CHAPTER - I

=   =    =   =   =    =   =		INTRODUCTION	g = []=]]= []=]]=	
••••••	• • • • • • •			
	1.1	The problem		
	1.2	The study area		
	1.3	Objectives of the stud	dy	
	1.4	Sources of data		
	1.5	Methodology		
	1.6	The review of the wor	k done	
	1.7	Chapter outline		
	-	References	,	
	•			
	(A)	(2)		

はもおりだちだちだち 彼ら所もはもおりたち だったし たりだったったったったい ひょうういったったったり おりおうおう ヨーヨー

•

1

•.

. 1

## 1.1 THE PROBLEM

Land is an important natural resource of the nation. It provides area to all the human activities. The basic needs, food, clothes, shelter of man are totally dependent on this resource, but many times it is improperly used and so it is deteriorated. Therefore, the land resource should be used according to it's suitability and capability. The land capability and landuse studies are important in this regard.

The concept of land capability was developed during the 1930s in the USA; but the widespread adoption of land capability schemes only began after 1960 (Markuskappel). The land capability is inherent capacity of land. It is a scientific appraisal of the physical characteristics of land. This type of study becomes possible only when micro level detailed soil survey is done. Based on this, soil and information, land is classified into different classes. The evaluation of land is done on the basis of soil characteristics and slope. Soil and slope are important factors influencing the use of land. Especially in Netherland, Great Britain and the USA efforts were undertaken to consolidate methods of land evaluation (Brinkman et al. 1973) .

Hence keeping the requirements resources, time and socio-economic conditions in view, various countries have adopted different methods of landuse. For rational planning



Code No.	Name of village	Code No.	Name of villaçe
<u></u>		-	
1	Malgund	16	Jambharun
2	Marathwadi	17	Vetoshi
3	Nivedi	18	Kharavate
4	Talepatwadi	19	Kotavade
5	Bhagavatinagar	20	Sadye
6	Rahataghar	21	Are
7	Bhandarwada	22	Bholewad1
8	Ganapatipule	23	Mayekarwadi
9	Bhandarpule	24	Kalbadevi
10	Kajirbhati	25	Basani /
11	Dhokambale	26	Pirandavane
12	Nevare	27	Wadajn
13	Dhamanse	28	Kasarwadi
14	Ori	29	Sakharwad1
15	Narme		

٠.

.

# LIST OF VILLAGES IN KOTAVADE CIRCLE (RATNAGIRI DISTRICT)



of landuse and development the significance of proper classification of land hardly needs any emphasis.

The utilisation of land for different purposes indicates an intimate relationship between prevailing ecological conditions and man. The efficient use of land depends on the capacity of man to utilise and manage it in proper perspective. With the help of technology, he can use the land efficiently and try to maximise the benefits to be obtained from the existing parcel of land. Land utilisation is a dynamic concept since it undergoes certain changes with the adoption of innovations.

Such types of land study is important because of foodgrain shortage and increasing population pressure. 'By this inventory the uncultivated land can be brought into production and cultivated soils can be made to produce more. The present study deals with the land capability and landuse study of Kotavade Circle in Ratnagiri District located in Western coastal belt of Konkan.

The landscape of Kotavade circle of the Ratnagiri district is basically influenced by the Deccan lavas which cover most of the area except the southern and south eastern part which is underlain by metamorphic types. The predominant characteristics of soil in Ratnagiri district are laterite

soil in Ratnagiri district are laterite soil of different varieties and colours. Generally alphanso, jackfruit, pineapple, arecanut are grown in warkas soils. In coastal, alluvial soil is common. Salty land is locally called as Khar land or Khajan land. The present study deals with the land capability and landuse pattern of Kotavade circle in Ratnagiri district.

# 1.2 THE STUDY AREA

Ratnagiri is situated in Sahyadri ranges. The rainfall is heavy. Because of this the top soil is swayed away. The Kotavade circle of Ratnagiri district is located between 17°2' to 17°11' North latitude and 73°15' to 73°25' East longitude in coastal Maharashtra (Fig.2.3). The relief features of Kotavade circle are essentially the product of its geological part, the nature of its geological composition and the agents of dendation working on the geological mantle. The outstanding feature in the relief of Kotavade is its highly uneven nature and very narrow riverine plains that fringe the coastline. Over 85 percent of the land surface is hilly. It is bounded by Sangameshwar by Guhagar taluka in the north, by Arabian sea in the west and Rajapur taluka in the south. Total geographical area of the Kotavade is 19081.62 sq.kms with 29 villages. heating



The climate of the study area is of monsoon type, being a coastal area. The variation in temperature is not large. The maximum and minimum temperatures are 40°C and 38°C respectively. The annual range of the temperature is 30°C. The annual average rainfall is 304 cm and the relative humidity seldom goes below 50 percent.

