Chapter II

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CHAPTER - 2

PHYSICAL SETTINGS

2.0 The Study Area:

In India, next to Rajasthan, the largest region in which climate ranges from arid to semi-arid type lies in the interior of the southern peninsula where considerable portion of the states of Karnataka, Andhra Pradesh, parts of Maharashtra and Tamil Nadu are included. Towards the leeward side of the Western Ghats, there is a sharp decrease in rainfall and a low rainfall zone exists roughly parallel to the Western ghats. This zone is very narrow in Maharashtra State and bulges out in Karnataka and Andhra Pradesh covering a wide tract. Two regions are discernible in this low rainfall zone; viz., Bellary, Bijapur, Chitradurg and Raichur districts and the eastern portion of Dharwad district of Karnataka State and also Royalseema tract covering the districts of Kurnool, Anantpur and Cudappah of Andhra Pradesh. The study area, i.e., Bijapur district falls under the first tract of the above mentioned two regions.

"The forms of agricultural activities and farm economy as a whole are influenced in a large measure by relief, soil and climate". The study of the physical setting, physio-graphic pattern, geology, land-scape characteristics, climatic parameter, soil structure, land-use, cropping pattern, marketing facilities and the demographic structure provide the basic and essential knowledge to the geographer for an effective planning of the region. The physical survey of an area provides the basis for understanding of any planning problems at the village and regional levels of appreciation. It is from this point of view that this chapter proposes to deal with the main physiographic characteristics of Bijapur district in order to provide a perspective study for investigating the various land
KARNATAKA STATE
LOCATION OF BIJAPUR DISTRICT

Fig. 1
uses, cropping pattern, livestock, agricultural practices, levels of agricultural development, etc., of the district in subsequent chapters.

2.1 Location:

Bijapur district, one of the twenty five districts in Karnataka, well situated in the Northern Maidan lies between 15 20 and 17 28 North latitudes and 74 59 and 76 28 East longitudes. The district has an average elevation of 1,950 feet, and surrounded by Sholapur and Sangle districts of Maharashtra State on the North West, Dharwad district on the South, Gulbarga district, on the East and Belgaum district on the west, the latter three being the districts of Karnataka state. The district is existing in the interior of Deccan Peninsula about 200 kms away from the west coast and lies in the rain-shadow region of the Western Ghats.

Bijapur district is the largest one in area among all the twenty five districts of Karnataka state with an area of 17,069 Sq. Kms. Its North-South extension is about 176 kms and East-West 144 kms. The shape index of Bijapur district is 59 per cent. The district with a population of 29,18,829 (1991) ranks 5th in Karnataka and shares 6.50 per cent of the state’s population. The district has 1268 village & 18 towns. The density of population is 173 persons per sq. km.(1991). The district has been divided into four sub-divisions which consist of 11 talukas for the purpose of revenue administration.

\[\text{Jackson J.N., ‘Surveys for Town and Country Planning’, p. 87.}\]
Certainly no other branch of human geography deals so directly with physical environment as agricultural geography does. An assessment of physical position will result in an understanding of the

Hettner A. (1947): General Geography of the Humans Allgemein Geographic des menschen,
BIJAPUR DISTRICT
ADMINISTRATIVE DIVISIONS
changing importance of the setting of a region in space and time and will provide the likely potentialities of the situation for the entire development. "Physiography of an area is essentially the product of the geological past and the composition of the agents of denudation working on the geological mantle". It may be mentioned, at the outset, that although the region under study is a part of the larger Deccan Peninsular India, it is distinguished from the latter both in terms of minor relief features and in elevation above sea level. The present day physiography of Bijapur district depicts a more matured topography which has been determined both by the geological formations and the structures on one hand, and long years of denudational and evolutional processes on the other. Geographically, the entire district lies in one region; viz., the dry and arid tract of the Deccan Plateau. The lands of the district may be divided conveniently into two types separated by the Krishna and the Don river basins until they meet and mingle into each other in Muddebihal taluk. The Don valley has its own distinctive characteristics.

Broadly there are three distinct types of land scapes in this area (based upon geological formations) (fig. 3).

