CHAPTER III

STATUS OF AKOLA DISTRICT

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Vidarbha is mainly rainfed farming region largely subjected to the vagaries of monsoon with instability of yields and income. It is only the assured supply of irrigation water which can give a ray of hope to the cultivators for stability in their income.

Vidarbh region comprising of 9 districts with 97.2, 51.2 and 55.1 lakh hectares as geographical, net sown and grass cropped area, respectively, supports predominantly rainfed agriculture-farming tied to the bane of monsoonic vagaries, thus providing insecure means of livelihood to about 70 per-cent of population of the region. Out of 14.38 Lakh land holders in the region about 43 percent are small and marginal farmers the most vulnerable lost from any considerations. Even with annual average rainfall of the region to the tune of 1050 m.m., irrigation potential created so far is supposed to be about 14 percent although it hardly accounts for 7 percent of the gross cropped area in practice. Besides irrigation potential created so far has been for variety of reasons, not dependable.
1. **Geographical Location:**

The Nagpur and Amaravati Division, popularly known as Vidarbha, comprises of nine districts namely, Akola, Amaravati, Buldhana, Yeotmal, Wardha, Chandrapur, Nagpur, Bhandara, and Gadchiroli. It lies on the eastern side of the state between 17°-57' and 21°-46' **North** latitudes and 75°-57' and 80°-59' East Longitudes. This region covers an area of 97,762.9 sq. kilometers which is about 31.92 percent of the area of Maharashtra State.

According to 1981 census, the Vidarbha region has 14,343,210 total population out of which 10,599,650 is rural and 3,743,560 is urban population. The percentage of urban population to total population works out to 26.09 percent. The density of population per square kilometer is 147 for the Vidarbha as against 205 for the Maharashtra state. Occupational pattern of the workers in the region indicates that about 35.76 percent are cultivators and 36.28 percent are agricultural labourers. Thus about 72 percent of the working force in the Vidarbha region is engaged in agricultural occupation.
**Topography:**

Nagpur-Berar plane covers the major portion of the region. Eastern parts of Bhandara and Chandrapur districts are part of Chhattisgarh plane of Madhya-pradesh State. Eastern ranges of Satpura and Ajantha occupy parts of Amaravati and Buldhana districts. In Nagpur and Chandrapur districts, Ramtek hills and Baster hills are important in the region.

**SOILS:**

This region has seven types of soils viz. Black soils of varying depths, alluvial salinealkali soils, shallow grey soils, red soils, alluvial sandy loams, hill and forest soils and deep alluvial soils. Black soils are predominant.

1) **Black soils:**

Soils with a dark colour ranging from dark brown to deep black, occur extensively in the whole of Vidarbha region except the eastern parts of Bhandara and Gadchiroli districts. These have been classified for purposes of mapping in the broad manner into 3 groups based upon the depth of their formation as shallow, medium and deep.
As a group, these soils are fine textured and their clay content varies from 50 to 60 percent. They are plastic and sticky when wet and very hard when dry. The clay is of montmorillonitic class and show very strong swelling and shrinkage on wetting and drying respectively. Heavy fissures and deep cracks are developed on drying.

**Alluvial saline-alkali soils.**

Saline and alkali occur mainly on the banks of Purna river in Akola, Amaravati and Buldhana districts. Their PH ranges between 8.0 to 9.3. They contain either high soluble salts, high exchangeable sodium, or both. Therefore they are either saline or saline-alkali in nature. A hard layer rich in lime at 120 to 150 cm. depth makes the soils impervious. The soils have become saline due to non-leaching of salts. They are deep black, alluvial salty clays formed in river valleys. In physico-chemical properties they are similar to deep black soils except pH and T.S.S.

**Shallow grey Soils.**

These soils are formed in Bhandara, Chandrapur and Gadchiroli districts from mixed parent material such as granite, gneiss and schist. They show more or less similar characteristics as the medium deep soils of trap origin.
Red Soils:

Red soils occur mainly in Chandrapur and Gadchiroli districts. They range in texture from sandy to loamy and the colour varies from Yellowish brown to red. They are derived from granites and gneisses and also from sandstones. They are characterised by being rich in sand fractions. The clay minerals become coated with red hematite or yellow limonite or mixture of two iron oxides forming a red, yellow or reddish soils. Ferruginous gravel formed of impure iron alumina and silica concretions and bits of quartz are the common accessory constituents of red soils. The clay minerals is of kaolinitic type and C.E.C. is 25 to 40 me. per 100 gm. of clay. The pH is slightly on the acid side ranging from 5.5 to 6.5 white a few soils have a pH on the alkaline side. The depth varies from 15 to 30 cm. and above. The soils are leached and show absence of CaCO$_3$. They are poor in organic matter, nitrogen, available phosphorous and potash. But, they are responsive to fertilizer application under irrigation for paddy crop.
Alluvial sandy loams.

