Chapter I

Appraisal of the problems
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APPRaisal Oflf THE PROBLEM

1.1 Introduction

Geography deals with spatial distribution of various characteristics on the earth surface. However, in the ancient times geographers were concerned with the identification of the phenomena, which give distinctive character to different places on the earth. They described what they could see. That means it included description of the phenomena observed by them. These phenomena were mainly related to human beings in different places is studied deeply in geography.

Geography involves such a wide range of knowledge that the subject has been divided into two major areas of study. The first of these is physical geography, which is concerned with the physical environment, landforms, weather, climate, soil, plants etc. The second is Human Geography, which is concerned with man’s activities on the surface of the earth. Environmental elements, which have been studied in geography, later on several branches have been developed and were interrelated to each other. Geography is an integrative discipline, which combines natural and social sciences.

The word agricultural comes from a Latin term ‘Agricultura’ which has its origin in the words ‘Ager’ meaning a field and cultura meaning to cultivate, the world agriculture as the ‘science or the art or the practice of large-scale soil cultivation’ in order to produce crops. Agricultural Geography is the description of the art of large-scale soil cultivation with reference to natural environment and human circumstances.
Agriculture is man's one of the oldest and most important primary economic activities. The study of relationship of agriculture with its environment may well deserve a title the science of 'Geoagercultura'. Agricultural Geography can be considered a science in view of its techniques of analysis methods of interpretation and its approaches to the investigation of agriculture. As a science, agriculture geography is concerned with the formulation and testing of hypothesis. Interpretation of spatial distribution and location of various characteristics of agricultural activities on the surface of the earth and measurement of geographic relationship are analyzed in it.

According to Hillman (1911), Agricultural Geography deals with a comparative study of agriculture of countries and condiments. The basic focus of this definition is on the comparison of the agricultural activities of different countries and continents at a macro level. Syman (1970) defines agricultural geography as man's husbandry of the land. Agricultural Geography is the science of agriculturally transformed earth's surface with all its associated physical, social and economic interrelationships as reflected spatially. (André 1981) The subject matter of agricultural geography is the plant cultivation and animal husbandry with associated aspects.

In Modern agricultural geography, the major thrust of geographer is to investigate the spatial variability of agricultural activity. Agricultural land use and productivity are the most obvious aspects of agricultural geography. Agricultural land use means the proportion of area used to grow different crops during the year. It is a dynamic concept and it changes over space and time. Agricultural productivity means the degree to which the economic, cultural, technical and organizational variables are able to exploit the biotic resources of the area for agricultural production. (Singh 1979) It is closely related to the per hectare yield.
The more recent investigations show that agriculture began around 8000 B.C. during the Sumerian times in southwest Asia. According to Zohary (1986), excavations at a number of early Neolithic villages in Near East (Southwest Asia) e.g. Jerichoo, Bethasaida, Hebron, Ramad, Haran, Tell-Aswad, Harmo, and Alikosh etc indicate that by 7000 B.C. cereal crops were being sown and harvested. There are compelling reasons to prove that einkorn wheat, emmer wheat and wild barly were cultivated at Alikosh on the border of Iraq and Iran.

The Mohenjodaro and Harappa civilization were well spread over in a significantly large region stretching from the Himalayan foothills in the north and Yamuna River in the east, Narmada River in the south and the Makran coast in the west. The crops and cattle in the Indus valley were diffused mainly from southwest Asia, though there had been some native crops like legumes and sugarcane. The main crops grown by the farmers of Indus valley were wheat, barley sugarcane, peas, gram and dates, cotton was diffused here around 3000 B.C. Ragi and bajara indigenous to Africa were cultivated in south India in about 1500 B.C. These crops, most probably, arrived in India from Africa through the land route of south west Asia.

At the beginning of the Christian era there had been considerable, inter changes of plants among south Asia, Europe, Africa, India, China and Southeast Asia. Arabs who had been active leaders in the Arabian Sea and Indian Ocean helped in the migration of crops and cereals from one region to another. During the period of ‘Great Age of Discovery’ i.e. thirteenth to Seventieth Centuries, the European navigators discovered sea routes to Southeast Asia and Far East. These navigators helped in the diffusion of American crops into Asia, Europe and vice versa. It was during this period that more complex cropping patterns came into existence in all the agricultural regions of the world.
The Portuguese brought maize, chilies, tomatoes, sweet potatoes and pineapples in India in the early sixteenth century. Coffee was brought to India in 1600 by the Europeans and was planted in Mysore. Tobacco reached India in 1607. There had been very few changes in the agricultural practices and cropping pattern in India, Southeast Asia after the 15th century up to 1965, when the Green Revolution occurred. The traders brought rubber to India from Brazil after 1976. Good quality cotton from Iran and Nile valley spread in India.

