Chapter – I

AGRICULTURAL GEOGRAPHY AN OVERVIEW

1.0 Introduction

Agriculture is as old as the man and his civilization. It is very hard to trace when and where it has begun. But it is the known fact that, he lived by hunting, fishing, and gathering in the beginning. It is also believed that, when the man was there in a cave, during the Paleolithic period, hunting the animals and gathering the fruits and nuts were his occupations. During the Stone Age period, the hunter's place was at mazin in the soviet union\(^1\), at Mallaha in Israel and at Suberde in Turkey\(^2\). During the Neolithic period, he moved; out of the cave and started sedentary way of life apply by involving himself in cultivation of land.

The history of the agriculture depicts that, agriculture has begun with domestication of plants and animals in the Middle East countries. The einkorn wheat (Triticum Monacoccum), emmer wheat (Triticum Dicoccum), and barley (Hardeum Spontaneum) were cultivated about 7000 B.C. at Alikosh on the borders of Iraq and Iran\(^3\). There is also reference of beans (Phasealus), peas (pisum), bottle gourds (Lagenaria), and water chestnut (Trapa) may have been grown at the spirit cave in north Thailand, about 7000 B.C. In America, pumpkins (cucurbita) and gourds (Lagennaria) are known to have existed in North East in Mexico about 7000 B.C. Where the agriculture have developed independently in northern and south eastern part of Asia about 7500 B.C. and in central Mexico about
6500 B.C. The practice of agriculture has spread from the above mentioned countries and from the Middle East to other parts of the world. Then the people who were skilled at making things like pots, cloths or tools and weapons were engaged in their own special activities. In these days, agriculture was developed independently by different groups of the people in different parts of the world. Some of them were remained in their own occupation like hunting and gathering.

Agriculture is the age-old occupation of human beings, therefore any country if we see, our almost half of the economic status depends upon agriculture. Agriculture also supports to many industries by providing raw materials to them. Development of agriculture always depends on fertile soil, rainfall, water resources, suitable climatic condition, leveled topography, water vapour or humidity in the atmosphere, fertilizers and chemicals improved seeds and modern form technology etc. About 2/3 of total population is fed by only agriculture and remaining 1/3 of the population is fed by other sources like industries etc. Even though, we are living in industrial age, still agriculture is the chief occupation of man and is the backbone of country’s economy. More than 50% of labour force of the world is directly engaged in agriculture alone. The types of agriculture differ from one region to another region and it is mainly because of temperature, rainfall, soil fertility and topography etc.

The rational use of land and water introduction of high yielding varieties of seeds, fertilizers, pesticides, changes in cropping patterns are all the needs of the present day agriculture, in the agrarian
countries of the world. Even though some revolutionary changes are taking place of irrigation facilities and introduction of modern tools and equipments and form technology. Still there is a long way to go in future to improve the agriculture in backward countries of the world.

The European voyages of discovery that began in the 1400’s A.D. affected the agriculture throughout the world. American Indians had developed advanced system of agriculture. In various parts of Americas, Indian farmers grew cocoa beans, corn, peanuts, peppers, rubber trees, sweet potatoes, tobacco and tomatoes. Europeans in turn brought their seeds, livestock and farming tools and methods to the regions they explode and settled.

By the late 1600 A.D., England, France, the Netherlands, Portugal and Spain had colonies, throughout America. In tropical regions, the colonists established plantation crops, like cocoa beans, coffee and sugar for export. By the end of 1700 A.D. Maryland, Virginia, South Carolina and Georgia were growing rice, sugarcane, tobacco etc. The French who controlled Canada from 1500 A.D. to 1763 A.D. had encouraged farming.