The predominent characteristics of soil in Kotavade are laterite and are of different varities and colours. The area is divided into four soil types as below.

- ( i ) Rice and Warkas soils
- (ii) Garden soil
- (iii) Coastal Alluvium and
- (iv) Salty land.

## 1.3 OBJECTIVES OF THE STUDY

• .

The present study aims at understanding the pattern of land capability and landuse. Therefore, the specific objectives of the present study are as follows .

- To examine the spatial pattern of physical properties of the soils.
- 2. To delimit the land capability classes of the study area on the basis of number one.
- 3. To map the present landuse pattern of the area
- 4. To analyse the relationship between the land capability and landuse pattern.

## 1.4 SOURCES OF DATA :

For collecting the data for the present study of the Kotavade circle help has been taken of the experts and local experienced farmers in the study area. The required information and data have been collected through the statistical abstracts e.g. soil survey departments published records, the village talathi records, forest department records and ground water survey department records. Intensive fieldwork at village level is undertaken to examine the soil. Landuse and land capability maps are prepared by employing the Choropleth to show the areal variations of land capability. The soil data is collected by visiting every farm of the village. For this the following procedure is adopted.

- Soil texture and slope is assessed with the field observation.
- Soil depth is identified by observing the river, nala and digging pits.
- Soil erosion was estimated by considering the drainage density, slope and soil texture.
- 4. Soil drainage and permeability is determined by assessing the slope texture and soil gravelness.
- 5. The colour of the top soil is identified by tallying it with the mansell soil colour charts.

6. The soil wetness and available moisture capacity is tested by using core roll molding method and rolling pin method.

The general landuse data at field level is collected through direct observations and represented on the circle map. The secondary data pertaining to general landuse is also collected from village talathi records and verified through field checks.

#### 1.5 <u>METHODOLOGY</u> :

The land capability study is entirely based on physical properties of soil and slope. The different methods have been employed for the land capability classification in various parts of the world. The data and information about the soil properties are represented on the map by using the Choropleth technique.

A tract of land is used to indicate the demarcated units of land in several ways. It is used for mapping of landuse as well as properties of soil. A landuse unit may consist of several land mapping units (Vink 1975). In general an evaluation unit is based on one or more land mapping units under ideal circumstances. It should also be the basic unit for current or future landuse. The dimensions of each of these II to VIII kinds of units in Kotavade circle of Ratnagiri district may very from a few square metres to thousands of hectares.

In the present study the U.S.D.A's method of land capability given by All India Soil and Landuse Survey Organisation (1971) is used (Appendix - I). The method includes eight classes and farming is possible only in first four classes and the remaining classes are suitable for grazing and forest landuse known as land not suitable for cultivation.

#### Land Suitable For Cultivation :

#### <u>CLASS I</u> :

This is very good quality of land that can be cultivated safely with ordinary good farming methods. It is a land of good productivity, practically free from erosion and suited for cultivation without special practices. It is nearly level land (slopeless than one percent). It has deep, easily worked soils and is subject to only slight erosion. It is well drained and is suited for intensive cultivation.

## CLASS II

2

It is a good cultivable land but has some limitations of gentle slope, moderate erosion, moderate depth etc. And earth of these limitations requires special protection. Land of moderate to good productivities suitable for cultivation with ordinary practices to prevent erosion by contouring and

growing protective cover other problems but not to serious extent.

## CLASS III :

(Land of moderate to good productivity) suitable for cultivation with intensive, shrip, cropping, heavy fertilization and installation of entensive drainage facilities. This kind of land is characterised by -

- i) Moderate steep slope
- ii) High susceptibility to erosion
- iii) Shallow depth and
  - iv) Sandy or gravely with low moisture capacity

#### CLASS IV :

•

Land with vary severe limitations in use and of moderate productivity, suitable chiefly for pasture and hay because of steepness of slope, with occasional use for raw crops. A long rotation of 5 or 6 years in grass followed by a crop of grain or lucern is of ten practicable when it is cultivated intensive erosion prevention practices usually are required.

