

INTRODUCTION

The northern most region of the state of West Bengal is known as North Bengal. The six districts that comprise of North Bengal are Darjeeling, Jalpaiguri, Cooch Behar, Uttar Dinajpur, Dakshin Dinajpur and Malda. (Fig. 0.1)

North Bengal lies between 27° 13' - 24° 40' 20'' North Latitude and 89° 5' 35'' East Longitudes. North Bengal is bounded by the river Ganga in the south, the state of Bihar and Nepal in the West, Sikkim and Bhutan in the North and Assam and Bangladesh in the east. Total area of North Bengal is 21854 square kilometers, which is 24.62 percent of the total area of the state of West Bengal. Jalpaiguri commands the largest area and Cooch Behar is the smallest district of North Bengal. North Bengal is a region of great physical inequalities with varied geological and topographical features.

The great differences in relief have brought about differences in climate, natural vegetation, drainage and soil character, which ultimately influence the agricultural practices of North Bengal.

The northern most part of the Darjeeling district is a mountainous region situated on the Himalayan chains. Jalpaiguri and Cooch Behar are characterized by their mixed hill and plain landscape. The southern districts, Uttar Dinajpur, Dakshin Dinajpur and Malda are completely riverine plains. Other plain areas comprise of southern parts of Cooch Behar, Jalpaiguri and Darjeeling district.

Historical Background

The historical background of North Bengal is very interesting. The tract of Darjeeling which is now the northern most district of North Bengal remained for a long time as a part of Sikkim. Captain Llyod who was in Government mission to deal with the border dispute between Sikkim and Nepal in 1829¹, was over-whelmed by its natural

¹ Dash. A.J. (1947) Bengal District Gazettes, Darjeeling, p. 37.

beauty and was charmed by its advantages as a site for its strategic location specially as a gateway to Nepal. Mr. Grant was also accompanying Mr. Llyod in that mission reported to the Government of India pleading on behalf of Darjeeling both as a center suited for being a sanitorium and a military base and recommended its occupation. According to the report a survey was conducted and negotiations with the Raja of Sikkim started and subsequently a deed was executed by the Raja of Sikkim in 1935². Following the deed the tract of Darjeeling was presented to East India Company by the Raja of Sikkim. In the year 1941 the British East India Company granted Rs. 3,000 per annum to Raja and subsequently increased it to Rs. 6,000 per annum in 1846³. But following the imprisonment of Sir Joseph Hooker and Dr. Cambell, the then Superintendent of Darjeeling by Sikkim Government in 1849⁴ the relation between Sikkim and East India Company reached to a climax. Though both of them were released unconditionally, but annual grant of Rs. 6,000 to Raja was withdrawn. Besides, the terai as well as the part of Sikkim hills 'bounded by the Raman and the great Rangit river on the north, by the Tista river on the east and by Nepal frontier on the west'⁵ were annexed to the British territory. Since then Darjeeling remained as a part of British India included in the Bengal province.

(b) Jalpaiguri

The area comprising of the Duars of the district of Jalpaiguri has interesting political history. For a long time, great political tussel was witnessed between the princely state of Cooch Behar and Bhutan regarding the border rights. The Bhutanese were responsible for making lawlessness along the northern border of Darjeeling and Cooch Behar. To prevent Bhutanese, British India annexed Bhutan, Duars including some hill areas. As a consequence a treaty was signed at Sinchula between the Dev Raj of Bhutan and British Government in 1865⁶. Subsequently Raja of Bhutan handed over the British Government some hill territories (Dalimkote) now forming

² Ibid, p. 38

³ Ibid, p. 39

⁴ Ibid, p. 39

⁵ Ibid, p. 40

⁶ P.P., Karan, 1967 : Bhutan Press, University of Kentuckey, p. 93.

Kalimpong Sub-Division as well as Bhutan Duars and the passes. The later represented Bengal Duars and Assam Duars. A district was formed known as western Duars with Kalimpong included in it as a Sub-Division. In 1860⁷ Kalimpong was transferred to Darjeeling district and in 1869 western Duars was annexed to the district of Jalpaiguri which now belongs to the state of West Bengal.

(c) Cooch Behar

During the reign of Maharaja Nara Narayan (1556-1588)⁸ Cooch Behar alone was an extensive Kingdom consisting of almost the whole of North Bengal, Bhutan, Sikkim and whole of Modern Assam and eastern states of India extending up to the coast of Bay of Bengal. Gradually Cooch Behar was reduced to a small district.