Rice growers such as China, India and Japan had greatly increased their rice production from 1600 A.D. to 1800 A.D. by improving through the methods of irrigation. But in 1600 A.D. the wealthy land owners of Asia had began the system of tenant farming. Which lasted in the mid of 1900 A.D.⁴
1.1 Agriculture in the 19th Century

Since, the 1800’s, science and technology have helped the agriculture to produce more and more food grains. Science and technology have contributed to the great increase in farm production in three main ways. They have:

i) Provided farmers with new sources of power,

ii) Producing improved plant varieties and improved lives (varieties) or breeds of livestock, and

iii) Developed new agriculture chemicals.

1.2 Agriculture in the 20th Century

Agriculture technology has developed more rapidly in the 20th century. With the result the Africa and Asia have initiated large-scale efforts to improve their agriculture. The modern agriculture is practiced throughout the world in general, India and study area in particular with tractors, unit machinery, tomato harvesting machinery, equipments, automobiles, trucks, medicines spraying pumps, harvesters, fertilizers, insecticides, herbicides, chemicals to control diseases, corn pickers, etc.

1.3 Agriculture in India during British Period

British did not come to stay and make India their new home. They came to rule, to exploit, to extract as much as wealth possible. But at the same time, they thought how to make a commercialization of agriculture.
The main changes brought in India during the British period that have direct bearing on agrarian transformation are now discussed under two headings,

i) Changes in the institutional structures, and

ii) The technological upgradation of agriculture.

In the formal type of land system, they introduced three types of land settlements such as Zamindari, Ryotwari and Mahalwari. In Ryotwari areas, absentee landlords were given right to collect the land revenue. It was believed that, this newly created class of landlords would initiate modern farming practices. Under the Ryotwari and Mahalwari areas, the cultivating sections of the village community had direct land rights and even there leasing in and leasing out of land took place on a large scale, as land passed into the lands of non cultivators due to indebtedness and other reasons.

During British period, few changes in technology of production in agriculture took place. The upgradation of the irrigation came in primarily, as a result of frequent famines, during the late nineteenth and early twentieth century. British undertook large investment in irrigation and had created a reasonable network of canal irrigation in Punjab, Sindh and Uttar Pradesh in 1920’s. Some agricultural Universities were instituted and research was encouraged. It was during the British period, the foundations for research and scientific development in agriculture were laid down.
1.4 Agriculture in Post Independent Period

It was only after the independence that, a planned attempt was made to bring about agrarian transformation in India with a view to improving the lot of peasantry. The policy makers adopted a two-fold strategy for agriculture. The first strategy was to implement land reforms and the second element of the national policy was that, large investments were undertaken in irrigation, power and other rural infrastructure.

Broadly speaking, two periods can be distinguished in the history of development during the post independence. The first period roughly extended from 1951 to 1961. During this period, the main emphasis was to bring the institutional changes and land reforms and to expand the irrigation infrastructure. In the second period, which extended from 1960-61 onwards, the main emphasis was on increasing yields through modern inputs and improved methods of production. In this period, the role of technology contributed a major input in agriculture.

1.5 Indian Agriculture

Indian agriculture is one of the oldest occupations and it is the main occupation of more than 65% of working population of the country. It is continued in its old fashion except some rich farmers and farmers with irrigation tracks. After the independence of our country, agricultural development launched through five year plans, but the effects were not felt till 1960. Later on it was realized that, there is no way to develop Indian economy unless there is an agricultural
development. Then new methods of cultivation i.e., Scientific and technological methods, have been used for agricultural operations wherever possible. Also the ‘Package programme’ often called as the “green revolution” is introduced first time in Indian agriculture through high yielding varieties of seeds in the year 1960. New agricultural practices have, however, broken the traditional institutions of rural India and have created grate disparities in the assets and income of different parts of the countries, at present agriculture plays an important role in Indian economic status. Now, geographers are taking much interest in regional disparities in agricultural development, crop productivity, agricultural income, agricultural infrastructure etc.