1.2 Importance of the Theme Selected:

Agriculture is the back-bone of Indian economy at time of the First World War; agriculture contributed two thirds of National income. However, after the initiation of planning in India the share of agriculture has persistently declined because to the development of the secondary and tertiary sectors of the economy. Agriculture is a largest employment-generating sector. The agriculture sector provides livelihood to about 64 per cent of total labour force. With rapid increases in population, the absolute number of the people engaged in agriculture has become exceedingly large. Development of other economy has not been sufficient to provide employment to the increasing additions to working population. Agriculture is providing raw materials, to various industries of national importance. Sugar industry, Jute industry, Cotton textile industry, vanspati industry are the examples of such industries which depend on agriculture for their development. The entire range of food processing industries is mainly depending on agriculture. Therefore, unless and until the development of agriculture, these industries will not survive.

Considering agricultural product and agro-base industries, agriculture is the base of trades and transport in India. Agricultural product including agro-base industries accounts more than 50 percent of
our exports. The share of agricultural export in total export was 44.2 percent in 1960-61, 30.7 percent in 1980-81 and 17.6 percent in 1992-93. (Indian Economy (1999) Misra, Pure P. 391-92)

In Maharashtra state about 65 percent of the total workers depend on agriculture and allied activities. Government of Maharashtra made remarkable agricultural progress through five years plan. The state ranks second in India about net sown area. Like India and Maharastra the study region of Solapur District is also agrarian economy. In Solapur district more than 60 percent population is engaged in agriculture. The development and expansion of agro base industries i.e. sugar industry, cotton textile industry, dairy industry, oil mills, dal mill is mainly due to local availability of raw material. In the year of 2000, about 58279 hectare area was under sugarcane. Solapur, Barshi taluka are famous for cotton textile and handloom products. Agriculture is the main supports for transport and trade. There are many weekly and daily market centers developed in the district and turnover of study region is based on mostly agriculture.

Cropping pattern reveals that, most of the agricultural land is covered by food crops in the study region. Jawar, wheat and bajara are the important staple crops. With the development of irrigation and other technological factors, commercial food crops like sugarcane, fruits-vegetables are gradually occupying land under cash crops. The change in cropping pattern indicates the change in socio-economic condition of farmers. There is considerable change in the pattern of agricultural land use during last two decades.

Agricultural productivity is the function of a number of factors including physical, socio-economic and technical organizations. All these factors are highly variable and dynamic in both space and time leading to spatio-temporal variations in agricultural productivity. The agricultural
productivity is high in irrigated area in the study region. It is low in the rainfed and inadequate irrigated area. The variability of production and per hectare yield is also high in rain fed area.

1.3 Study Region:

The district has a total area of 14878 sq km. It constitutes 20 percent of the total area of Pune division, 5 percent of the state Maharashtra. For administrative purpose, the district is divided into eleven talukas, which constitute 1150 villages and 10 urban areas. These talukas are North Solapur, Barshi, Akkalkot, South Solapur, Mohol, Mangalvedha, Pandharpur, Sangola, Malshiras, Madha and Karmala. According to total geographical area, Malshiras taluka ranks first and North Solapur the smallest in size. Solapur city is the district head quarter.

The choice of region under investigation is influenced by many considerations. The district occupying southern part of the Maharashtra Plateau, and only the river basins of the Bhima, Nira, Man and Sina occurs suitable and fertile lands.

Secondly, district is more or less, plateau area except some hilly areas in Barshi and Karmala taluka, the remaining parts are flat.

Thirdly, due to flat surface, it is favorable condition for high concentration of agriculture. As a result, these characteristics make this region a district entity and homogenous unit for geographical investigation.

Fourthly out of total geographic area about 92 percent was cultivable land during 2000 but 75 percent area was under cultivation. If irrigation facilities will provided to the area then there will be a scope for increasing agricultural land.
Fifthly, the whole district came under drought prone area. Last two decades shortage/scarcity of water the farmers have changed the trend in land-use pattern. Fruit cultivation is increased in Sangola, Mohol, Madha and Barshi Taluka instead of food grains.