( I ) The Deccan trap,
( II ) The Kaladgi Series and
( III ) The Peninsular gneiss

( I ) The Deccan Trap:

The land between the Bhima and the Krishna rivers is mainly underlain by the traps. Only the eastern margins belong to Sindgi, B.Hagewadi, Muddebihal and Hungund taluks are marked by local outcrops of gneiss and other metamorphic types. Jamkhandi and Bijapur

Fig. 3
taluks on the north-western margin are also covered under Deccan trap. Almost, everywhere, the trap is a uniform appearance of an undulating plain, extensively furrowed by streams. The trap with a topography of flat table lands and steep sides is well presented here by the main upland chain which forms a continuation of the Mahadeo range in this district. The flanks of this central backbone show varied in topography and more remarkable features of the earth’s sculpture. The streams promote small well formed valleys where running water is available for the major part of the year. These valleys are important as they form the belts of agricultural development and centres of human inhabitation. The general topography of the Deccan Traps in this district is of the rolling character, nothing but poor grass grows and occasionally in good rainy years, better patches of vegetation are seen. Bajra is commonly found in such areas where soils are sandy and infertile. Near the junctions of tributary streams with the Krishna and Bhima the soil cover outstretches to form open plains of black soils forming vital agricultural areas of the district.

(II) The Kaladgi Series:

The area lying between the Krishna and Malaprabha rivers in this district presents a sharp change in landscape and its utilisation by man. The sedimentary and metamorphosed rocks which are collectively known as the “Kaladgi Series”, occur in nearly horizontal bands. Due to the slight dip of these beds, almost all the hills present a dip-slope on one side and an escarpment on the other, and they have a generally uniform crestline. Thus, the outcrops of Kaladgi quartzite occur in two broad bands which in their residual form are generally known as the North Ghataprabha range which begins at Terdal (west of Jamkhandi taluk) and runs as a low continuous chain with a scarp-face towards the Krishna valley and a dip-slope to the south. North Malaprabha range starts from
the neighbourhood of Belgaum city and acts as a watershed between the Ghataprabha and Malaprabha rivers, bearing a close resemblance to the North Ghataprabha range in form and appearance. These series cover the areas of Eastern part of Mudhol, Sindgi, Biligi, Bagalkot taluks and some portion of Muddebihal taluk in the district.

(III) The Peninsular Gneiss:

The peninsular gneissic complex forms the basal rock for all the other types occurring in Bijapur district. However, gneiss appears on the surface mainly in the south-east portions in the taluks of Hungund and Muddebihal. Here, the harder granite and granitoid outcrops have resisted erosion and they develop a varied and crag like topography. The lower reach of the Krishna river in this district traverses outcrops of gneiss and develops a scenery quite unlike that on the traps and the Kaladgi series. The land is generally poor from the economic point of view.

2.3 Geology:

The oldest rocks in the district consist of schists, phyllites, banded hematite, quartzites occurring as distinct bands mainly to the south-east of the district. The schists include hornblende schist, micro-schist, chlorite-schist, talc-schist and hematite-schist. The granites and granitic-gneiss of Archaean age intrude into the pre-existing schistose rocks and occur as big, rounded, massive boulders and small isolated hills and knolls near Biligi, Rolli, Chimalgi, Guledgud, Pattadakal and Muddebihal. These show considerable variation in texture, from fine and coarse granites to coarse porphyritic and gneissic types and generally vary in colour from greyish to pink. Intrusions of pegmatite and quartz veins and basic dolerite dykes are seen throughout the granitic country.
DRAINAGE:

The drainage system in the district is greatly influenced by its geological history and the location of western ghats which acts as water shed for the drainage system of the peninsular India.

Bijapur district is drained by river Krishna and by its leading tributaries to its north and south banks which originates in western ghats. On the north, the river Bhima drains the northern strip for about 321 kms and acts as a boundary between Karnataka and Maharashtra states for about 152 kms. In the centre of the district the land is drained by river Don which too joins the Krishna just outside the administrative limits of the Bijapur district. Several small streams drain the immediate borders of Krishna. But on the southern side river Ghataprabha and Malaprabha are the leading tributaries.

River Krishna & its Tributaries:
1. Krishna
2. Dhone
3. Malaprabha
4. Ghataprabha
5. Bhima

1. Krishna:

This river enters Bijapur district a little east of south railway bridge at kudachi. It divides district into two parts. The north being slightly large in
BIJAPUR DISTRICT
RELIEF & DRAINAGE

- - - 450 m.

451 - - 500 m.

501 - - 600 m.

Above - - 601 m.

Drainage

Fig. 4
2. **Bhima**

This river supplies ample water for general purpose. It is useful for irrigation. Its section is overlain by layers of gravel. Sindgi portions of Bhima river bank has a rich alluvial and black soils and has promoted several prosperous large villages. On the banks of this river there is rich agricultural land where garden crops and wet fodder are raised.

3. **Dhone**

Dhone river rises in the upland region of Sangli district about 4 miles to south of the town of Jath. It flows east and then to south-east and reaches Talikot in the Muddebihal taluka of Bijapur district. In this district its length is about 100 miles.

