CHAPTER 1
INTRODUCTION

1.1 The Statement of the Problem

Agriculture is the main occupation of the majority of population in Darrang district. The farmers of the district rely heavily on agriculture for earning their livelihood. The development of agriculture depends on various aspects such as type of soil, relief, vegetation, climatic conditions, attitudes of different social groups of farmers to agriculture, use of irrigation, HYV seeds, fertilizer, pesticides and insecticides, use of mechanical tools and implements, as well as proper scientific rotation of crops by which production be enhanced. The impact of these aspects of agriculture varies in different areas of the district. There are distinct variations in the magnitude of these concepts both over space and time. To have real understanding of the nature of agricultural development, scientific investigation and evaluation of different aspects of development become highly necessary. Keeping these points in view, the Darrang district of the state of Assam has been selected as the study area because there has been significant development in agriculture in the district in the post independence era. The level of agricultural development is not the same throughout the district of Darrang which is inhabited by various social groups of people. This is because they live in different geographical areas and their attitudes to agriculture are different. The five social groups among various groups, viz. the indigenous Hindus, the indigenous Muslims, the Muslims of immigrant origin, the Scheduled Tribes and the Scheduled Caste are selected for the study because these are the most dominant social groups in the district.
The Indigenous Hindus and Muslims mostly inhabit in the built-up regions of Pachim Mangaldai, Sipajhar, Pub Mangaldai and Kalaigaon Development Blocks. The winter rice is the principal crop grown in these blocks. Apart from rice, a small quantity of vegetables is also cultivated during the rabi season by the farmers belonging to the indigenous Hindu and Muslim communities. The two development blocks viz. Dalgaon-Sialmari and Bechimari are mainly inhabited by the Muslims of immigrant origin who possess special abilities in agricultural activities. The farmers of this social group mainly grow different varieties of vegetables throughout the year. They are greatly experienced in the use of HYV seeds, irrigation, fertilizers, pesticides and insecticides as well as modern agricultural implements. The summer paddy such as Boro and Ahu are also cultivated by the Muslims of immigrant origin farmers. The Scheduled Tribes people are found to inhabit in the Kalaigaon and Khairabari development blocks. Their main crop is the winter paddy which is cultivated through traditional methods. They are not interested in the cultivation of vegetables. The Scheduled caste farmers lie scattered over the different development blocks of the district, mainly the Pub Mangaldai development block. Their agricultural activities are more or less restricted to pisciculture, poultry and dairy farmings.

The nature of land used for cultivation by the farmers varies from area to area. Even within the char areas, the nature of lands for agricultural purposes is not similar in all parts. Some parts of the char areas are very fertile which are used for cultivation of various kinds of vegetables, while some are covered by sand and silt and are used for growing crops like groundnut, maize, jute etc. Kharif cultivation is generally destroyed or disrupted almost every year by floods of the river Brahmaputra and its tributaries. Ahu and small amount of Bao paddy and jute are cultivated during this season. To get
rid of the loss inflicted by the floods, the farmers of the char areas cultivate Boro paddy in large scale. This variety of paddy is harvested just before the start of the monsoon.

Except a portion of the char areas of the three development blocks-Sipajhar, Pub Mangaldai and Dalgaon-Sialmari, the rest of the district is a built-up region. The middle and western parts of the built-up region are resided by the indigenous Hindu and Muslim social groups. They mainly cultivate the winter paddy and do not give much importance to the cultivation of vegetables. It seems they are ignorant about the use of HYV seeds, fertilizers and insecticides and also the use of modern agricultural implements. On the other hand, the eastern part of the built up region is inhabited mostly by the Muslims of immigrant origin social group. Different varieties of vegetables are mainly cultivated in this part of the district. This region not only supplies vegetables for the local people but also the entire state.

The five social groups living in different physio-social areas, behave differently in respect of agricultural activities and therefore the development in agriculture is not the same in all the areas. Under such a situation, it is highly essential to adopt separate development planning strategies for the five different social groups living in different areas of the district.

Much research works have so far not been done to study the inter social group variation in agricultural development at a micro-level in the district. So, for the adoption of appropriate planning strategies for agricultural development, an indepth study of the inter social group variation in respect of agriculture in the district is highly necessary.