Sixth as graduate and postgraduate people are job less they started tilling land and they adopted modern technology and to cultivate fruits and vegetable instead of their traditional methods, that is why agricultures land use is changed.

Seventh Ujani dam is the only one big project in the study region which was completed in 1980 due to this project 94662 hectares area has came under permanent irrigation and benefited to Madha, Mangalvedha, Pandharpur, Mohol, Malshiras and North Solapur Talukas. Beside this project, Nira right bank cannel runs through Malshiras, Pandharpur Sangola Talukas, has been irrigated 32013 hectares area. The development of surface irrigation due to the major irrigation project has led to bring changes in the agricultural land use. Hence, the study of the use of the land for crop and change in the aerial strength of the same offer a scope for obtaining complete understanding of the agricultural land-use and productivity of the district. In the view of this consideration, attempt is made to analyze the changes in agricultural land-use and agricultural productivity in the study region from a geographic point of view.

1.4 Hypothesis:

The agricultural pattern is determined by physical determinants. Non-physical determinants. They play an important role in the agricultural land use and agricultural productivity in the district. There are spatio-temporal changes in the general land use, agricultural land use and agricultural productivity in the area under study.
1.5 Objectives:

The present research work incorporates the following objectives.

1. To study the physical determinants and to explain the relationship between physical determinants and agricultural operation.

2. To assess Non-physical determinants which are the bases of changes in agricultural land use.

3. To categorize and study the general land-use and find out the scope for extension of cultivation area in future.

4. To map, analyze the pattern of agricultural land use and changes therein as well, as compute the proportion involved in changes.

5. To delimit and analyze the agriculture region in Solapur district.

6. To find out the trend of production and per hectare yield in the study region.

7. To measure and examine the level of agricultural productivity in the area under study.

1.6 Database and Methodology:

The relevant information and data regarding cropping pattern and productivity collected and used for the period of 1975-2000, comes from both primary and secondary sources. The primary data is the first hand data collected through different sources for which special questionnaires were designed. Information was collected through various Talathi Office, Agricultural Officers and farmers.

The broad picture of present pattern of agricultural land-use and productivity of the region is prepared with the help of secondary data
obtained from official statistics such as socio-economic review and District Statistical Abstract of Solapur district. Epitome of agriculture Part-I, District-wise general statistical information of agricultural department, Commissioner of Agriculture Pune, Season and crop reports, Statistical Abstract of State, Report on agricultural census Maharashtra State Part-I and II, Gazetteer of Solapur district, Periodicals, Economic survey of Maharashtra, Statistical Department of Agriculture Commissioner Pune, Agricultural Diary of M.F. Agricultural University of Rahuri, District census handbook of Solapur district and Data Dissemination Wing Office of the Registrar General India 2 A, Manshing road New Delhi 110011 through internet. Data regarding water resources obtained from water and irrigation commission Report Vol II and III, Senior Geologist, Ground Water Survey and Development Agency branch Solapur, and ‘Bhujal Bhavan’ Maharastra state Pune 411005. Data about soil is obtained from soil survey and soil testing laboratory Solapur. Information of percolation tank and K. T. wears is obtained from Z.P. Office Solapur. Data concern drip irrigation obtained from District Superintendent, Agriculture Office Solapur.

Information pertaining to consumption of pesticides, fertilizer, size of operational holding etc. has been collected through questionnaires, personal interviews, and visits to the district and the taluka head quarters in the study area. It is considered necessary to supplement information by in depth micro-studies at village level. For the analyses, purpose villages are selected one from each taluka of the district except South Solapur taluka, by random sample, which are satisfactory representing agricultural condition. A questionnaire is prepared for Talathi-officers and concern person to get the information regarding non-physical determinants such as irrigation, use of fertilizers, pesticides, agricultural implements, HYV, live stock, general land use, agricultural land use, agriculture
productivity. The farmers were interviewed for the same. During the field survey, exhaustive field notes were also prepared which have been used for the subsequent micro level-analysis.

In the first phase of research, the data collected from different sources are processed and analyzed, maps and diagrams are also used for effective analysis of the relevant statistical information pertaining to agricultural aspect of the district concerned. For measuring the actual pressure of population on agricultural land, the relative co-efficient value of over population is computed by taking in to consideration the standard hectares.

