

CHAPTER - III



LAND CAPABILITY CLASSIFICATION



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3.1 LAND CAPABILITY :

The concept of land capability was developed during the 1930s in the U.S.A., but the widespread adoption of land capability schemes began only after 1960. The assessment of land capability involves an evaluation of the degree of limitation posed by permanent or semipermanent attributes of land to one or more landuses. This U.S.D.A. method is used (July 1993) worldwide. It is a monodisciplinary soil science approach with emphasis on soil conservation and with consideration of climatic conditions, but without regard to economic and social aspects. The method has three levels in its classification structure, such as class, sub-class and unit.

The detailed investigation of the physical properties of soil such as soil texture, depth, slope, erosion, gravels, colour, drainage, wetness, permeability and available moisture capacity is made in the previous chapter. The ultimate product of the soil properties is a land capability classification map. And this chapter attempts to analyse the pattern of land capability of the area under study.

The land capability classification is prerequisite for landuse planning and development. Land capability is an attempt to integrate land according to its physical characteristics. Land capability classification is scientific appraisal of the physical characteristics of the land.



It is the quality of land and is assessed by the physical properties of soil and terrain characteristics. Land capability is by and large ascertained by inherent soil characteristics, external land features and environmental factors limiting the land use (Mohammad Noor 1981).

Land capability classification is a scientific appraisal of the physical characteristics of land, including characteristics of the soil and is a systematic grouping of different kinds of land according to the properties that determine the ability of the land to produce almost on a permanent basis. The classification enables the farmer to use the land properly for long time production with suggestions for taking such measures as control of erosion. The physical characteristics which are appraised for land capability classification include, among others, the slope of the land exposure to climatic factors that are conducive to soil erosion, soil factors affecting drainage, availability of water and characteristics of water supply, science land capability classification related to the use and treatment of the land, the effects of these various varying with various physical characteristics are considered in making suitability classification.

The land capability classification scheme, as developed by the Soil Conservation Service of the United States Department of Agriculture will be discussed here. An outline of this land

capability classification is in two categories as below.

- 1) Land suitable for cultivation and
- 2) Land not suitable for cultivation

The land capability comprises eight classes, e.g. Class I (very good land), Class II (good land), Class III (moderately good land) and Class IV (fairly good land) under the group land suitable for cultivation; Class V, Class VI, and Class VII land suitable for pastures and grazing and Class VIII land suitable for wildlife and watershed under broad group of land not suitable for cultivation. The gradation from Class I to Class VIII indicates the increased limitations of crop cultivation and hazards and decreased adaptability and freedom of choice of use. Class I land is very good in passing from Class II to Class IV land is not level and there are limitations or problems of cultivation, depth, wetness, erosion, and need for specific management practices. Class V land is of good productive mountain meadows which are wet and have short growing season, and not arable, but well suited for pastures and grazing. Class VI and Class VII land are steep subject to erosion if cover vegetation is covered, bad lands, sand dunes, tidal, stream, channels, swamps, barren mountain tops with little or no soil mantle and these are suited only for wildlife protection.

Based on the above scheme of classification for land capability classes viz. class II, class III, class IV and class VI are observed in the study area.

3.2 LAND SUITABLE FOR CULTIVATION :

In the study area there are three class of land suitable for cultivation. They are class II, class III and class IV. The total area covered by these classes is about 21.11 percent of the total geographical area.

1) Land Capability Class II :

This class of land is widely distributed in the region, claiming 0.98 percent of the region's total area (Fig.3.1).

Table 3.1 : Area under different land capability classes.

Sr. No.	Land capability class	Percentage area
1	Land suitable for cultivation	
	Class II	0.98
	Class III	8.45
	Class IV	11.68
2	Land not suitable for cultivation	
	Class V	4.39
	Class VI	29.59
	Class VII	44.91
	Total	78.89

SOURCE : Soil Survey Department, Ratnagiri.

3.3 SOIL CHARACTERISTICS :

Soils are very deep, very friable, well drained time standy loam to sandy loam. Those of the sub-soil being loam to sandy clay loam. Plentiful medium to coarse pores are found in the sub-soil, slope ranges from 1 to 3 percent. The permeability is moderately rapid to rapid and watertable fluctuates from 2 to 6 metres.