Indian agriculture has undergone a revolutionary change in recent years. The production is also substantially increased. There are few district/river basins zones those are highly developed, some are moderately developed, and still many have to develop in agriculture. It is interesting to note that, food grain production increased by more than two-times from 50 million tons in 1950-51 to 150 million tons in 1983-84, 199.06 million tons in 1999-2000 and 241.56 million tons in 2010-11 in the entire country.

Indian geographers have made a remarkable study in the field of agriculture. In this connection, there are many geographical journals like Indian geographical journal (the first professional journal in the country), the organization of the madras geographical association etc., through which the studies on agriculture are brought to the notice of the learneds. At the same time, establishment of university departments
of geography at Aligarh (1931) Madras (1932) Calcutta (1941) and Varanasi (1946) have played an important role in the development of agriculture branches of geography. Regional studies on agricultural theme are intensively taken up and studies at Macro, Meso and Micro levels are also involved. During the last 50 years, notable work on agricultural geography have come from the efforts of the distinguished geographer such as; Gopalan S.K. (1937) Mukhejee B.N. (1942), Deshpande C.D. (1942), Dayal P. (1950), Mukherjee A.B. (1956), Shafi (1960), Mishra S.N. (1964) and many others. Among the Indian geographers who have contributed in the field of land utilization agriculture planning along with the case studies, the following are noteworthy; Mishra R.P. (1969), Reddy N.B.K., Noor mohammad, Vithal Reddy, Tiwari V.K., Majid Hussain, Mandal R.B., Roy B.K., Chaterjee S.P., Rafiullah S.N., Choudhari N.R., Sinha B.N. etc.

Apart from the above mentioned eminent scholars there are many scientific organizations that have been engaged in agricultural research. They are National Atlas organization, Indian statistical institute and central arid research institute, National Atlas and thematic mapping organization Calcutta, Atlas of agricultural resources of India, (36 plates), Indian concord of Social Science research (ICSSR), Irrigational Atlas of India (35 plates), International crop research Institute for Semi-arid tropics (ICRISAT) etc.

1.6 New Agriculture Strategy and Green Revolution

Since, the mid-1960’s, the traditional agriculture practices are gradually being replaced by modern technology and farm practices in
India and a veritable revolution is taking place in our country. Initially
the new technology was tried in 1960-61 as a pilot project in seven
districts and was called Intensive Agriculture District Programme (IADP).
Later, the high-Yielding Varieties Programmes (HYVP) was also added
and the strategy was extended to cover the entire country. This strategy
has been called by various names. Modern agricultural technologies,
seed fertilizer - water technology, are simply part of green revolution.

The term ‘green revolution’\textsuperscript{12} has been used to indicate higher
production through enhanced productivity per hectare. Such a vertical
growth in productivity, rather than a horizontal expansion in area is
the only pathway available to us during this century to meet the food
and livelihood needs of a growing population.

As a result of the new agriculture strategy\textsuperscript{13}, area under
improved seeds has gone up from about 15 million hectares, during
1970-71 to nearly 75 million hectares in 1995-96, in the year 1996-97, little bit increased trend i.e., 76.42 million hectares. The new
varieties are of short term duration and consequently, instead of
growing one crop, two crops and sometimes, even three crops are
grown. In the case of wheat, enthusiasm has prevailed among farmers
in Punjab, Haryana, Delhi, Rajasthan and Western U.P. for the new
Mexican varieties like Lerma Roja, Sonara-64, Kalyan and P.V. 18 and
a situation developed in which the demand for seeds by the farmers
exceeded the supply. But, in the case of rice, the new varieties like
T.N. 1, IR-8, Tinen-3 and ADT-17, which were tried and found
successful on a laboratory scale, could not be successfully applied on
the field. Some breakthrough, however, has been achieved in rice areas by developing better and more acceptable varieties like IR-8.

Traditional agriculture relies heavily on indigenous inputs such as, the use of organic manures, seeds, simple ploughs and other primitive agricultural tools, bullocks, etc. Modern technology, on the other hand, consists of chemical fertilizers, pesticides, improved varieties of seeds including, hybrid seeds, agricultural machinery, extensive irrigation, use of diesel and electric power, etc. Since 1966, the use of modern agricultural inputs have increased at a compound rate of 10 percent per annum in contrast to the traditional inputs rising at the rate of only one percent per annum, during the same period.