For the quantitative measurement of the over all changes in general land use and agricultural land use during the period of 1975-2000 the Weavers Index (1954) technique is used. To study the correlation in different land use categories matrix of co-efficient of correlation method is applied. The Methods of Rafiullah and Doi are applied for delimitation of crop combination in the study region. Bhatia’s method (1956) of location quotient is used for the calculation of crop concentration. To investigate the spatial pattern of crop diversification Bhatia’s (1965) formula is used.

To study the trend of production and per hectare yield the indices of annual rate of growth, linear equation technique and co-efficient of determination technique is applied. To calculate the agricultural productivity the technique introduced by Jasbir Singh (1976) i.e. crop yield and concentration indices ranking co-efficient, M Shafi (1972) and Bhatia’s technique also used. Aggregate productivity is also calculated on the basis of index values of different productivity. Category region were observed and the maps were prepared.
1.7 Review of Literature:

For the present investigation, the literature of different types has been referred. The role of the Geographer is very vital in synthesizing of other disciplines and in presenting comprehensive picture of an issue that may then pass on to the planners for retouching.


S.D. Shinde (1972) studied 'the Panchaganga basin: As study of some aspects of agricultural geography'. In this paper typical topography, climate, edaphic conditions and agronomics practices has been analyzed which have conditioned the agricultural pattern in this region. The intensity of cropping index and the ranking of crops in the basin area under study has been determined.

Majid Hussain (1969): studied the Geographical basis of tube well irrigation in Upper Ganga - Yamuna doab. In this paper the geographical factors helpful in the drilling of tube wells in the area have been assessed and the effect of tube well irrigation on the changes in the land-use pattern have been shown. The paper includes four maps, showing the subsurface configuration of the area and the area under commands of canals and tube wells. The proportion of cropped land irrigated by tube wells also have been depicted in the map. The study can be utilized for the further extension of canals and small irrigation project in the area.

S.D. Shinde and M.G. Jadhav (1978) studied use of energy in agriculture in Sangli district paper deal with the use of energy in agriculture in southern Maharashtra Sangli region. They had examine the availability of energy in terms of hoarse power and hoarse power hours and their spatial distribution. The index values both for hoarse power and horse power hours for each Talukas are obtained by using the following formula in which Taluka is considered as an unit.
Where,

\[ 1 = \text{index value both for H.P. and H.P. Hours per hectare.} \]

\[ PT = \text{per hectare availability of H.P. and H.P.} \]

\[ \text{Hours in the Taluka.} \]

\[ PD = \text{per hectare availability of H.P. Hours in the district.} \]

**Suresh D. Shinde** (1974): studied A Geographical Appraisal of Horticultural Resources and potentials. The purposes of this study is firstly, to analyze the spatial spread of major fruit crops and secondly to suggest generalized scheme of horticultural zones for planning development in the entire Konkan tract, mainly in the context of its typical environmental setting.

**Raiz Aktar** (1974): studied the cropping pattern in the Kumaon region.

**Surendra Singh and V.S. Chauhan** (1977): studied Measurement of Agricultural productivity of Uttar Pradesh. In this paper they emphasis on net cultivated area for considering agricultural productivity. To measure agricultural productivity they apply standard yield index, weighted crop equivalent index, cropping intensity Index, Agricultural worker Index.

**S.D. Shinde, M.G. Jadhav, C.T. Pawar**: studied Agricultural productivity in Maharashtra plateau. They utilized the district wise average production figures for as many as 21 leading crops and their prevailing wholesale prices at taluka markets between 1971-75 from the district statistical abstracts. The production of all the crops from each
aerial unit was converted into money value which formed the basis for measuring agricultural productivity in the region they applied following formula.

\[
\text{IP} = \frac{\text{DP/RP}}{\text{CAD/CAR}} \times 100
\]

The indices obtained were arranged in an ascending order and districts were divided in five categories that very high productivity, High productivity, Moderate productivity, Low productivity, very Low productivity.

**M. D. Tawde** (1978): studied geomorphic studies and agricultural land use planning. In this paper he emphasis upon the necessity to understand the morpho metric patterns of the region and to seek a possibility of positive land use planning. His Hypothesis is that if a good agricultural land use planning is done based on agro morphic studied of region, the land use regions, thus planned, would help promote rural economy by maximum utilization of the potential land resources. For this he studied geomorphic pattern of the south konkan region.