Thus keeping these points in view, the researcher considers it important to undertake an analytical study of the socio-spatial variation of agricultural development in the district of Darrang, from the geographical point of view.
1.2 Objectives of the Study

The main objectives of the study are

1. To study the socio-spatial and temporal variations of agricultural land use pattern in Darrang District, Assam.

2. To examine the different innovative measures adopted by different social groups for agricultural development in the district at block level.

3. To assess the contribution of various social groups to the agricultural changes in the region and examine the controlling factors behind such changes.

4. To investigate the pattern of agricultural productivity, intensity of cropping, crop diversification and rotation of crops.

5. To find out the spatial variation of agricultural development in Darrang district.

1.3 Research Questions

1. Is there any significant change in the agricultural land use pattern of Darrang district during 1991 - 2011?

2. What are the main causes of spatial variation of cropping pattern?

3. What are the innovative measures adopted by different social groups for agricultural development in the study area?

4. Are there spatial variations in respect of crop diversification and rotation of crops?

5. Has the area recorded any change in the agricultural productivity and intensity of cropping?

6. What are the causes of socio-spatial variations in respect of agricultural development of the study area?
1.4 Methodology and Data Base

In the first stage, necessary books have been collected from different libraries and the relevant secondary data required for the verification of the research questions are collected from different state government offices like the Directorate of Census office, Directorate of Economics and Statistics, Govt. of Assam, Department of Irrigation, Govt. of Assam, District Agriculture office, District Settlement office and Revenue Circle offices. Data on general and agricultural land uses, crop production and block wise population relating to the problem are collected from the different community development blocks of the district.

There are seven community development blocks in the district and study has been conducted in some villages of these development blocks.

The next stage of the study begins with the selection of representative villages for primary data collection. Altogether 31 villages, five villages each from six development blocks and one village from one development block have been selected purposively on the basis of five dominant social groups living in them. So from each of the villages, 30 percent of the total households are chosen considering the land holding sizes with the help of stratified random sampling method inorder to get pictures of land use and cropping pattern of each village, innovation in agriculture and also attitude of the farmers towards agriculture.

The households are selected on the basis of the following:

1. Classification of the households according to the land holding size (in hectares) in the following categories: <0.5, 0.5-1.0, 1.0-2.0, 2-5, 5-10 and >10.
2. Collection of the land holding data for all the households of the selected villages from the Mandals and village level field survey.

3. Selection of at least 30 percent households at random proportionately from each of the categories.

4. Filling in the schedule through direct queries to the respondents.

1.5 Significance of the Study

Like any other district of Assam, agriculture is the mainstay of economy of the people of Darrang district. It contributes more than 50% of G.N.P. in 1977-78. During the period 1994-95, the average annual income from the state’s agricultural sector is 35.5 percent of the domestic product as against 29.4 percent as share of India’s agriculture to national income. In 1984-85 the contribution of agriculture to state domestic product is 33.3 percent. The data given in Statistical Hand Book, Assam 2005 reveals that 11331 hectare of land are irrigated in the district which are available to cultivate rabi and kharif crops. In the period 2003-04, the cultivators of Darrang district utilized 10032 tones of fertilizers in agriculture. Inspite of the efforts made by the government during the five year plan periods; the agricultural sector is still traditional-bound and problem stricken. The total population of the district was 759858 in 2001 which has increased to 908090 in 2010-11. To meet the demand of the growing population, agricultural development should be expedite through proper planning and to minimize spatial inequalities. As population of this region is growing rapidly and the study has been devoted specially to find out the pattern and factors of development of agriculture, the present work is highly significant.
1.6 Review of Literature

A brief review of literature has provided us valuable information regarding various factors on which agricultural development depends, factors that stand on the way of adoption of agricultural innovation, possibility of argumentation of agricultural production through improve farming technology.