Green revolution has introduced, new agriculture technology and its uses such resources like fertilizers, pesticides, agricultural machinery etc., which are produced outside the agricultural sector. As a result, industries supplying the modern farm inputs, are growing at a rapid rate. Massive programmes of farm mechanization and irrigation have also led to an increase in the consumption of electricity and diesel in rural areas of India in general and study area in particular.

The major achievements\textsuperscript{14} of the new strategy in green revolution to increased the production of major cereals, viz., wheat and rice. There is increase in rice production from 89.68 million tons in 1999-2000 to 95.98 million tons in 2010-11. The yield per hectare has also recorded improvements from 1986 Kgs. in 1999-2000 to nearly 2239 Kgs. in 2010-11.
The production of wheat was 76.37 million tons in 1999-2000 and it rose to 86.87 million tons in 2010-11. This increase can be attributed to an extension of the area, but the yield per hectare rose from 2778 Kgs. to 2988 Kgs.

It is interesting to observe that, the ratio of wheat to rice has steadily increased from 1999-2000 and also in 2010-11, to over 17.42 percent in 1999-2000 and nearly 10.49 percent in 2010-11. It is due to the impact of green revolution in the country. Even though rice continues to be the most important cereal in the country, wheat is catching up fast.

1.7 Classification of Agriculture

G.G. Chisholm classified agriculture in the last 1890’s. It was nothing more than a long list of crops and animal products divided into for broad latitudinal groups. His classification was based on the goods produced. So, it was criticized severely. Later on, a German geographer H. Engelbrecht, in the year 1930 published a map entitled, “Agricultural Zones of the Earth”, which distinguished between twelve main types of farming. In the year 1936, Derwent Whittlesey devised a classification that became widely accepted because; it avoided the weaknesses of the earlier system. (Table 1.1)

Among the above mentioned classification, the study area comes in the subsistent type of agriculture. This study aims to contribute the agricultural factors and cropping pattern and crop combination of the district, which is the micro-level study in the agricultural geography.
**Table - 1.1: Whittlesey’s Classification of Agriculture**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Whittlesey’s Categories</th>
<th>Simplified Version</th>
<th>Main Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Nomadic Herding</td>
<td>Nomadic Herding</td>
<td>Subsistent categories</td>
</tr>
<tr>
<td>2.</td>
<td>Shifting Cultivation</td>
<td>Shifting Cultivation with some scattered sedimentary tillage</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Rudimental Sedimentary tillage</td>
<td>Intensive tillage without paddy/rice</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Intensive subsistence tillage with rice dominant</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Intensive subsistence tillage without paddy/ rice</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Subsistence crop and live stock forming</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Mediterranean Agriculture</td>
<td>Mediterranean Agriculture live stock ranching</td>
<td>Subsistence/ Commercial</td>
</tr>
<tr>
<td>8.</td>
<td>Live stock ranching</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Commercial plantation crop tillage</td>
<td>Tropical and Sub-tropical cash cropping</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Commercial grain reforming and group farming</td>
<td>Extensive grain farming</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>Commercial live stock and crop farming</td>
<td>Crop and live stock farming</td>
<td>Commercial and semi-commercial</td>
</tr>
<tr>
<td>12.</td>
<td>Commercial dairying</td>
<td>Dairying</td>
<td>-</td>
</tr>
<tr>
<td>13.</td>
<td>Specialized Horticulture</td>
<td>Specialized Horticulture</td>
<td>-</td>
</tr>
</tbody>
</table>

### 1.8 Major Classification of Agricultural Regions of India

The major classification of Indian agricultural regions are based on topography, soil, climatic conditions, land use pattern, water supply, farming practices, crop combination and agricultural productivity. Agro-economic factors are also taken into consideration for classification of agricultural regions.
In India, various attempts have been made from time to time for agricultural regionalization of the country. These attempts were made by some individual scholars and organizations-like:

1. Dr. M.S. Randhawa,
2. P. Sengupta and
3. Planning Commission etc.

1. **Randhawa’s Agricultural Regions**

   The great and well-known agricultural scientist Dr. M.S. Randhawa has divided India into five main agricultural regions on the basis of climate, crops and live stock animals etc.

