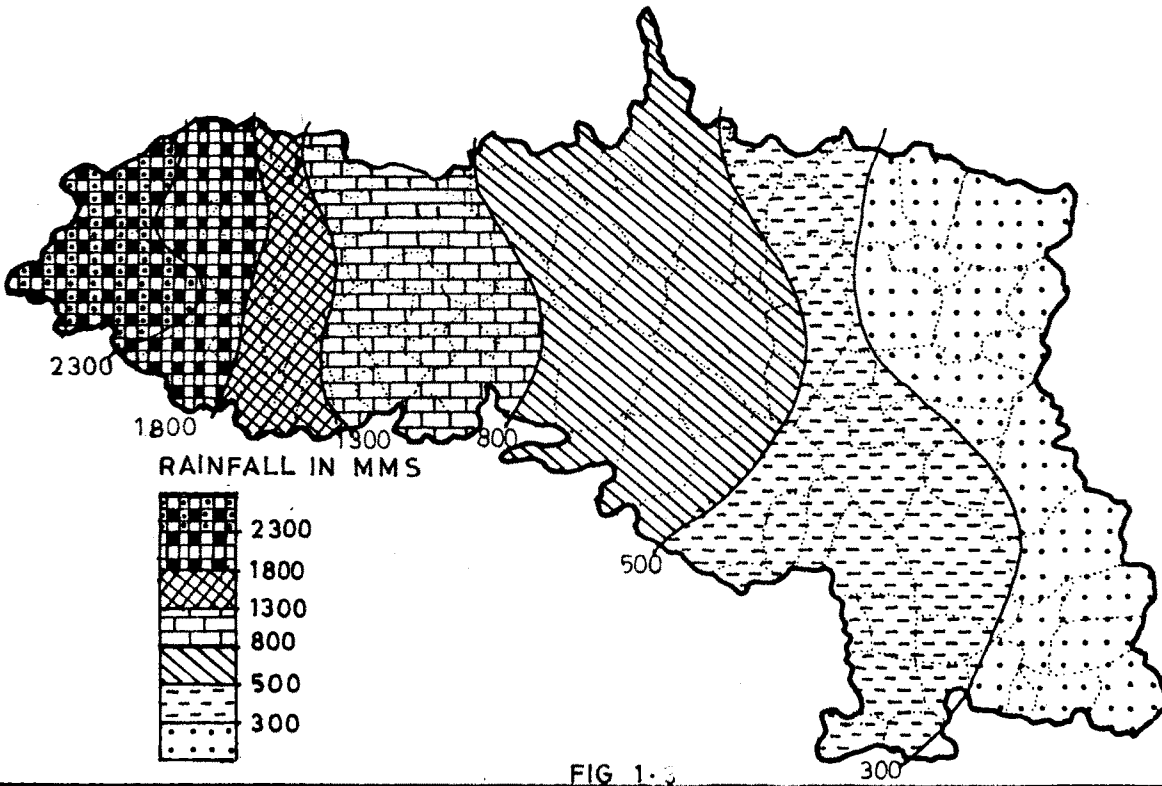
It is observed that the river water is used for agriculture at different places by lifting it with the help of oil engines and electric pumps. The river is useful for irrigating kharif crops only. In summer season the river runs dry and there is no water for agricultural use. In the hilly area the river streams are useful for irrigation purposes, diverting the streams in the fields.