During this period, pioneer works in that field had been started by such geographers like O.E. Baker (1926), Olaf Jonson (1925-26), Clarence F. Jones (1928-30), Samuel Van Valkenberg (1931-36) and Griffith Taylar (1930). Their contributions in the Journal, “Economic Geography” have been considered as significant in the field of Agricultural Geography. Most of their studies were devoted mainly to agricultural regionalization. Whittlesey (1936) strongly recommended the regional approach while discussing the major agricultural regions of the world. Another most important contribution was made by Von Thunen (1826) towards the scientific study of agricultural activity. Significant work on agricultural geography was brought into light during the second half of the present century. Majority of these works are concerned with agricultural regionalization. Perhaps best known studies of this period are Weaver’s investigations of the agricultural activities in the Mid West U.S.A. (Weaver 1954).

Reed (1964) forwarded a critical appraisal of the progress and prospect of agricultural geography citing examples from different parts of the world.

Mehto (1982) intends to highlight the theoretical considerations in selecting the indicators of economic development. He has given a comprehensive list of general indicators of agricultural development.
Hodder (2000) considers that development is best defined as growth with equity. Some definitions focus on technological change as a significant criterion. Thus development can be defined as the process by which a traditional society employing traditional, unsophisticated technology is transformed into a modern, high technology, high income economy in which capital, labour skills and scientific knowledge replace labour intensive methods of production.

Side by side the quantitative revolution of the fifties encountered the development positivistic approach in Geography and gradually hypothetical deductive treatment of problems leading to the building of models and theories used to gain ground. Besides, model new sophisticated technique like principal component analysis, factor analysis etc. are also used by the modern agricultural geographers. The study of development process found a limited place in geographic literature. There is increasing appreciation by geographers of the fact that physical and non-physical factors influence over all economic development and that factors contributing to agricultural growth must also be thought in the same perspective. (Singh & Dhillon, 1984)

Agricultural geography in Indian is still younger. Before the fifties, the study in this field was limited to some regional description of major crops. But during 1950-60, there was notable change both in content and methodology. Chatterjee (1962) dealt with the scarcity of foodgrains in India and gave a comparative idea of the foodgrain supply of India and the world.

Studies on physical ecological factors influencing growth and development are also not lacking. But systematic and in-depth studies on socio-economic factors or problems of modernization of agriculture in India and abroad are very few mentioned.
Agricultural development denotes the quality of the agricultural system of a region in terms of productivity, diversification and commercialization consistent with a desired state of agrarian relations and ecological balance (Krishan, 1981). Also in studies on agricultural development in India Krishan says, “a review of geographical literature covering agricultural development in India, reveals that seldom on attempt is made to define agricultural development and to select criteria in the light of any conceptual framework”.

In 1974 Singh published “An Agricultural Atlas of Haryana” in which he probed the physical, economic and cultural variables as the bases of farming and identified some ecological problems arising out of the existing land use practices. Bhatia (1964) analysed and opined that crop productivity is the function of various factors including the physical, socio-economic, technical and organizational. While Mohammad and Singh in a topic, “Measurement of crop productivity” analysed the level of crop productivity, as a concept, means the degree to which the man made frame is able to exploit the physical resources of an area for the purpose of “agricultural-product”. Mohammad and Singh, Chouhan and Singh (1981) in their paper have made an attempt to find out the regional disparities in the agricultural output in Rohilkhand – a region which lies on the eastern edge of the Ganga Basin.

Gupta and Singh (1975) for measuring agricultural development in India of different states, used indicators of productivity, mechanization of agriculture and consumption of chemical fertilizers.

Mohammed and Majid(1979),in their study have analyzed the impact of socio-economic factors on technological change and spatial diffusion of agricultural innovations in a district of eastern U.P.
Raza (1981) presented a most comprehensive view of agricultural development by recognizing its four dimensions productivity, production conditions, agrarian relations and agricultural change. However, none of the above provided a clear definition of agricultural development.

Shrivastava (1983) has assessed the regional and district wise pattern of disparities in agricultural development in Madhya Pradesh.

Singh (1985) has evaluated the areal disparity in the level of agricultural development in Rohilakhand region while Joshi (1987) has examined the relationship between economic development and infrastructure at the district level in Uttar Pradesh.

Singh (1988) has analyzed the regional inequalities of socio-economic development of Himalayan district of Pauri Garhwal in Uttar Pradesh with the help of thirteen variables, six of which were related to agricultural development.


