PATTERN OF LAND UTILIZATION IN ASSAM

A. K. BORA

The volume analyses the data on land utilization pattern in Assam and focuses upon the changes in land utilization pattern with a view to arriving at basic premises that will benefit the posterity in increasing both the productivity and the production from land. The author has discussed in detail the cropping pattern, the cropping intensity, production scales, fragmentation of holding of land and other aspects related to the extensiveness, intensiveness and efficiency of land use in the state, thus accelerating the process of economic prosperity of the region. The author has elaborately discussed various geo-physical, socio-economic and institutional factors as well as States' land reform policies as these factors have great influence on the changing pattern of land use which is basic to its scientific management and productivity.

The Volume also includes the micro-level analysis of primary data collected by the author which projects the socio-economic and institutional factors as impediments to optimum utilization of farm land in Assam. By analysing two sets of data—both secondary and primary, the author has made a good number of suggestions so as to rectify these lacunae.

This book, one of the very few on the subject, is a must for every library and also for students of social science, researchers, academicians, administrators of the public bodies and those connected with the planning of land use policies, both long-term and short-term.

Rs. 190.00

Born in 1942, **Dr. Ajit Kumar Bora** took his Master's Degree in Economics in 1967 from the Gauhati University. In 1968 he joined the Agro-Economic Research Centre for North-East India, Jorhat as Senior Research Investigator. In the Research Centre, Dr. Bora completed a Socio-Economic Report entitled "Borkuloi—A Socio-Economic survey of a plains village in Assam". Dr. Bora did his LLB and Diploma in Business Management and joined the Department of Tea Husbandry & Technology, Assam Agricultural University in 1972 as Assistant Professor of Tea Economic and Management. In 1981 he was awarded Ph. D. Degree by the Gauhati University. Dr. Bora is currently working as the Associate Professor of Tea Economics.

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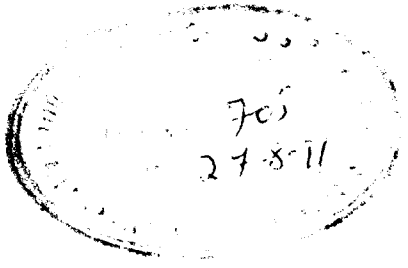

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Introductory

LAND sustains life. It is vital for the survival of plants, animals and man. It provides man with living space, food, clothing and housing materials. In a broader sense, it includes all free gifts of nature or the entire natural environments that exist independently of man's activity. "This broad concept of land includes all of the earth's surface, water and ice as well as ground. In addition to building sites, farm soil, growing forests, mineral deposits, and water resources, it also involves such natural phenomena as access to sunlight, rain, wind and changing temperatures and location with respect to markets and other areas. Moreover, it includes all those man-made improvements which are attached to the surface of the earth and which cannot be easily separated from it."[1]

The scope of the book is not wide enough to include all the free gifts of nature or the environment which constitutes land in economic sense but is confined to that part of earth's surface within which and upon which life takes place. This land or the earth's surface is used for several purposes and according to the uses to which it is put may be classified as agricultural land, forestry, land used for sites (for rural and urban habitation), land used for industries, commerce and for transport, recreational purposes and other land remaining as barren, waste, deserts etc.[2] Agricultural land is further classified as cropped area, pastures and other fallow land. Ordinarily agricultural land is that part of earth's surface where the land is used for growing cultivated crops. The present study relates to the different use patterns of land and problems discussed here concentrate on all use classifications as determined by the Government according to recommendations made by the Technical Committee on Coordination of Agricultural Statistics, Government of India. Here the emphasis is laid on agricultural land which includes as indicated, cropped area, pastures and other fallow land.

Land is fixed in supply. The increasing pressure of population on land is the sole cause of the rising man-land ratio, which sometimes even determines the type of farming and the crops cultivated. But the pressure of population and accessible markets are themselves insufficient to ensure that all land is employed intensively[3]. Even in densely populated country like the United Kingdom, there are still large areas where the land is normally used for light grazing or sport. The case may be different in industrially backward countries like India, where 82 per cent of the people live in the countryside and agriculture is their main occupation. India ranks second in total population map of the world, next to China. But considering the present rate of growth of population in India which is 2.4 per cent per annum according to 1971 census, intensive utilization not only of cropped land but also land under miscellaneous tree crops and groves, forests, pastures and grazing land etc. is highly desirable. Better land utilization can bring about better labour force utilization. It may be underutilization of land rather than a critical man-land ratio, that may be the cause of crucial bottleneck to production and employment[4].