1.4 CLIMATE AND IRRIGATION FACILITIES :

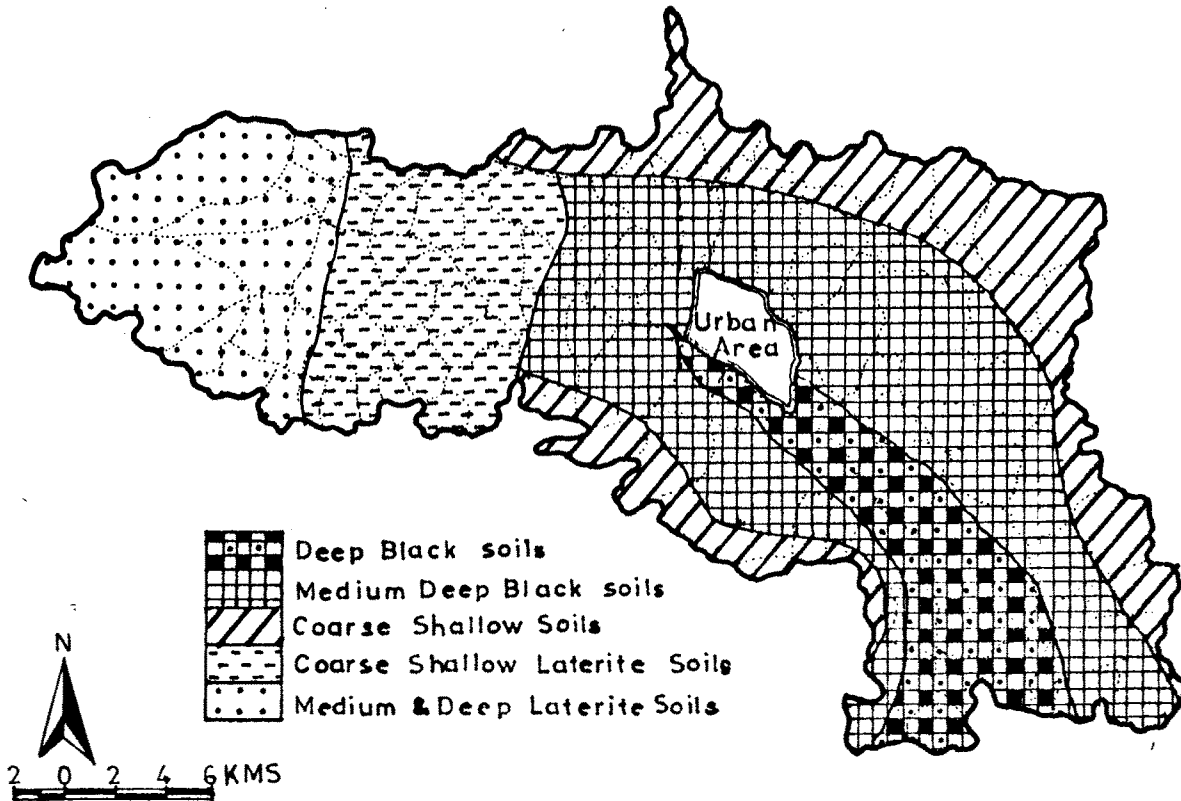
The climate is a major influencing physical factor on spatial variation in irrigation, cropping pattern, crop

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ANNUAL RAINFALL



SOILS



productivity and other activities of human beings. The demand for irrigation depends on the seasonal distribution of rainfall, the crop cultivated and the temperature. The mountain range of the Sahyadri stretching northsouth is an important factor determining the climate of the region. The climate of this study region is typically monsoonal in character with four seasons :-

- i) The cold weather season - Mid December to February,
- ii) Hot weather period - March to May,
- iii) South-West monsoon period - June to September,
- iv) Post-Monsoon period - October to Mid December.

The months of March, April and May are the months of maximum heat. In April and May, thunder storms are a common feature all over the region. The first week of June is the time for the onset of the south-west monsoon. Maximum rainfall is received in July, August and September. July is the wettest month in Wai taluka. October is the transition period from the rainy season to winter. From November to the end of February, there is cold dry spell, with clear skies, gentle breezes and pleasant weather.

The region comes under rainshadow zone of the Sahyadri range. There is rapid decrease in rainfall with the annual average of 2,124 mm from the west to 300 mm in the east during the southwest monsoon (June-September) (Fig.1.4). Mahabaleshwar records an annual average rainfall of 4,360 mm, Wai 710 mm, and