Singh Nina (1991) also took agricultural development as a part of study of the development process in a newly organized state of Haryana. She divided the indicators of agricultural development in output (agricultural produce) and input indicators (irrigation, fertilizers, seeds, tractors and power).
Pokhariyal and Naithani (1996) analyzed the inter-district variation in the levels of agricultural development, using multiple regression technique.

Verma and Singh (1999) wrote a book named – Haryana, it is quite a superficial work and collection of inadequate informations at many levels.

Aftab Uddin Ahmed and Kanak Kanti Bagchi (2007) analyzed that for sustained agricultural development Indian Agriculture must rely upon improved agricultural technology and this technology has been incorporated into the farming system of India in a significant way.

Dharmender Singh Chauhan (2010) analyzed that Agriculture in developing countries engages a majority of workers and contributors, a major part to the gross national product. Other sectors of economy are largely concerned with either processing agricultural products or meeting requirements of agricultural population. Development of agriculture is basic to socio-economic transformation of these countries.

Works on agricultural geography in Assam are still in the initial stage. The actual picture on agricultural geography appeared only in the beginning of the eighties. In Assam, not much works have been done on the development of agricultural sector and regional disparities.

Taher (1975) successfully analyzed the physical basis of planning for agricultural development in the Brahmaputra valley. He correlated the pattern of cropping with different ecological settings in the valley.

Phukan (1990) subsequently revised the study on Agricultural Development in Assam with data upto 1975-76 and estimated linear rates of growth of the 13 crops.
Chattoraj and Sahu (1983) studied the intra-district variations in agricultural development of Kamrup District, Assam at micro-level.

Datta (1983) in her Ph. D. thesis “Agricultural Land Occupance of Nagaon District, Assam” analysed systematically the physical and socio-economic problems of agriculture and explored the possibilities of its future development.

Das (1984) contributed a number of papers which were published in different journals and books edited by different scholars. His book entitled, “Peasant Agriculture in Assam”, is recognized as the pioneering work in agricultural geography of the region.

The book can be particularly useful to geographers interested in Indian agriculture, agricultural development and especially the role of socio-economic structure in agriculture.

Bhagabati (1984) made an attempt to investigate and evaluate the patterns of agricultural development of the Brahmaputra Valley, their changes and processes involved so that a proper micro-regional planning can be undertaken for the future economic development of the region.


Konwar (1986) in his M.Phil dissertation analysed the socio-economic problems of agricultural development in Morigaon Sub-division, Assam and to find out the prospects of agricultural development through modernization of agriculture and suggests measures for rational agricultural planning in the region.
Goswami (1963) discussed various aspects of flood and its impact on agriculture of Assam and advocated for reorganization of the cropping pattern and crop rotation according to the flood environment to ensure sustainable development of agriculture.

1.7 Organization of the Study

The study comprises three parts: the introduction, the analysis and the synthesis. The first part consists of three chapters. The first chapter introduces the nature of problem, objectives, research questions, methodology and data base, significance and review of relevant literatures are discussed. Chapter II provides the geographical background of the study region. Here the physiographic divisions, soil, vegetation, population structure and historical background of different social groups are discussed. In Chapter III, a detailed analysis of physical and socio-economic factors affecting agriculture -the topography, climate, flood, soil erosion, size of land holdings, labour, land revenue system, mechanization and equipments, transportation facilities and marketing facilities are discussed. The second part consists of five chapters. In Chapter IV, a detailed analysis of the general land use patterns, agricultural land use and cropping pattern, concentrations of major crops, crop diversification, crop combination and intensity of cropping are discussed. Chapter V deals with the innovation in agriculture. Here the area under irrigation, introduction of HYV crops, fertilizer consumption status, pesticides and insecticides, cultivation of commercial crops and agricultural implements and mechanization are discussed. Chapter VI deals with the production and productivity of major crops. Here production of major crops and changing productivity pattern and the role of social groups with some of its existing methods are discussed. Chapter VII covers the role of social groups on agricultural development. Here the
attitude of different social groups towards agriculture and cultivation of commercial crops by different social groups are discussed. Chapter VIII deals with the spatial variation of agricultural development.

The last part under the heading of “summary and conclusion” synthesizes the whole work. It comprises the summary of the whole work, the findings and some suggestions for improving conditions of the agricultural land use by different social groups in the study area.

References


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