4. **Malaprabha**

This river enters Badami taluka near Karlikop. From here it flows east for about 20 miles, forming southern boundary. It is a counterpart of Krishna as a stream. The northern flank of the river is marked by low residual chain of hills. The southern flank commands a large drainage area underlain by peninsular gneissic and Dharwar rock. The river has abundant evidence of historical importance.

5. **Ghataprabha**

This river enters in the Mudhol taluka for about 8 miles west of Mudhol town. Its length in Bijapur district is about 70 miles. From Mudhol and Bagalkot it runs in a course of about 50 miles. It runs to the south-easterly direction and then easterly up to Bagalkot town. From here it flows in a sand stone and quartzite hills and joins Krishna at Chimmalagi. The dam across river Ghataprabha built in Belgaum district irrigates in Mudhol & Jamkhandi taluks of Bijapur district.
Soil:

Soil constitutes the physical basis of an agricultural enterprise and plays an important role in agricultural economy of a region. Bijapur district with distinct geological and structural landscape has varied soil types formed under semi-arid climate.

The analysis of the soil indicates that they are poor in organic matter constituents. The sand and silica content is poor, which may be due to high proportion of lime. Nitrogen content is also very low. There are three main classes of soil

1. Black soil (Yeri Bhoomi) which has great moisture content capacity is found in all taluks.
2. Red Soil (Masari Bhoomi), the red sandy soil is found near sandstone hills of Badami, Bagalkot and Hungund talukas. Where the soil needs proper system of manuring and tillage. It can yield better crops.

Climate:

The average height of the land is 1,950 from mean sea level. The area is surrounded by semi-arid regions of Karnataka and Maharashtra states. The district has a broad groups of physical divisions with deccan traps in the north, Kaladgi series in the south-west and peninsular genessic topology in the east and south-east. The district is drained by five major rivers and is overlaid by deep black soils in major portion of the area. The waste land occupies 6.10 per cent (1,04,466 hectares). Climatically the area belongs to semi-arid type with dry and healthy conditions for human settlements. The average annual rainfall of 554 mm. Occurs in the region with its large variation in the amount and distribution rendering the district liable to drought and famines. The mean maximum temperature of the district is 40.00 C and minimum 14.8 C. The district in Karnataka
is conspicuous due to its plain and gentle topography and also its geographical entity in the matter of relief, soil, climatic, drainage and vegetation. The vegetation cover is very sparse and occupies 4.87 per cent (83.103 hectares) only.

**Economy:**

The economy of the countryside is dwindling due to the occurrence of drought at least twice in every five years. The land under irrigation is very less i.e., 10.84 per cent (1,54,258 hectares) compared to the net sown area i.e., 83.09 per cent (14,22,713 hectares). The strength of livestock population is 22,86,734. The total number of land holders in the district is 3,02,566 of which marginal land holders are 9.52 per cent (28,560), small holders 19.66 per cent (59,316), semi medium 28.97 per cent (87,652), medium 30.86 per cent (93,376) and large holders 11.13 per cent (33,662). About 10.99 per cent of the land was brought under high yielding variety programme in the district. The fertiliser consumption in the district is very low i.e., 0.013 tonnes per hectare. The number of tractors in the district is 1,807 which emphases the development of agricultural towards mechanisation. Similarly the high use of electric pump-sets (36,512) suggest the achievements of farmers in the developmental programmes like well irrigation.

The areas which are prone to frequent drought and scarcities will have these problems in an accentuated manner. Bijapur district is one of the backward districts in the State, inspite of the existence of rivers and fertile soils. Though five rivers flow in this district, the waters of the river is used only by those villages which are situated on the banks. The Ghataprabha left bank canal irrigates the lands of Jamkhandi (46.52 %), Biligi (52.27 %) and Mudhol (70.15 %) taluks only. The development of the district mainly depends on the exploitation of underground water and canal
irrigation by Almatti Dam (which is not yet completed). Proper
development of land and water use thus merit special consideration. The
problem concerned to agriculture of small and marginal farmers and
agricultural labourers will have to be considered on top priority and the
benefits should go mainly to them to strengthen the land use efficiency.
The Jawahar Rozgar Yojana will be quite appropriate to reduce the stress
of drought situation as well as unemployment created due to low progress
in socio-economic conditions of the study region. The emphasis is also
needed to restore ecological balance. The economic development in
Bijapur district depends upon the development of irrigational facilities,
soil and moisture conservation, adoption of bio-technology, afforestation,
change in the cropping pattern, agronomic practises, livestock
development, rural communications, provision for drinking water supply,
development of small and marginal farmers and the agricultural labourers
and setting up of agro based industries. The dry land development
programmes, sustenance of animal husbandry, fisheries, horticulture,
sericulture and small scale industries (at village level) should also
accompany the programme.

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