## Land not Suitable for Cultivation :

## CLASS V :

This land is not suitable for cultivation but it is suitable for grazing or the growing of the tree with strief precaution for sustained use. Conservation measures may be needed. The land is nearly a level and is subject to slight erosion. It occurs in many swampy areas that cannot be drained easily.

#### CLASS VI :

Land not suitable for cultivation because of wetness, stoness or other factors but useful for grazing or forest with normal precautions to ensure sustained use but not for arable farming.

## CLASS VII

۰.

:

It includes such area as bad lands deep gullies, t includes such area as bad lands deep gullies, t includes and very steep, rough and stony barren land. Forestry and wildlife are the best uses in this class of land.

1

## 1.6 THE REVIEW OF THE WORK DONE :

The work on land classification, landuse and land capability has been done by many scholars in India and in the world. In India the pioneering work was done by Prof. M.Shafi who has written an article on the land classification, land capability and techniques (1978). This is the broadest category and a total of eight classes are defined and labelled from I to VIII indicating degree of limitation. Areas of Class (I) are for all uses, where Class (VIII) is



useable for wildlife. Altogether eight land classes are differentiated according to their limitations, described thoroughly in the handbook (Khingebiel <u>et al</u>. 1961 : 6). The brief summary of these classes as provided by Young (1973:14) is given below.

Shri Chandrabhan has worked on the land classification and capability of Agra district (An Ecological Assessment, 1973). Pannalal Das and R.Bhattachary have studied the land capability classification, A case study - Kaliaghar River Basin in West Bengla (1978). Sharma S.C. and Sharma R. have worked on the land capability classification and landuse planning of Block Padrouna, District Dearia - A case study (1980). Das K.K.L. and Das K.N. have studied the land capability classification of north plain, west of the river Koshi - A study in methodology (1981). Nageshwar Rao and Vaidyanadhan R. have attempted to study the landuse and land capability from aerial photo interpretation - A case study from Krishna delta (1981).

The U.S.D.A. land capability system was published by the Soil Conservation Service (SCS) of the United States Agricultural Department in September 1961 (Klingebiel <u>et al</u>. 1961). The methodology was the result of decade long experience of the (SCS) in America, establishing a new development in the field of land evaluation. The procedure is therefore well described in specialist literature (Davidson, 1980 Dent <u>et al</u>. 1981; Huizing 1983; Hundson 1986; London 1984, Landgren

al Strong Carden

1975). Last, but not the least Mohammad Noor, Jasbir Singh and Dhillon S.S. have made a detailed soil appraisal study of Kheri village in Haryana. All the work, on land capability done in India is qualitative based on the empirical approach. The work done in India is subjective in nature and is not well suited for meaning capability in quantitative terms (Das 1981). Waghmare S.A. has worked on the capability and landuse studies of Kotavade circle in Ratnagiri district.

# 1.7 CHAPTER OUTLINE :

The present study of 'Land Capability Classification and Landuse Pattern in Kotavade Circle of Ratnagiri District' is organized into five chapters. The first introductory chapter, states the need and significance of study. The study area, objectives of the study, sources of data, methodology, the review of the work done and chapter outline is presented. Chapter II describes in more detail the physical properties of soils as basis of land capability of the study area. Chapter III, is devoted to analyses of land capability of the Kotavade circle. The detail analysis of landuse cropping pattern of the relationship between the two study areas is done in Chapter IV and the conclusions have been given in the last chapter. 14

#### REFERENCES

- Mohammad, Noor (1981) : Perspective in Agricultural Geography, Vol.3, Concept Publishing Co., New Delhi, pp.78-83.
- 2. do (1980) : Perspectives in Agricultural Geography, Vol.2, Concept Publishing Co., New Delhi, p.45.

.

•.

- 3. Markuskappel (1993) : Methods of Land Evaluation and Landuse Planning for Rural Areas: A Review, <u>Trans. Inst. Indian Geographer</u>, Vol.15, No.2, July 1993, pp.55-57.
- 4. Vink, A.P.A. (1975) : Landscape Ecology and Landuse, Edited by D.A.Davidson, pp.10-11.