Agriculture is defined as "the art and science of purposeful use of soil for raising plants and breeding animals by a community. It includes, therefore, integrated set of ideas, culture, traits, skills, techniques, practices, prejudices and habits employed by the members of a given society for extracting a living from the soil".[5] In most of the countries of Europe and especially in the U.S.A., the U.S.S.R. and Japan, emphasis has been laid on study of land, resources so as to realise the optimum utilization of scarce land resources by correcting the traditional trial and error methods through classification and mapping of lands. In developing countries like India, the trial and error methods are still prevalent as a result of which the land resources are gradually deteriorating. An F.A.O. publication points out that in countries where attempts are being made to modernise agriculture through the adoption of scientific practices, there is the excellent opportunity to correct past errors in land use and avoid further errors through classification and mapping of land.[6] In China, man has modified land to considerable extent so as to make it more productive.[7] The intensity of any agriculture is partially measured by the extent of such modifications. In China, physical conditions of the land are modified through irrigation, drainage, terracing and to a smaller extent by fertilization, which tend to bring about a higher degree of utilization[8]. In India, there is also a unique example in Kerala, where higher density of population and the acute scarcity of land and the chronic problem of food shortage compelled the people from early days to reclaim land from the bed of the lakes for rice

cultivation[9]. Kuttand, the rice-bowl of Kerala, is a man-made land which has emerged out of their labour. In advanced countries, barren land, lying idle for several centuries, is now brought under use through heavy reclamation ; forestry has been developed on such land. Other form of utilization of such land is the development of grass for pasture.

The economic prosperity of a country is also linked up with the size and composition of its population. On the one hand, a sparse population is a hindrance for a country to harness its natural resources fully ; on the other hand, an abnormally dense population also reduces the income and in such over-populated countries, intensive utilization of agricultural land is a must. Intensive farming is characterised by the use of relatively large number of productive factors such as labour, machinery, livestock and management on a specified land[10]. In a densely populated country like India, land-based enterprises represent not only a source of income to a vast majority of people but also a critical determinant of the pace of economic development[11]. The identification of various socio-economic problems associated with the utilization of agricultural land would enable the administration to take effective measures.

The utilization of agricultural land in hilly areas of India is of different character. In the hilly areas, the shifting cultivation, which is commonly known as *jhumming*[12] is predominant. *Jhumming* or the shifting form of agriculture was evolved in the Neolithic Age between 13,000 to 3,000 B.C.. It still survives over a large part of the globe[13]. It is recognised as traditional stage between economy of hunting, gathering and settled farming. From centuries ago, it is found that as compared to settled farming, shifting cultivation is a purely subsistence form of land use. P.D. Saikia[14] observed that because of pressure of population and progressive deterioration of soil in the hill slopes *jhum* land is gradually becoming scarce and as a result the *jhum* cycle is becoming shorter. Ganguli[15] made a survey of *jhumming* of Tripura, Bose[16] surveyed two villages in Pawi-Lakher area in Mizoram and Saha[17] made a survey of shifting cultivation in Assam (including Meghalaya and Mizoram). These studies show that the shifting cultivators are the most backward sections of the hill tribes of the North Eastern Region. Among various uses of land, the use for agriculture seems to be the most important.

Water is an inseparable element in optimum utilization of land. "Land, water and people go together. The people cannot reach the highest standard of well-being unless there is the wisest use of the land and the water"[18]. The proper use of land and water resources seems to be of utmost importance in view of rapid rise of population in recent

years. The advanced countries like Japan and the U.S.S.R. have shown the world that with the aid of science and technology, land and water resources can be utilized to the desired extent[19]. In spite of India's vast potential wealth in water, land and other natural resources which perhaps compare favourably with those of any other advanced country in the world, more than 50 per cent of her people are still living below the poverty line, In such situations, optimum utilization of land and water resources through irrigation, hydel power etc. is of paramount importance. Owing to differences in intensity and distribution of rainfall, the management of water resources is of vital necessity with a view to bringing agricultural land into the most productive use.

There is need of proper classification of land after careful adjustment keeping in view the maintenance of ecological balance. It is often seen that there is overlapping among different uses of land in the country. With the progress of a country towards higher civilization, a part of the cultivated land has been utilized for residential and industrial purposes, for construction of roads and railways, pipelines, etc. The expansion of urban areas in the recent past has also affected the use pattern of land to a great extent.