Stability :

This land is well suited to the cultivation of groundnut, arhar, sugarcane, barley, potato, oilseeds and vegetable crops.

The soil in class II is good with moderate limitations. Soil depth is more than above 15 centimeter and the slope is very gentle. The soil erosion texture is clay loam silty. The soil colour is mostly red yellow brown. But it is less drained soil. The soil is very dry. Soil permeability is slow and available moisture capability soil is high.

This class of land covers about 0.98 percent land of the Kotavade circle. This type of land has a good productivity and is suitable for cultivation with ordinary practices. This class of land is generally observed in northern part of Bhandarpule, Ganpatipule, Rahataghar, eastern part of Nivedi.



Land Capability Class III :

Moderately good land with severe limitation.

This class of land covers an area of 1306.81 hect. or 8.45 percent of the total and is scattered predominantly in the eastern half of the region.

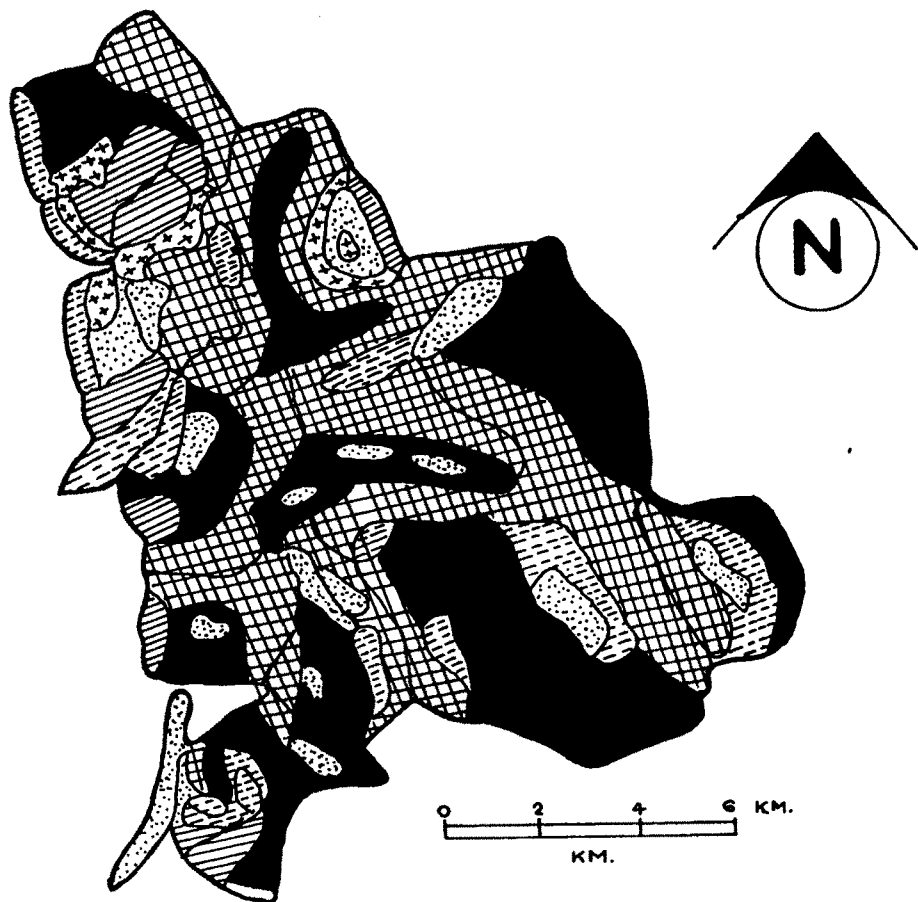
Soil Characteristics :

The slope varies from 3 to 5 percent but underline topography is also common, which results in moderate erosion. The watertable fluctuates from 2-3 metres to 3-6 metres during summer. The water holding capability is low and permeability rapid.




The soil in class III is moderately good with severe limitations that reduce the choice of crops and requires special care in handling and management. The limitations of soil in class III are more than those in class II and therefore, it needs careful management (I.C.A.R., 1980). The soil texture of this land is sand clay loam. The soil depth is more than 15 cm. and the slope is very gently (1-3°). The erosion is less. There are also gravels in the soil. The soil colour is medium red brown. The soil drainage is moderate. The soil permeability is also slow. This soil is very wet and available moisture capacity in the soil is less.