WAI TALUKA

RAINFALL

ANNUAL VARIATION OF RAINFALL FROM NORMAL

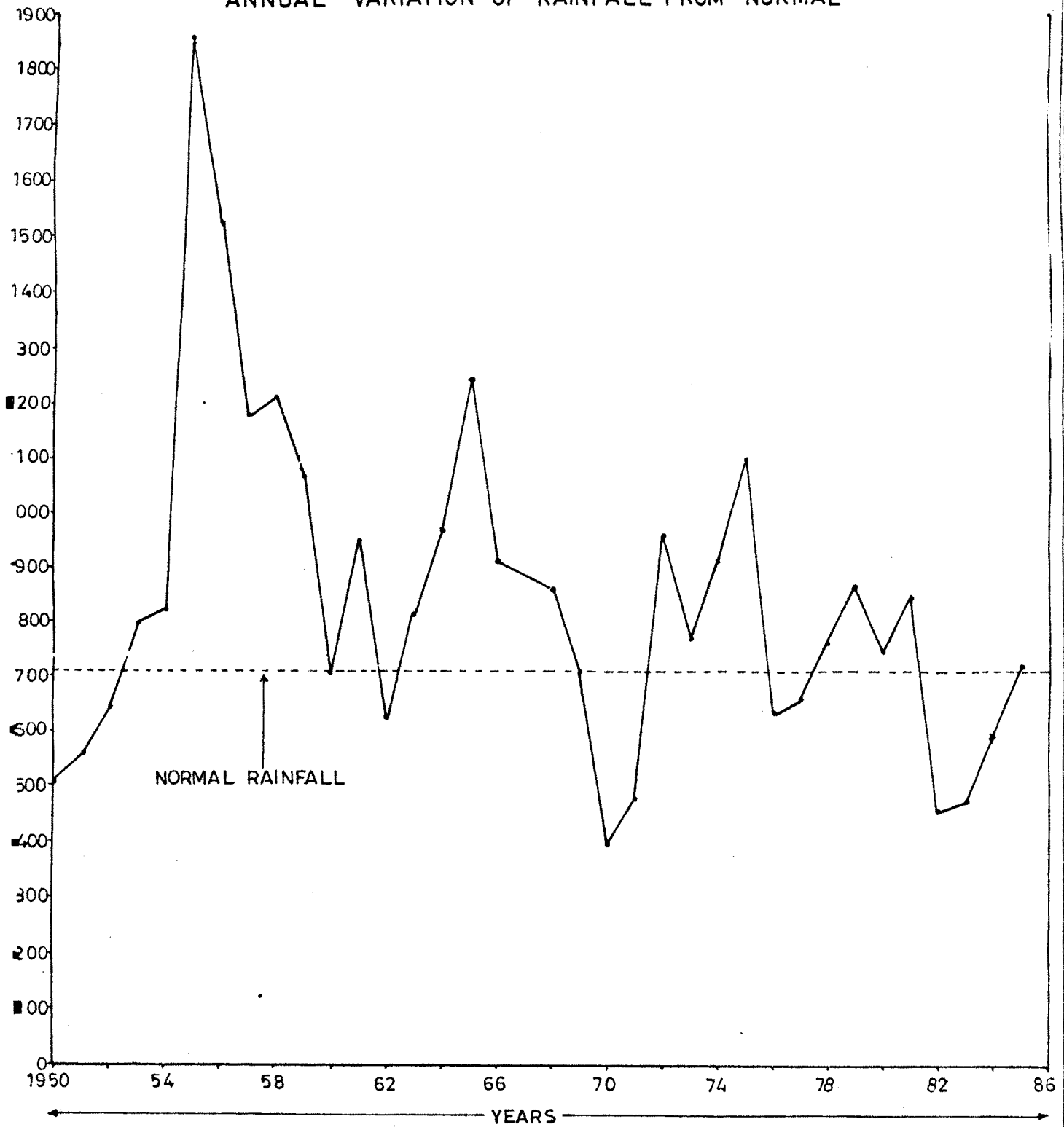


FIG 1.5

further east Shirgaon records only 302 mm. The annual variability also increases with the decreasing amount of rainfall; so in the east of Wai, drought hazard is common. In view of this the irrigation facilities are essential in the eastern part of the region. " The monsoonal regime of rains with its unequal regional occurrence emphasises the inescapability of schemes of irrigation to ensure stability as well as higher production in agriculture," (Deshpande, 1971). The areas receiving high rainfall cultivate the crops like rice, nachani, groundnut etc. While in the eastern part, where rainfall is comparatively very less, bajara and jowar are the main crops.