Cooch Behar remained sovereign upto 1772 and became a feudatory state under the British East India Company following a treaty of 1773 between the East India Company and Cooch Behar state. According to the third article of the treaty of 1773⁹ Cooch Behar was annexed to the British territory. In 1947 India gained its independence but Cooch Behar remained as a feudatory state. From 1947 to 1949 Cooch Behar was out of the political map of West Bengal. It was on January 1950 Cooch Behar merged with Indian Union.

(d) Uttar Dinajpur and Dakshin Dinajpur

The district of Dinajpur was born as result of partition of India. At that time the district has only one Sub-Division named as Balurghat and was consisting of the western part of the old Dinajpur district of undivided Bengal. In 1948 Raiganj was formed into second Sub-Division. In the same year Hilli was added to the district of West Dinajpur. According to Bihar West Bengal Act of 1956, a tract of land was transferred from Purnia district of Bihar to West Bengal. At first this tract of land was annexed to district of Darjeeling. Subsequently however, the area consisting of

⁷ Das, A.J., 1947 : op.cit, p. 41.

⁸ Chaudhury, H.N., 1903, Cooch Behar and its Land Revenue Settlement, Chapter-V, p. 232.

⁹ Ibid, p. 242.

Chopra, Islampur, Goalpokhar and Karandighi Police Station was added to the district of west Dinajpur. Again in 1956 the area lying to the north of Mahanada river was transferred to Darjeeling district and making the river as the northern limit of the district of West Dinajpur and a new Sub-Division was created in the name of Islampur

Thereafter, West Dinajpur was divided into two districts and are known as Uttar Dinajpur and Dakshin Dinajpur.

(e) Malda

Malda has a very rich historical past. In ancient time Malda was a part of the kingdom of Paundrabardhana ruled by Paundra the youngest son of King Bali. In third century A.D. Malda region was an important unit of Gupta Empire. Ishan Barman the King of Magadha attacked the area and ruled for sometime. During the rule of Sasanka the area was called Gaur and was powerful in the eastern region of the country. In 9th century during the rule of Pala Kings, the kingdom of Gaur flourished as a great power in Bengal. In 1215 and 13th century, during the rule of Sen Dynasty, Gaur as a state became very powerful. After the advent of Muslim period the kingdom of Gaur became an important center of trade during the medieval period of history of Bengal.

In 1680 British purchased one village near Malda and established a Kuthi from East India Company. In 1771 British made one fort near Malda and it came to be known as English Bazar. In 1813 Malda was created as a new district of Bengal. In 1815 the district was consisting of eight thanas or police stations curved out from different districts of Purnia, Dinajpur and Rajshashi.

The Problem

Agricultural development is very much important for the elimination of regional disparities and promotion of national integration.

The Indian sub-continent has become free from colonial rule with extreme regional variation in terms of development in agriculture. In post independence period

attention has been paid to remove all regional disparities and agricultural development was first priority to the Government of India. In spite of this fact some states in India even today appears to be developed in agriculture and economically more advance while others are relatively backward. Besides, with in each states some regions are observed to be more developed while others are more primitive.

In India population is also expanding at a high rate. With the growing population more and more lands are being brought under cultivation.

The development of agriculture does not necessarily mean full scale change nor does it involve expensive changes in the morphological features of the land. What is needed is better understanding of the geomorphic parameters of the agricultural field which includes the morphological characteristics of the terrain, sequence of the land, drainage characteristics, physical potential of the land and how different land form react to the external pressure.

The study area, i.e., North Bengal with particular reference to Darjeeling district in the state of West Bengal is acknowledged as agriculturally and economically backward region according to the indicators prescribed by different institutions to determine agricultural development of specific regions in India.

The North Bengal is a region of great physical inequalities with varied topographical features. The physical constraints can be divided into the following categories :

- (i) Variations in topography;
- (ii) Variations of soil fertility;
- (iii) Problems of drainage;
- (iv) Problems of frequent floods;
- (v) Uncertainty and uneven rainfall and temperature;
- (vi) Soil erosion and landslides;

(vii) Problems due to irrigation.

All these factors directly or indirectly wholly or partly stood in the way of development of agriculture in North Bengal in general and Darjeeling district in particular.

The geomorphology is the foundation and background of agriculture, influencing the entire agricultural structure of North Bengal specially Darjeeling district and have naturally brought to the fore from a number of research issues. What impact does the terrain has on the agricultural development of North Bengal ? What is the place of agriculture in the economic life of rural population ? What is the pattern of agriculture? What are the effects of climate on agriculture ?How soils and their properties are influenced directly by topography relief and altitudes ? What is the importance of forestry in this region. What are its impacts ? What is the magnitude of natural calamities ? What are the present problems of agriculture ? What role agriculture has if developed, plays in economic life of North Bengal as well as national economy ?