**M. Sambasive Rao and K. Kalavathy** (1983): studied water balance and cropping pattern in Madurai District, Tamilnadu, for this paper the data is collected for 50 years period from 27-raingage stations distributed in the District. Mean seasonal and annual distribution of rainfall, variability of rainfall and precipitation ratio are analysed from eleven station the temperature data collected for calculating thermal efficiency. The method of Thornthwaite and Mather was adopted to calculate potential-evapotranspiration (PS) using both precipitation and PE data, other relevant indices are computed and water balance graphs were then constructed for each station. Based on crop-acreage of 1976-77
at block level, the concentration indices of selected food crops and non-food crops are worked out.


V. S. Data and S. C. Gupte (1984) studied association between agricultural land use and physical-economic phenomena: A Multivariate approach. In this paper an attempt is made to explain how and to what extent do the factors of physio-socio-economic environment influence the agricultural land-use in Poona district. In order to investigate the association between land-use types on one had and physio-cultural dements on the other hand. The fourteen variables like net shown area, gross cropped area, rice, Jowar, Bajara, cash crops, irrigated area, accessibility, own cultivators, density of population, slope <3, slope>20 distance from crest, distance from major streams were used as dependent and new seven variables. First seven variables were used as dependent and next seven variables used as independent variables.

K.S. More and F.R. Mustafa (1984): studied irrigation requirements and development in Maharashtra. The objectives of this study were (1) To develop a method by which to identify the need for irrigation facilities. (2) To identify there area of varying irrigation requirements (3) To locate the area of varying degree of development of irrigation facilities. Their study is depend on mainly these factors namely annual average rainfall, rural population density and percentage of area cultivated.

H. Chandra Sakaram and Balkram (1985): studied groundwater: A parameter in determining land use pattern in Siwana region, Western Rajasthan. For this paper they done land-use survey and mapping by interpreting topographical maps, air photos on scale 1:40,000 land use at imagery (land 4,5,6 and 7) through additive colour viewer (is) and visual
observations. They were also used secondary data with field data for arriving at certain conclusions.

**Hari Sankar Gupta** (1986): studied Relation between cropped area and irrigation in Madhya Pradesh. In this paper focus is on inter relationship exists between the area cropped and the area irrigated, quantitative and qualitative aspects had been taken into account for the assessment of the significance district.

**Nandini Chatterjee** (1986) studied impact of irrigation on agriculture in southern west Bengal. The objective of this paper was to make an in deep study of the impact of irrigation on the use of land. She analyzed qualitatively and qualitatively the role of irrigation, based upon the detailed survey of twenty sample villages.

**C.Roy Choudhary, R.M. Pofali, J.C. Bhattacharjee and K.B. Mendhekar** (1986) studied landforms and land use in Nagpur District. In this paper, they described the characteristics of each landform units, associated soil and the land use. They highlighted the problems, and finally suggested a suitable land use pattern.

**Rabindranath Bhattacharya** (1987): studied temporal and spatial changes in the cultivated area of West Bengal. In this paper author drawn two set of curves, period of 68 years (1905-06 to 1973-74) considered to get a clear picture regarding the net sown area the area sown more than once in all district. For scanning the spatial relationship map showing the net sown area for three periods, namely 1905-08, 1911-14 and 1973-74 and a fourth map depicting the average figures for the last sixteen years (1957-58 to 1973-74) were drawn. The same exercise is carried out for the area shown more than once also.

**K. Bagchi** (1987): the studied, the studies on land-use in selected regions of Eastern India. The objective of the author was hinter land of Haldia port was to find out the impact of the emerging Haldia port in its
immediate neighborhood. He had been considered the area under study, as a developing region and the aim of the project was to Assess the impact of development on the changing land use pattern of the hinterland.

**Abani K. Bhagabati** (1989): studied spatial pattern of land utilization in Nalbari District, Assam. In the paper attempt was to analyse the spatial pattern of land utilization in Nalbari district of Assam by considering mouzs as the spatial units of investigation. the study stresses on the urgency of the need of a scientific land use planning in order to check further deterioration of the structure of nature culture interaction in the area.

**P.S. Pragathi and Y.V. Ramanaih** (1989): studied Agricultural regionalization: A Theoretical perspective and its applied significance. The paper is descriptive. An tempt had been made to examine all the methodological rambles of agricultural regionalization in order to discern and describe there aerial classification of agriculture. In this paper, they described agricultural rationalization and agricultural typology, the concept of agricultural region, methods of agricultural regionalization, special purpose agricultural regions, general purpose agricultural regions and applied significance of agricultural rationalization.