1.5 SOIL AND IRRIGATION FACILITIES :

Soil, of course, is the basic factor in agriculture. Soil absorbs and stores water to make it available to the roots of the plants which are in the soil bed. Water is a carrier of large amount of nutrients, which are stored in the soil and made available to the plants and crops. Due to inadequate and uneven distribution of rainfall during the growth span of a crop, it becomes essential to supply additional water to the soil for plant use. This is done through irrigation. The need of irrigation depends on the soil types. The moisture holding capacity of the soil differs according to the soil types. This region is a part of 'Deccan Trap', and the soils of the region are of trap origin. They may be classified as follows :-

- 1) Black soils
 - i) Deep black soils
 - ii) Medium deep black soils
- 2) Coarse shallow soils
- 3) Laterite soils
 - i) Coarse shallow laterite soils.
 - ii) Medium and deep laterite soils

1) Black soils :

The river tracts are largely occupied by black soils. This soil is called 'regur soil'. Based on the depth the region has two types of black soils.

i) Deep black soils :

Deep black soils are confined to the river course. It has been derived from the old lava deposits and it is one of the most fertile and productive soil types. In the region this soil type occurs in the south-eastern part of the region (Fig.1.4). The soil is very rich in calcium and magnesium carbonate but poor in nitrogen, potash and phosphates. The average pH value of the deep black soil is 7.9. The soils are deficient in nitrogen which is only 0.27 percent. The proportion of phosphate (P_2O_5), Potassium (K) and Magnesium (Mg) is not sufficiently found in these soils (Table 1.1). These soils are black in colour due to the presence of titaniferrous magnetite iron and humus content. The soil is very deep along

the river valley. The advantage of the soil lies in its possessing a high water holding capacity. The disadvantage is its poor drainage, and excessive water applied to the soil makes it waterlogged. Deep black soils are found in the southern part of the village Ozarde, the western part of Bhujinj, the eastern parts of Kadegaon, Asale, Pachawad and Udtare. It is also found in the villages Chindhavali, Jamb and Virmade.

TABLE 1.1 : Soil analysis of Wai taluka (1985-86).

Sr. No.	Type of soils	pH value	Total Nitrogen N %	Phosphate P ₂ O ₅ Kg/hect.	Potash K ₂ O Kg/hect.
1	Black soils				
	i) Deep black soils	7.9	0.27	9.9	374.20
	ii) Medium deep black soils	7.7	0.45	8.5	447.00
2	Coarse shallow soils	7.7	0.28	18.0	315.75
3	Laterite soils				
	i) Coarse shallow laterite soils	7.6	0.63	28.0	346.00
	ii) Medium and deep laterite soils	7.4	0.49	30.0	246.00

SOURCE : Agriculture Department, T. and V. Scheme, Wai, Dist. Satara (1985-86).



ii) Medium black soils :

This soil type occurs in the south-eastern and central part of the region along the Krishna river. These soils in general are loamy to clayey in texture. The average pH value of these soils is about 7.75. The soils are deficient in nitrogen which is only 0.45 percent (Table 1.1). The black soils can be efficiently managed for successful crop production with proper water management.

2) Coarse shallow soils :

These soils are confined to hill ranges in the northern and eastern parts of the region (Fig.1.4). A strip of shallow soils also occurs in the south-western parts of the region. These soils are light brown in colour and loamy to sandy in structure. They contain about 0.28 percent nitrogen and pH value is about 7.73. These soils are less in depth and poor in structure and texture. The water retention capacity is very low and they are devoted to crops requiring comparatively less water viz. jowar, bajara, pulses etc.

3) Laterite soils :

Laterite soils occur in the western hilly area. Two types of laterite soils occur in this region.

1) Coarse shallow laterite soil :

These soils occur on the upper slopes and have little depth, besides being coarse in structure.

ii) Medium and deep laterite soils :

Medium and deep laterite soil occurs to the east of coarse shallow laterite soil zone. The valley laterites have rich texture and are used for potato, groundnut, wheat and paddy cultivation. The colour ranges from brown to black. They are generally known as 'Tambdi mati'. pH value of these soils is 7.42. They are deficient in calcium carbonate, phosphate and potash. This soil is moderately fertile for agricultural purposes. Its water retention capacity at high moisture tension is greater than the laterite soils.

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