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The importance of agriculture in the national economy does not require any advocacy. It provides not only food but employment to the people. Several raw materials are supplied to the industries. Despite the recent developments in irrigation facilities a major portion of agricultural land depends on the irregular monsoon. A prolonged break of monsoon may affect the standing crops considerably and ultimately entire agriculture is affected adversely. The rain shadow areas of the state of Maharashtra has the experience of frequent drought conditions for many centuries. The per hectare yields of different crops has decreased considerably in the areas where such climatic hazards exist.

Considering the backwardness of agriculture in the country through Five Year Plans several irrigation schemes have been implemented to overcome the problem of scarcity conditions. However, a very small portion of cultivated area has been brought under irrigation successfully. The undulating topography of Maharashtra plateau has again obstructed the development of irrigation. Thus the proportion of rainfed agriculture has remained more in the area where the water resources are inadequately available. The agriculture of such areas presents typical traditional nature of Indian agriculture. Solapur district is selected in the present investigation to examine and explain how different aspects of agriculture are distributed over the space and how they function in spatial arrangement. The main emphasis is given on the

distribution of causes, distribution of effects, and their inter-relationship in the present analysis.

1. Objectives of the study :

The present work deals with the geographical study of agriculture in drought prone area of Solapur district for the period of 1960 to 1980 though initially it was confined only to 1961-75 due to non-availability of data. An attempt is made here to examine, analyse and to map the agricultural phenomenon in the region. The spatial arrangement of drought conditions have also been highlighted as they influence the methods, operation and farming systems, cropping pattern, agricultural enterprises, productivity of agriculture. The spatio-temporal pattern of physical and non-physical basis of farming are studied in relation to drought conditions. The specific objectives of the study are :-

- i) To analyse and highlight the drought conditions and how they are distributed over the space and time.
- ii) To examine the spatio-temporal pattern of physical, non physical and organisational factors that influence the agriculture of the region against the backdrop of drought conditions.
- iii) To analyse the distribution and dynamism of landuse and cropping pattern.
- iv) To demarcate the crop combination and livestock combination regions and to attempt regionalization.

- v) To measure and examine the levels of agricultural production in relation to drought conditions.

2. Hypotheses :

It would be logical to frame hypotheses which will be further examined in this work. The proposed hypotheses are -

- i) The proportion of drought resistant crops mainly of foodgrains is high in drought prone areas.
- ii) The yields per hectare of rainfed crops decrease due to drought conditions as compared to normal years.

3. Selection of the region :

The present study deals with the geographical perspective of the agriculture in Solapur district, located (between 17°10' to 18°32' N latitude and 74°42' to 76°15' E longitude) in Southern Maharashtra plateau region. The region is drained by Bhima, Sina and Man rivers. The district comprises eleven administrative tahsils (Fig.2.1) covering an area of 15,021 sq.km. with an altitude of 600 metres above mean sea level. According to 1981 census district recorded about 2,610,144 population constituting about 4.47 percent of total population of the state. The population is distributed in one city, 9 towns and 955 villages.

Agriculture is major activity covering about 80 percent of the total geographical area. The agriculture of the region is, however, influenced by scarcity conditions. Despite the irrigation facilities in few parts the overall nature of agriculture is rainfed

and traditional depending upon uncertainty of monsoon. The fate of the farmers is closely related to the precarious nature of monsoon. The Fact Finding Committee (1973) has included this district in drought prone belt of the state. Since the author is born in this region he is familiar with the agricultural operations and drought conditions of the region. An attempt is, therefore, made to examine, analyse and highlight the spatio-temporal pattern of agriculture against the backdrop of drought conditions in the district. The agriculture in the district presents certain problems which are typical that of drought prone area are also highlighted.