**S.D. Shinde** (1980): studied, Agriculture in an under developed region: A Geographical survey. This entire work is divided in 3 part and 10 chapters. First chapter deal with Environmental setting of agriculture relevance the second Chapter is socio-economic factors as bases of farming. Third chapter deal with general land use pattern. Forth chapter is patterns of cropland use. Fifth chapter deal with patterns of distribution and dynamic in Horticulture. Six is animal husbandry. Seventh, deal with Economics of Agricultural activity. Eight deal with crop combination regions. Ninth deal with Regional disparities in land uses efficiency and level of Agricultural development and Tenth is conclusion.
K.S. More (1981): studied changing pattern of agricultural land use in Kolhapur district. Entire work is divided into eight chapters. First deal with physical setting, second deal with socio economic factor as bases of farming, third deal with land use pattern and changes forth is cropping pattern and changes there in fifth is spatial organization of agriculture sixth deal with cropping pattern Regions and changes there in seventh deal with technological determinants and agricultural changes. Chapter 8 deals with conclusion.

Mohd Azimuddin Khan (1992): studied impact of tube-well irrigation and agriculture development entire work is divided into seven chapters first is Methodology and profile of the study areas. Second is irrigation development in India-an overview. Third is impact of tube well irrigation on socio economic conditions of the respondents. Fifth is impact of tube well irrigation on changing cropping pattern crop yield and farm income. Sixth is multi-variant analysis of productivity, expenditure and profit of selected crops. Seventh deal with conclusion.

D. B. Gambire (2000): Studied Critical study of Agricultural productivity in Osmanabad District (M. S.). Entire work is divided into eight chapters. In first chapter, he throws light on meaning of agriculture and agricultural geography, aims, objectives, methodology and review of literature. In the second chapter, he has considered physical determinants where as non-physical determinants of agriculture are discussed in third chapter from the view point of agriculture development of the study region. Fourth chapter throws light on general land use on the other hand fifth chapter deals with agricultural land use. Sixth chapter has thrown light on production and productivity of the agricultural crops of the study region. Seventh chapter is devoted for the study of general land use and agricultural land use of the selected villages.
B.R. Fule (2002): studied pomegranate cultivation in Solapur district entire work is divided into nine chapters. First chapter deal with introduction. Second is with physical determinant of fruit cultivation. Third, consist Socio-Economic determinant of fruit cultivation whereas fourth deals with land use. Fifth, deal with fruit cultivation in Solapur district. Seventh is pomegranate cultivation. Marketing of pomegranate is described in Eighth whereas problems and prospects of pomegranate cultivation in Ninth.

1.8 Scheme of Chapters:

The present study deals with *Changing Pattern of Agricultural Land-use and Agricultural Productivity in Solapur District*: A Geographical Analysis

* Chapter first deals with an introduction of Agricultural Geography in brief, an importance of the theme selected, about study region, hypothesis, objectives, methodology and review of literature in brief are included in this chapter.

* Chapter second deals with location, physiography, river systems, climate, soil and water resources and their relationship with agricultural operation of the study region.

* Third chapter comprises an analysis of demographic factors, such as size, distribution, literacy of population, technological factors such as irrigation, agricultural implements, chemical fertilizers, High Yielding Variety of seeds, consumption of pesticides. Cultural factors like landing ownership and tenure, landing holding, size of cultivator’s holdings, farming workers, livestock, infrastructural services and composite index of major non-physical determinants.
In the fourth chapter land use classification, general land use pattern and changes in area under forest, area not available for cultivation, other uncultivable land, other fallow land, current fallow land, net area sown, correlation between different land use categories, area sown more than once, gross cropped area and scope for extension of cultivation area in future is analyzed.

Agricultural land use with analysis of cropping pattern, irrigated cropping pattern, inter correlation between different categories of agricultural land use, intensity of cropping, crop combination and crop concentration and crop diversification are included in chapter fifth.

Sixth chapter comprises an analysis of yield and production of selected crops and changes therein, co-efficient of variation of yield and production, trend of yield and production of selected crops. indices of yield and production of selected crops, taluka wise crop productivity of selected crops and aggregate productivity.

The efforts are made to support the present study by selecting villages for micro level analysis the chapter seventh is devoted to the case studies of sample villages of the district. The chapter comprises physical setting, non-physical determinants, land use, productivity and problems of selected villages.

In the chapter eight the brief summary and conclusions have been presented with meaningful and viable suggestions.
References:

2. M. Hussein Pp. 19 & 20
3. Economic Geography of India. V.S. Gananathan Pp. 21
5. India. 2004 P.60,795.