All these along with other related questions still remain unanswered as no comprehensive work on the influence of terrain on agricultural development of North Bengal specially of Darjeeling has yet been made.

In view of this, an attempt has been made in the present study to find out the impact of terrain on the agricultural development of North Bengal in general and Darjeeling district in particular.

Hence the study is expected to be very much important in the planning in the field of agriculture.

Scope of the study and its objectives

Keeping the above issues in view the following objectives have been framed in this study.

- a) To reveal the geographical conditions of the North Bengal with special reference to Darjeeling district.
- b) To find out the impact of climatic factors affecting agriculture.
- c) To analyse nature extent and role of altitude and slopes in the region.
- d) To analyse nature and fertility of soil.
- e) To find out various physical constrains such as, soil erosion, landslides flood and drought in the way of development of agriculture.
- f) To find out production, yield and cropping intensity of various agricultural crops of the region.
- g) Analyse and study drainage and irrigational facilities.
- h) To find out the application of fertilizers and its impact on agriculture.
- i) To make an evaluation of the forest and its impact on agriculture.
- j) To examine nature of rural settlement in the hill and plain areas of North Bengal.
- k) Synthesis of problem associated with terrain agriculture both in plain mountains.
- l) To explore the pattern of agriculture in Darjeeling.

Hypothesis

For the spatial analysis of the above problems the following hypotheses are proposed.

- a) To know the various agricultural problems of the study area.
- b) To study the impact of terrain on agricultural development in hills as well as plain areas of North Bengal.
- c) To make the agriculture in North Bengal a viable preposition, it is necessary to introduce a new system, which would improve the

productivity and there by giving rise to better economic return to the cultivators and improve their economic conditions.

Methodology Adopted

For the purpose of carrying out this study with aforesaid objectives the following methodology may be adopted which will make the study an systematic one.

- a) To start the work the consultation of similar works should be done at first instant. The methods and techniques used by the researches in the similar field of studies should also be consulted which may help in doing the present work an easier and comprehensive way. A bibliography is to be made including all similar works done so far for other areas previously.
- b) Library work will be carried out to consult the available literature in the relevant topics.
- c) To find out agricultural landuse and cropping pattern and secondary information relevant to the topic would be collected from different government departments, agencies and organizations.
- d) Field work will be done in all the districts of North Bengal.
- e) Primary data will be collected with the help of field notes, questionnaires, maps, ground photographs and personal observations.
- f) Computer would be used to analyse the data.
- g) Maps will be prepared with new cartographic techniques.
- h) Lastly agricultural regions have been formulated with a view to tackling the terrain constraints for useful development of agriculture of the district of Darjeeling in particular.

Significance of the study

A study of the problems of agriculture in the North Bengal particularly Darjeeling district has a special significance. The future researchers in the field of agriculture will get more knowledge about the agricultural practices and patterns of agriculture which is greatly influenced by the terrain and other physiographic aspects of this region. Apart from academic significance this study will help planners and agricultural geographers to formulate developmental programme for cultivators.

The study will also strengthen national economy.

Organisation of Chapters :

The preface deals with works related to this work done by prominent geographers since 1925 till 2005. Introduction contains the geographical setting of the study area the statement of the problem, scope and objectives of the study, Hypothesis, methodology adopted and significance of the study.

The contents of the thesis are divided into three parts. Viz. part one general, part two problems and prospects of physical environment of agricultural relevance and part three applications in national economy.

The chapter one deals with the geology of the North Bengal.

Chapter two contains physical setting including relief and drainage system.

Various aspects of soil is analysed in chapter three.

Chapter four contains climate and its effects on agriculture.

Chapter five contains forest areas of the study area.

Chapter six purports to examine the population, settlement including agriculture.

Chapter seven presents the general landuse pattern in North Bengal.

The second part deals with the agriculture problem and prospects of the study area.

Chapter eight deals with geology, rocks composition, soil and agriculture of Darjeeling district.

Chapter nine is designed to exhibit the influence of climate on agriculture.

Chapter ten evaluates the impact of relief slopes, altitudes river system drought flood landslides and soil erosion on agriculture.

Chapter eleven examines the landuse pattern of Darjeeling.

Chapter twelve presents the forest and agro-forestry system in India.

Chapter thirteen deals with the population settlement and agriculture in the study area.

Chapter fourteen examines the comparative study of agriculture in the hill and plain areas of Darjeeling. Planning policy for agricultural development and agriculture in national economy, plan period and its future prospect through agricultural regions.

Chapter fifteen, agriculture in national economy, plan period and its future prospects through agricultural regions.

Chapter sixteen presents summary of the entire work and some suggestions and prognosis.