Position in Assam

Agriculture remains the mainstay of the people of Assam contributing 56 per cent of the state income. According to 1971 census, 65.8 per cent of the labour force is employed in agriculture. The growth of population in Assam is the highest among all the states in India, being 3.5 per cent per annum against 2.4 per cent in the country according to 1971 census. The 1971 census has further revealed that during the decade 1961-1971, the number of persons per occupied census house in Assam rose from 5.47 in 1961 to 5.98 in 1971. This indicates the pressure of population on residential accommodation too. Almost the entire increase of population has been absorbed by the rural areas alone, in which figure went up from 5.46 persons in 1961 to 6.03 in 1971 census household[20]. Per capita cultivable land in Assam is only 0.19 ha. as against 0.60 ha. in Maharashtra, 0.57 ha. in Madhya Pradesh and 0.55 ha. in Gujarat. With the increase of population, per capita arable land will further decline in view of the spread of townships and need for more land to be used for residential purposes. On the other hand, rapid industrialisation modifies the pattern of land utilization. Since by industrialisation and thereby creation of new townships, the proportion of land available for cultivation per capita goes on decreasing[21].

There are 19 lakh farm families and 5 lakh landless labourers in the state. This corresponds to an average density of 5 people per

cultivated hectare. Average agricultural holding size is only 1.47 ha. against all India average of 2.3 ha. and nearly 60 per cent of the farmers have less than a hectare. Therefore, subsistence farming predominates. Only 10 per cent of the holdings are larger than 3 ha. and these comparatively big landholders operate 40 per cent of the cultivated area.

The authors of '*Limits to Growth*'[22] have calculated that every child born today would need 0.08 ha. of land for purposes like housing, roads, water disposal, power supply and other uses ; and 0.40 ha. of land for producing food. On this assumption the whole of India will require atleast 5 million ha. of additional land every year to support new comers. In 1969-70, the availability of agricultural land in India was only 0.34 ha. per person which was reduced to 0.28 ha. per capita during 1970-71. With the projected population, area and production of foodgrains by the National Commission of Agriculture[23], per capita availability of arable land in India would be 0.22 ha. in 1985 and 0.17 ha. in 2000 A.D., which according to them will be less than the minimum requirement of land per capita. In Assam, the estimated population in 1981 was around 20 million and the per capita land available for production of agricultural crops was 0.13 ha. of land. This had indicated the need of studying the patterns of land utilization in the country so that effective measures like that of Japan, where per capita arable land is only 0.05 ha. during 1970-71,[24] can be taken to raise the required quantity of foodgrains and raw materials to feed the growing population and industries in the country. In Taiwan, agricultural output has been raised by about 73 per cent in 1951-61 period. This has been possible by effecting land reforms and reorganizing agricultural extension services in that country[25].

Although the rise of population is the highest in Assam, agricultural production in Assam is one of the lowest in the world. Data on land utilization would indicate that the net area sown is only 33 per cent and there is no further scope to bring more areas under plough. The proportion of area under forest has already come down from 38.5 per cent in 1951-52 to 26.3 per cent during 1975-76 in the plains districts of Assam. The land-man ratio is likely to narrow down with the gradual increase in population. Under a fixed land economy situation, measures are to be taken towards raising yields per unit of land so as to produce more and more foodgrains and raw materials. The average yield/ha. in Assam is also very low. The low yield might be attributed to several causes—economic, social or physical which require investigation to locate the constraints associated with the utilization of land. An analysis of data on land utilization in the state is expected to bring into

focus the various lacunae in land utilization which will help the appropriate authority to take steps so as to improve land utilization.

Although several studies relating to different aspects of land utilization have been conducted in different parts of the world, a detailed study on the land utilization pattern is yet to be undertaken in India, not to speak in Assam. However, Giri[26] has made interesting studies on the changes in land utilization pattern and factors associated with them in India as a whole and in Tamil Nadu and Punjab, for the period from 1950-51 to 1963-64 for all-India, from 1950-51 to 1964-65 for Tamil Nadu and from 1950-1951 to 1964-1965 for Punjab.

Nath[27] observed by analysing general land utilization data in the country for the year 1949-50 that the objective should be to secure a pattern of land use for each region under which all lands are used according to their land use capability. This means, on the one hand, reduction of idle and wasteland in each region to the minimum by suitable reclamation and land improvement measures and on the other hand, securing such alterations in the existing pattern of land use as are necessary for raising productivity or for conservation of soil and water.

While studying agricultural land utilization in the country, Chauhan has made an attempt to analyse data on land utilization pattern in different sub--regions (for the year 1952) along with different states for the year 1958-1959. By comparing land use pattern data with other continents and selected nations, he showed that amongst the large countries of the world, India had the largest proportion of land devoted to the cultivation of crops.