   These regions are -

   i) The temperate Himalayas Region.
   ii) The Dry Northern Wheat Region.
   iii) The Eastern rice Region.
   iv) The Malabar Coconut (Western West) Region.
   v) The Southern Millet (Medium Rainfall) Region.

2. **P. Sengupta Classification**

   In 1968 P. Sengupta has outlined four agricultural zones or Macro-agricultural regions, eleven meso-regions and sixty micro-regions in ‘Economic Regionalization of India’. The macro-regions are;

   i) Himalaya’s Agricultural zone
   ii) Dry Agricultural zone
   iii) Sub-Humid Agricultural zone and
   iv) Wet Agricultural zone.
The three zones are based on rainfall distribution except the Himalayan zone.

3. Planning Commission Scheme

The planning commission has divided the country into 15 Agro-climate regions i.e., on the basis of Agro-climate factors like type of soil, rainfall, temperature and water resources etc.

These regions are –

i) Western Himalayan Region
ii) Eastern Himalayan Region
iii) Lower Gangetic Plains Region
iv) Middle Gangetic Plains Region
v) Upper Gangetic Plains Region
vi) Trans - Gangetic Plains Region
vii) Eastern plateau and Hills Region
viii) Central Plateau
ix) Western Plateau
x) Southern Plateau
xi) East Coast Plains
xii) West Coast Plains and Ghats Region
xiii) Gujarat Plains
xiv) Western Dry Region
xv) The Islands Region.

1.9 Concept and Approaches to Agricultural Geography

Agricultural geography is one of the important branches of economic geography and draws its subject matter both from the
physical as well as social sciences. Geographers with their usual training and background is somehow able to cover in their field, the multitudinal facts of the over-widening and inter-disciplinary field of agriculture. Now the field of geography is changing from inventory, narrative and descriptive to an analytical, quantitative and predictive science of any items spread over the surface of the earth. Hence, the field of agriculture geography is also changing from inventory to a predictive science of crops and live stock and forecast about their trend. Since agriculture is one of the primary economic activities, the study and relationship of agriculture with its environment may well deserve the title “The Science of Agriculture”.

Geographers are also very interested in studying various aspects of agriculture at Micro, Meso and Macro levels. The specialists have gradually developed the subject matter of agriculture geography with the help of modern, sophisticated and dependable tools of investigation and analysis. As a science, agricultural geography is concerned with the formulation and testing of hypothesis, interpretation of spatial distribution and location of various characteristics of agricultural activities on the earth and the measurement of geographic relationship with them. As a science it also seeks to identify, describe and clarify the problems of agriculture against a geographical backdrop.

1.10 Scope of the Subject

The potentiality of a region depends upon the intensive and extensive growth of agriculture for the well being of human society. The growth of this aspect brings economic prosperity through better
agricultural production, planned location for industries, concentration of population and developed communications. Thus, one cannot think of any progress without improving conditions of people. Agricultural land use and industries are the immense value in any scheme of regional development and planning. Agriculture included land devoted to the production of cultivated plants, crops and rearing of livestock. However, some writers restrict the term agriculture only to the growing of crops alone. As such the scope of agricultural geography includes regional agricultural analysis, food and commercial crops, problems of agriculture and planning, the ownership of agriculture land, agro-climatology, agricultural region, land classification, land conservation, crop combination levels of agricultural development and ultimately supply of food in relation to population growth.