These soils are present in the Vainganga river Valley and are derived from mixed parent materials. They are very deep often 15 meters, sandy loam to silt loam in texture and greyish in colour. The pH ranges from 7.5 to 8.5 T.S.S. are in safe limits. The soils in Wani tahsil are deep black clay, rich in all nutrients but having restricted drainage.

Hills soils and Forest hill soils:

These soils are found on hills and hill sides. They are highly eroded, coarse textured, poor in nutrients. Mostly they are under forest vegetation. The population unlike the water and other relevant resources, is increasing rapidly, therefore, there is an ever increasing need for additional production of food and fibre. Amongst the major limiting factors in Agricultural production, namely genetic potential of the crop, the availability of soil moisture and nutrients, appropriate agronomic practices, plant protection measures, adoption of new technology; water has a major role.
The Deccan plateau, with its predominantly black soil region, the hard rock formations below the subsoil layers, the semi arid climate and the characteristic low rainfall, provides a challenge to the planners and agriculturists in their efforts to increase the returns from farm land.

The level of agricultural production attained in India as a whole and in the Deccan plateau in particular is only a fraction of the attainable potential. Statistics on agricultural production of different regions of India reveals the low level of production of different crops as compared to most other countries. The major reasons for the low returns from our farm land are the inefficient utilization of the land and water resources.

In the planned development of agriculture of a region various factors have to be taken into consideration. These include climate, topography, soils, ground water, cropping patterns and agronomic practices. Modern agricultural technology provides the means for augmenting the agricultural production substantially. The concept of optimization in agriculture aims at the best possible level of utilization of the available resources.
of land and water at the required levels of production to meet the demands of the population, keeping in view the available levels of supply of inputs. The common tools used in the integrated planning of agriculture of an area are the application of the linear programming technique.

The district Akola in Vidarbha region was chosen for study. This was mainly due to the generally representative nature of the district to the agro-climatic situations of the central Deccan plateau region. The district Akola in the Vidarbha region of Maharashtra State lies between $19^\circ15'$ and $21^\circ16'$ north latitudes and $76^\circ38'$ and $77^\circ44'$ east latitudes. The elevation of the plain portion of the district varies between 274.32 m to 335.28 m. Akola is located at 231.94 m above mean sealevel. The border of the district is marked on the north by the Satpura mountain ranges and about half of the south by the Penganga river. The district as a whole has a rolling topography. The land area comprises of small mounds and gently sloping plain fields. The climate of Akola district is semi arid; characterized by hot summer, from March to May and general dryness throughout the year; except during south-west monsoon, the cold season
extends from December to February. The south-west monsoon is from June to September. October and November constitutes the post monsoon season. The annual rainfall of the district is 846.5 mm. of which 85% occurs during the south-west monsoon season. The average number of rainy days in a year are 48.2. The average annual rainfall of Akola station is 876.8 mm with an average 48.2 rainy days in a year.

Water Management:

Agriculture is the vanguard of our national economy and it must be the basic thrust area for our development, and research is the core of agriculture. Water is the most single requirement for the crop which will determine the success of our attempts made in achieving self-sufficiency in food grains. The agriculture Ministry have fixed a target of 160.7(1) million tonnes of food production in 1986-87. The food production in the year 1985-86 was 150.5(2) and the estimated food production for the year 1986-87 being 153901.35 million tonnes and the estimated food production for the year 1990-91 is 173492.20 million tonnes. This is a stupendous task to

(1) J.R. Ramteke: Water shed Management in high rainfall region.
achieve and would need continuous efforts for providing irrigation to the cropped area. The crop production is based on availability of soil and water resources. However, there are certain limits beyond which the land under cultivation cannot be extended. The availability of water depend upon the climate as well as our capacity to harness the available water resources and make the most judicious use of the same.