The proportion of this class of land in the area under study is about 8.45 percent of the total area of circle. This

LAND CAPABILITY CLASSIFICATION



LAND SUITABLE FOR CULTIVATION

- II CLASS ----- 
- III CLASS ----- 
- IV CLASS ----- 

LAND NOT SUITABLE FOR CULTIVATION




- V CLASS ----- 
- VI CLASS ----- 
- VII CLASS ----- 

FIG. NO. 3-1

type of land has a less productivity and is suitable for cultivation with special practices. This class of land is recorded in central part of Kotavade west and south part of Kajirbhati, Are, Bholewadi, Mayekarwadi, Kalabadevi, Wadajun, eastern part of Narme, Jambharun, Ori and Talepatwadi, northern and north eastern part of Bhagavatnagar, Nivedi.

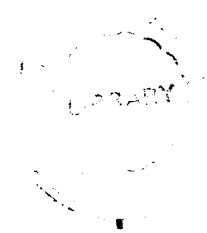
Land Capability Class IV :

This covers 1805.88 hect. of land, 11.68 percent of the total area and is found scattered widely in small patches.

Soil Characteristics :

The soil in class IV is fairly good with occasional cultivation and has very severe limitations. Hence, it has moderate to low productivity. The limitations are restricted to the choice of crops and require very careful management practices. The cultivation of crops may be restricted to once in three or four years.

It is characterised by sandy clay loam texture, moderately deep and gently slope. The erosion is moderate. The gravel content is less. The soil colour is medium. But it is well drained soil. The soil is moderately dry. The soil permeability is moderate and availability is moderate and availability of moisture capacity is also moderate.



In the area under study the proportion of this class of land is about 11.68 percent of the total area of the circle. It is observed in the Kotavade circle of Ratnagiri district; South western part of Kasarwadi, Basani, Narme, Jambharan, Vetoshi, Kotavade, Ori, north-western part of Marathwadi, Bhandarpule, Ganptipule, central part of Dhamanase, Kharavate villages.

Land not Suitable for Cultivation :

In the study area class V, VI and VII is identified as land not suitable for cultivation and covers about 78.89 percent land of the study area.

Land Capability Classes V, VI & VII :

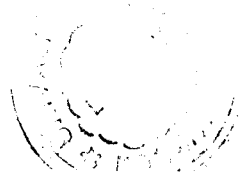
Only an area of 11979.68 hect., 78.89 percent of the total area is under the class V, VI and VII. This land has severe limitations making it generally unsuitable for cultivation. This is generally found in the basins of nalas which remain waterlogged and flooded throughout the year. The soils are swampy which are very deep, very poorly drained and variable in texture. They are only suitable to baro paddy cultivation. Since they always remain flooded, their detailed survey and study is not possible.

The soils in class VI have severe limitations that make them generally unsuitable or cultivation and limit its use largely to pastures or wood land.

The soil texture of this class of land is sandy. The soil is shallow in depth and slope is moderate (3-5 to 5-10 cm.). The erosion is high. The gravel is also high. The soil colour is gray brown. But it is highly drained soil. The soil is slightly wet. The soil permeability is rapid and available moisture capacity is low. The proportion of this class of land is about 29.59 percent of the total area of the circle (Table 3.1). It is observed in the south western and north eastern part of the Nivedi, Jambarun, Ori, Taleptwadi and south western part of Kalabadevi, Mayakarwadi, Wadagun villages. Land class VII is suitable for grazing and forestry. The very severe limitations make the soil unsuited for cultivation and restrict their use to pasture and wood land. It is stony and rugged and is found on higher elevated area. The soil depth is shallow. It covers 44.91 percent area of the circle.

SUMMARY :

The land capability classification is grouping of land. According to its inherent characteristics it is grouped into eight classes and each class is indicated by Roman letters from II to VII. The second four classes of land are suitable for cultivation and the remaining four are not suitable for cultivation but useful for grazing, forestry and wildlife.



Based on this classification scheme four land capability classes i.e. class II, III, IV and class VI are identified in Kotavade circle. Class II, III and IV cover about 21.11 percent area and land not suitable class V, VI, VII record only 78.89 percent area of the study area.

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