The concept of agricultural geography is generally based on the following ideas of agricultural economics.

1) The use of resource of environment, space, time, property, goods, techniques and information.

2) The scarcity of land resource or agricultural commodity on a particular space and time which provides

3) Improving the quality of agricultural land for better production of food grain and cash crops.

4) Exchange of agricultural goods and landed property rights which play an important role in subsistence agriculture for economic development.
5) The choice of alternate enterprises, farming systems and methods of agricultural practices, transport network and market behaviour of agricultural goods.

On the basis of these ideas agricultural geographers are interested to study on two levels.

1) They are interested in barren fields, soil fertility, water resources, fertilizers, irrigational facilities, cultivation and production of individual crops with high yields. Marketing of agricultural goods and animal rearing.

2) Also geographers are concerned with the functional relationship of these structures that give rise to the complex and dynamic character in agricultural practices. With the help of these two levels of agricultural studies, the principles of agricultural geography are:
   i) Principles of comparative advantage
   ii) Law of diminishing returns
   iii) Principles of economic rent
   iv) Minimization of effort and input
   v) Maximization of production
   vi) Protective space and optimization of crops
   vii) Optimization of quality of produce in relation to environmental factors and
   viii) Principles of agricultural typology.

While studying agricultural geography more attention is given to three sets of relations. They are;
i) Between the physical environment and agricultural operations, a physical environment exerts upon agricultural operations.

ii) Between Socio-economic and agriculture space, as Socio-economic factors affect the intensity of land use, selection of crops, farming methods, relationship between cropping and livestock raising etc.

iii) A resemble of historical relationship to find out the causes of stagnation in agriculture in the past. These would assess the degree of change from subsistence to commercial type of farming.

### 1.11 Significance of Agriculture

Agriculture occupies an important place in the Indian economy and despite of the concerted industrialization in the last five decades, agriculture continues to be a dominant sector of the Indian economy. Agriculture being the largest industry in the country, it covers an area about 193 million hectares of cropped area and (even in 2006-07) provides employment to more than 65 percent of the total labour force in the country. Fluctuations in agricultural output, has an important influence on the state of the national economy. The share of agriculture in gross Domestic Product (GDP) has been in the range of 52 to 55 percent during 1950-51 to 1960-61. The share of agriculture indicated a sharp decline and reached a level of 26 percent in 1996-97 and 13.7% in 2012-13. The share of agriculture in the GDP is still dominating as compared to other advanced countries like USA (1 percent) and United Kingdom (1 percent).

Agricultural mechanization is one of the important means, introduced during 20th century, for achieving agriculture productivity.
A new technology and using modern equipments in agriculture aimed at augmenting agricultural production. Towards this end, the various programmes and schemes were carried out. For instance, in Karnataka, the programmes like Women and Youth Training Employment (WYTEP) was introduced in 1982-83, covering all the districts. It was aimed at training women and youth in the application of relevant technology in agricultural operations and thereby bringing them into the mainstream of agricultural activities. In the same line, High Yielding Varieties Programmes (HYVP) was introduced during 1965-66, with a view to achieve self-sufficiency in food grains. During 1990-91, an area of 31.57 lakh hectares was covered under the programmes. Similarly, Dry-land Development Programme (DDP) was introduced aiming at minimizing risk in rainfed farming and inducing investments in the use of inputs such as improved seeds, fertilizers, pesticides and so on.