Mishra[29] has observed that the area under forest, barren and uncultivable land, cultivable wasteland, under miscellaneous tree crops and groves in Uttar Pradesh had shown a declining trend in the first three National Plans.

Singh[30] has tried to depict the variable patterns of land use in the two physical units, the Vindhyan upland rim and the valley plain in Mirzapur district in U.P. He has noticed the impact of physical, social and cultural factors on the different types of land farming systems. He has incorporated in his study the actual land uses and their changing pattern since 1879 and for primary information he incorporated data from four villages.

Jalal[31] has presented a vivid account of the general and agricultural land use by verification and physical factors responsible for effective land utilization in the district of Pithoragarh. He has further observed that the land use pattern of an area is an outcome of its physical environment and human endeavour.

Goswami[32] has suggested possible use patterns of different land

classes in the Garo Hills, particularly in relation to *jhumming*. He has further suggested that flat bottom upto 5 per cent slope where prospect of irrigation is fairly bright can be cultivated with rice without special soil conservation measures. Valley land remaining under water are suitable for rice cultivation with proper drainage. He also advocated land use based on land capability status.

Stamp[33] has observed while surveying the land use in Britain that the physical factors are dominant in determining the land use patterns. He has found that the distribution of arable land is a very faithful reflection of physical conditions. The excellent soils and low rainfall of South-West Lancashire explain the dominance of plough land there. The scatter of small arable fields in the west is a reflection of the dominant system of lay farming and local concentrations of plough land have their explanation in terms of soil and climate.

In the study on *Land Utilization in Australia*, Wadham[34] has found that considering the actual conditions of climate, topography and soils which control settlement, four-fifths of the country could not be settled much more densely because of rainfall deficiency or other factors and indicated the margin which existed between actual and potential standards of living at which land would support its people. The study further revealed that with the introduction of modern technology in wheat cultivation in the gray chernogem-like soils of the Wimmera was an excellent example of the extent to which the utilization of land in a district had been changed through introduction of new methods.

In another study entitled *Land Utilization in China*, Buck[35] has observed that in China, man has modified land to a considerable extent so as to make it more productive. "The greatest amount of change in China is the adjustment of the moisture condition of the soil either through irrigation or drainage. Soil conditions are further modified by fertilization by allowing or preventing soil erosion by changing the slope of land through terracing and sometimes by reversing the position of the layers of soil."

Though a comprehensive study on land utilization in Assam has not yet been undertaken, some works have been done on land systems and land utilization in connection with different studies on the economy of Assam. Goswami[36] has given the land systems and utilization pattern in Assam upto 1960-61. Dutta[37] has also referred to land utilization pattern in Assam, particularly in the district of Goalpara and the Karimganj Sub-division of Cachar district in connection with his study on land systems and land reforms in Assam. Saha (1976)[38] has given the utilization pattern of land from 1950-51 to 1973-74 in connection with the study on agriculture development of Assam. In the micro level, an idea on land utilization pattern in different villages can

be had by going through the continuous village study programmes so far conducted by the Agro-Economic Research Centre for North East India, Jorhat.[39] But most of the data available from the above studies are not strictly comparable due to changes in the system of classification, different designs and coverage of the studies.

This volume presents a systematic analysis of the changing pattern of land utilization and the factors responsible for such changes. In this analysis, the nine-fold classification recommended by the Technical Committee on Coordination of Agricultural Statistics, Government of India, has been used and where data available from secondary sources were found lacking in this respect, an attempt has been made to bring them into nine-fold classification for a comparative study. Here, the author has made an attempt to give a picture of the present pattern of land utilization in all the plains districts of Assam as a complete set of data for the two hill districts (Karbi Anglong and the N.C. Hills) are not available. Secondly, the changes in the utilization of different categories of land over 28 years from 1951-52 to 1978-79 and the factors that might have influenced such changes have been discussed. Thirdly, an attempt has been made to indicate the prospects of optimum utilization of land in view of the growing population pressure and introduction of farm technology based on science and technology by discussing the problems of land utilization. The problem of land utilization has two aspects, mainly, the level of utilization of cultivable area, in other words the proportion of cultivable area actually cultivated and intensity with which the cultivated area is being utilized.

Social factors affecting modernization of farm technology and optimum utilization of land have been indicated on the basis of field surveys conducted in connection with the study. It should be borne in mind that a particular plot of land may be used for different purposes for raising different types of crops. In this book, we have indicated how best land can be used optimally on the basis of present knowledge and technology.

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