4. Data sources and Methodology :

The data for the present investigation were obtained from the two sources i.e. primary and secondary. The former is collected mainly through the intensive fieldwork for which interview and questionnaire techniques were employed. The later is collected from the published records like census handbook, agricultural census, socio-economic abstract, gazzeeter, reports of Fact Finding Committee (FFC), reports on drought conditions by the World Bank etc. The collected data were processed and analysed which further represented through the maps and tables. Different quantitative techniques have been used and their procedures are discussed in detail at appropriate places. The tahsil is considered here as unit of study. The study confines to the period of 1960 to 1981 and previously it was related to 1961-75 inview of non-availability of data. The data pertaining to rainfall is, however,

considered for 35 years i.e. 1950-1985. The selection of villages for case studies was based on stratified sampling and the random table was used to choose the number of farmers for interviews covering about 10 percent sampling.

5. The organisation of the work :

The present work is organised in five chapters. Chapter first deals with the various aspects of drought conditions. The second chapter studies the bases of agriculture in Solapur district. The study of landuse, its distribution and dynamism of cropping pattern, associations of crops and livestock and diversification of crop were attempted in the third chapter. The fourth chapter includes the study of regional imbalances in due levels of agricultural efficiency. The fifth chapter deals with the summerisation and inferences of the work.

6. Review of Literature :

Several attempts have been made by geographers, climatologists, hydrologists and scientists from other disciplines to study different aspects of droughts and to delimit drought prone areas taking into consideration many parameters. Subramanyam, V.P. and Hemamalini (1978) discussed the techniques and methodology for the delimitation of drought prone areas of India. Chowdry (1978) studied the approaches and methodology for delimitation of sub-areas in drought prone areas. A detailed micro-level study of water resources and its management in drought prone area

of Chittoor district of Andhra Pradesh was attempted by Rao, R.J. et al., (1978). The criterion for delimiting drought prone areas in Karnataka were discussed by Barai and Naganna (1978). The human responses to drought prone areas have been highlighted by Deshpande, C.D. (1978). Reddy and Singh (1978) delimited the drought prone areas of India. Parthasarathy (1978) applied game theory model to drought prone areas. Gupta (1978) studied trend analysis of rainfall and probability of drought in Chattisgarh region in M.P. Subramanyam and Reddy (1978) studied rainfall variability as the aspect of drought in Telenghana. Venugopal and Geeta (1978) highlighted droughts and famine conditions in Royalseema plateau. Thornthwaite (1974) attempted the types of drought. Palmor (1965), Heathcote (1974) defined the droughts. Soundaravalli (1978) has delimited the drought areas in Tamil Nadu State whereas Satpathi (1978) identified the drought prone areas of Bihar. Kayastha and Singh (1978) analysed the relationship between rainfall and wheat production in the drought prone area of Chambler region. Tannehill (1947) studied the causes and effects of drought. B.Arunachalam (1976) highlighted the role of geographer in analysing the problem of droughts. Nigam in (1978) his study suggested plants for afforestation in the drought prone area of Rajasthan. S.Reddy (1978) studied the economics of jowar and groundnut production in drought prone areas in Andhra Pradesh. A conceptual aspect of rainfall for drought prone area was studied by Roopali (1978). Tapeswar Singh (1978) studied the drought prone areas in India. Bhatia (1967)



evaluated the economic history of famines in India. B.Krishnama Naidu (1978) studied the spatial and temporal variations in rainfall in the drought area of Swarnmukhi basin in Chandrgir. T.Chandshekara Reddy (1978) studied the spatial and temporal variations in rainfall in the drought prone Araniar basin in Puttur tahsil in Chittor district. N.K.Jaiswal (1978) discussed the development of drought prone areas which are often affected by famine and the measures to be adopted for the amelioration of the conditions. Arunachalam (1976), has analysed drought areas by the super imposition of maps of agro-climatic conditions, terrain and soil, irrigated areas and areas identified by administrative authorities of Maharashtra. Subramanyam (1971) has worked out the water balance of some stations and has computed the index of aridity for each individual year for a period of 75 years.

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