The economic survey 1998-99 has expressed grave concern at the low growth rate in food grains output during 1990s, which has been at only 1.72 percent being just equal to the annual exponential growth in population. In 1990s, the annual growth rate in agricultural production has been 3.54 percent. The survey noted that, the decline in food-grain production in 1997-98 to 192.4 million tons from a peak level of 199.4 million tons in 1996-97 increased to 241.56 million tons in 2010-11. The food-grain production increased to 38.8 percent compared to 1997-98 due to improved agricultural methods and government policies.
The sustained and broad based growth of agriculture is considered very essential for elevating poverty, generating incomes and employment, assuring food security and sustaining a buoyant domestic market for industry and services. In this direction, the Government of India has come out with new agricultural policies. These aim at dismantling all controls that hinder maximization of farm income future trading in all important agricultural products to minimize market fluctuations allowing heading of risks facilitating flow of credit to farmers against pledging of their produces and keep agriculture outside the regulatory and tax collection system. The overall thrust of the policy is to achieve an annual growth rate in excess of 4 percent to pave the way for not only meeting the domestic demands, but also creating surplus for exports. Furthermore, a very high proportion of working population is engaged in agriculture as it is the main source of livelihood. The total cultivators and farm labourers (cultivators, agriculture labourers, livestock, forestry, fishing and plantations etc.), together constitute around 68.8 percent (151.9 million) in 1981 and 67.8 percent in 1991. In the year 2001 constitute around 39.30 percent (1025.25 million) and 39.79 percent (1210.85 million) of the total working population in the year 2011. Where as in developed countries, it is less than 10 percent of the working population, for instance in USA, it is 2 percent, and in the U.K., it is 2 percent and in France 8 percent. It has been the source of raw materials to our leading industries. Small scale and cottage industries are also depend on agriculture for their raw material. The dependence
of industrial growth, on agricultural output is clearly brought out that, one percent increase in agricultural production enhance industrial production by about 5 percent.

Importance of Indian agriculture also extends to export trade. The exportable agricultural products interalia are coffee, tea, oil cakes, tobacco, cashew kernels, spices, sugar, raw cotton, fish and fish preparations, meat and meat preparations, vegetable oil and fruits etc. They account for more than 90 percent share in agricultural exports.

1.12 Analytical Approach towards the Study

Land is one of the important resources which plays an important role in determining man’s economic, special and cultural progress as it is evident from the socio economic history of different nation’s. Planners and geographers should plan, how to use land in respect of various natural aspects and they should suggest proper utilization of available agricultural land. A systematic framework and survey is needed for up-dating land use and land cover maps which will help planners and agricultural geographers to plan for further land use. “Land use data are needed in the analysis of environmental processes and problems that must be understood if living conditions and standards are to be improved or to be maintained at current level”17.

Various departments in the state and central government, university departments and private sectors have been trying to collect data related to land resources for last many years, but their work, mostly were independent without any co-ordination and resulted in certain amount of duplication. Because of the slow process of

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collection of data, some time will become out dated and this will lead
to failure of plans. There are very few organizations like National Atlas
and the Thematic Mapping Organization, All India soil and land use
survey, Directorate of economic and statistics, Department of
agriculture etc, that have developed their own classification schemes
for land use planning. Land use maps so prepared give an idea of land
use pattern and trends of change. National Remote Sensing Agency,
Hyderabad, has used lands at imaginary to update the existing land
use map in a short time in certain areas.

1.13 The Aims and Objectives of the Study Area

The present study is made to bring out systematic account of
the complex, diversified and dynamic nature of agriculture of Koppal
District through the process of identification, classification, delineation
and description of problems on agricultural development and nutritional
standards. This is to provide a comprehensive understanding and to
gain insights into the problem as well as planning for the development
of agriculture nutrition of all the villages of Koppal District. The
present study attempts.

1) To study and identify the natural resource endowment and
economic regions of the district.

2) To analyze taluka wise growth of population, occupational
structure and functional nature of the district.

3) To analyze the land use pattern (taluka wise) and cultivable area,
and to know the cropping pattern and demarcate the area under
different crops in talukas of the district.
4) To know role of irrigation in agricultural development.

5) To analyze the crop regions with reference to crop area and crop combination.

6) To evaluate the volume of change in area, productivity and production of important principal crops.

7) To evaluate the agricultural efficiency of the district.

8) To know the variations in spatial development of all talukas of Koppal district in terms of socio-economic and demographic indicators.

There are many studies on agricultural geography by different geographers. In this regard the work of Whittlesey (1930) is well known. Among the various fields of geography, economic geography, perhaps more than any other has experienced and undergone a remarkable change within the past thirty years. “Geography was tended in the past to be the descriptive rather than analytical.”

Today agriculturist and agronomists are increasingly concerned with world-wide distribution of crops, animals, types of rural economy and the problems associated with them. Gregor opines that, it was only at the end of the 19th Century that geographic literature on agriculture began to be seen. In the same period Author Young of England and J.N. Schwerz of Germany also thought on the same lines as Gregor contributed significantly to the literature on agriculture. Gregor calls it as an old subject and young field. Later on in 1807, Alexander Von Humbolt references to “Natural paintings of tropical land” and in 1911 Krzynowski’s article on “Scientific position of agricultural geography”,

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were amongst the first to be landed in this field. They devoted for his methodological work on the “Problems of agricultural geography”22. T.H. Engelbrecht (1883)23 and many other young geographers have contributed substantially on the themes of agricultural geography.

1.14 Selection of the Study Area

India is one of the developing countries in the world, and stands second in population next to China. So it is quite natural in having a number of problems like insufficient food, old methods of agriculture, lack of transportation, lack of industrial development, unemployment, starvation, etc., at state and national levels. Koppal District being part and partial of Karnataka state and India, it is quite natural and not exceptional, if it has same problems or even more.

Apart from that, there are quite a number of works, which have to be done at the state and national level agricultural development planning’s. But only a few of them have been done on Shinha B.N.24, Mishra R.P., Ayyar N.P., Tiwari A.K., Doi K., Bhat L.S.25, Sharma A.N.26, Chakraborti S.C.27, Mukherji, Partha28, out of these experts some of the geographers have done on micro level planning through a geographical approach to get an effective result. This field is yet to be developed by many of the geographers in India, where there is ample scope for doing research. This has inspired the researcher to choose the topic for study purpose.

1.15 Reasons for the Selection of the Study Area

With a spatial emphasis on social justice, the Indian Government has been trying hard to evolve a workable feasible acceptable strategy
for developing its backward area and regions. As a result of it almost all states have been making attempts through designed programmes and measures to develop the backward area of the state. Since, Koppal District has been considered as one of the backward district in Karnataka state from the point of view of agricultural and amenities, in spite of rich natural and human resources, it has been selected for the study purpose.

Koppal District experiences the geographical characteristics of Maidan region, and it is known for its geological structure in India. This is presently an agrarian-based district in the state. In view of the backwardness in agricultural development, attention has recently been given by the government to establish industrial units by inviting entrepreneurs, from outside the state. To eradicate the disparities found in the state, the government of Karnataka has introduced ‘District Planning Units’ in backward district, based on the observation and survey, mainly from Statisticians and some government administrators. It is observed that the involvement of Geographers, Economists/Regional planners is very meager. On account of the attempt has been made to show planning through geographical knowledge and techniques.

In view of the main emphasis given for micro-level development programmes by the government, Koppal District has been chosen for the present thesis through a geographical approach. Koppal District is one of the prominent districts having the number of villages in the Koppal District. According to 2011 census, it stands fifteenth in terms of area, and twenty-first in terms of population.
1.16 Methodology

To study the various aspects of agricultural geography of Koppal District of Karnataka state, the data for two periods i.e., 1999-2000 and 2010-11 are taken from the different sources.

The present work is based on primary and secondary data. Primary data is based on actual field work by questionnaire and a personal interview method. Data has been collected from various government and Semi-government offices and respondents from different villages. Talukawise one village has been randomly selected for survey work. The study has been analyzed with the help of latest Quantitative Techniques, like Intensity of Irrigation, Intensity of Cropping, Ranking of crops, Crop Combination, Crop Concentration, Crop diversification, Crop Productivity, Arable Land use Efficiency, Rank order score method, Maps, Diagrams and Photos.
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