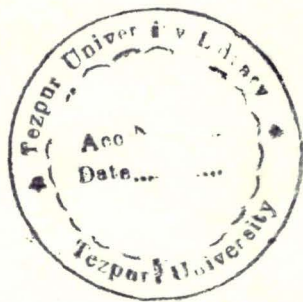


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LAND USE IN ASSAM : A SPATIO-TEMPORAL STUDY

*A Thesis Submitted To Tezpur University
For The Degree Of Doctor Of Philosophy
In The Department Of Business Administration*

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23/8/2003

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(Srinath Baruah)

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GLOSSARY

ARIASP	: Assam Rural Infrastructure And Agriculture Services Programme
ICDP	: Intensive Cattle Development Programme
JFM	: Joint Forest Management
NABARD	: National Bank For Agriculture And Rural Development
NEC	: North Eastern Council
NEDFi	: North Eastern Development And Finance Corporation Ltd
NGO	: Non-Government Organizations
NLCB	: National Land Use And Conservation Board
NSDP	: Net State Domestic Product
NWDB	: National Wasteland Development Board
SHG	: Self-Help Groups
SLUB	: State Land Use Board
STW	: Shallow Tube Wells

Ahu rice	: Paddy crop cultivated during the pre-monsoon season
Arhar	: A cereal type
Beel	: Low-lying water bodies; swamps
Char area	: Riverine sand-banks , fertile, cultivable during non-flood periods
Crore	: Count of 1,00,00,000 units
Gram Panchayat	: The village level local body, consisting of five
OR	
Gaon Panchayat	(selected /elected) representatives.

Jhum : Slash and burn method of cultivation, usually on hill-slopes, shifting type

Kharif crop : Agricultural cultivation during the monsoon season

Khuti : Places (usually near river banks) where cattle is kept, for milk and milk products

Lakh : Count of 1,00,000 units

Mesta : A fibre yielding crop

Rabi crop : Agricultural cultivation during the winter season

Sali rice : Paddy crop cultivated during the monsoon season

Tur : Red gram, a cereal

CHAPTER ONE

INTRODUCTION

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Land comprising soil, water and associated flora and fauna is the most precious resource providing sustenance and survival of human beings. It is the basic prerequisite for all productive activities. The essential requirements of food, shelter, clothing and energy are met by utilizing the land resources.

The overall supply of land is perfectly inelastic even in the long run. The rapidly increasing human and livestock population has been putting pressure on land resources for food, fibre, firewood and other uses, including Industrial uses. This has resulted in large-scale degradation of land endangering the ecosystem seriously. Over the last 50 years or so, 1.2 billion hectares of land in the world - an area larger than that of China and India taken together - has been degraded and its productivity reduced. Soil degradation is widespread in India. It is estimated that the country's total geographical area of nearly 329 million hectares, about 188 million hectares or roughly 57 percent are degraded due to various reasons, such as wind and water erosion, water logging, salinity and desertification. Land degradation not only adversely affects agricultural productivity and the industrial sector depending on agriculture, it also disturbs the entire environment, which upsets the water regime - causing flood, silting of rivers and ports.

Land degradation may take place due to natural factors without human interference. But human interference plays a far more important role. Poor management of land resources resulting from various factors such as ignorance, willful neglect, pressure of immediate economic necessity is responsible for the present severe problems of land degradation faced presently.

But the neglect of scientific land management and land use will jeopardize the process of sustainable growth. The importance of land resources (for growth and welfare of the people) has been recognized by international bodies like FAO, which has adapted the World Soil Charter in 1982. The Charter declared "*Decisions about the use and management of land and its resources should favour the long term advantage rather than the short term expedience that may lead to exploitation, degradation and possible destruction of soil resources.*" The Charter enunciated the principles that should govern the use of land resources and laid down the guidelines for action by international organizations and governments.

The pressure on land is constantly increasing for providing food, fuel, fodder, wood, etc to the fast growing population (human and livestock) and industries. The per capita availability of land in India has declined from 0.90 hectares in 1951 to 0.50 hectares in 1991. The decline in per capita availability of cultivable land has been more rapid - from 0.48 hectares in 1951 to 0.20 hectares in 1991. Livestock density is also relatively higher in India (1.5 per hectare of reported area, 3.1 per hectare of net cultivated area and 4.7 per hectare of grazing land). With the increase in human population, the consumption of firewood (mainly used by the poor) has also increased. In addition, the process of economic development has been putting an increasing demand on land for irrigation projects, transport and communication, residential

and commercial uses also. Between 1951 and 1991 about 12 million hectares have been diverted from other uses to non-agricultural uses.

Reconciling these competing demands for land use in a judicious and environmentally sound manner is a formidable challenge before the nation. What is needed is an integrated approach to the scientific management, conservation and development of land resources of the country. With the increasing biotic pressure and the various competing claims for agricultural and non-agricultural use, a perspective plan is required for ensuring an optimum land use.

The concept of optimum land use has two dimensions - economic and environmental. Consideration of economic efficiency implies that land use is governed by the objective of maximization of net returns to the society as a whole, whereas environmental considerations put emphasis on the question of ecological balance and sustainability. Thus an optimum land use plan has to maximize output while at the same time preserve the environmental balance, and ensuring sustainable development.

During the first two decades of planning, the idea of an integrated approach to management of land resources was absent among the policy maker. The first step was taken in 1974, when the States were directed to set up State Land Use Boards (SLUBs) for providing policy directions and co-ordination of the activities of the different departments dealing with soil and land resources. Although most of the States established SLUBs, these Boards could not discharge their responsibilities during the initial stage. A Study Group on working of the SLUBs was constituted by the Ministry of Agriculture in 1986. The Study Group recommended that SLUBs should act as the apex body to provide policy decisions and co-ordinate all concerned

departments and agencies in matters relating to scientific use of land resources.

At the National level, the National Land Resource Conservation and Development Commission, and National Land Use Board (reconstituted as National Land Use and Wasteland Council in 1985) was set up in 1983. Simultaneously, two other bodies was set up - National Land Use and Conservation Board (NLCB) and the National Wasteland Development Board (NWDB).

The National Land Use Policy (1986) was a major step towards scientific and integrated land use planning. The policy puts emphasis on optimal management of land resources in a manner so that *"the most effective use of the resources will be determined on the basis of surveys relating to land capability and technology of production and the policy framework will be so organized that land is, in fact, used for the purpose for which it is most suitable on the basis of efficiency of production."* The National Land Use Policy is an important statement towards an optimum land use policy in the country. But actions based on this policy are grossly inadequate. Till now a detailed inventory of land resources has not been prepared. Nor an institutional and legal framework capable of ensuring the use of land according to its capability has been set up. There is an inadequate cooperation between various concerned departments dealing with land use. The inability to enforce the National Land Use Policy has caused enormous damage to the productive capacity of land in our country leading to overstressing of the carrying capacity of land.

1.2 OBJECTIVES OF THE STUDY

The use to which land is put can be studied with reference to a given point of time and/or over a period of time. Both studies are academically rewarding. The former upholds the factors affecting the land use pattern at a point of time, which includes, inter alia, the size of human and livestock population, the demand pattern, the technology in use, the cultural traditions, the location and capability of land, institutional factors like ownership pattern and rights, and State regulations. The latter, i.e., the study of land use over a period of time provides an insight into or reflects the working of the factors explaining the dynamics of the society / economy. The important factors include the human and livestock population, the changes in the demand pattern, the improvement in technology, the changing tastes and habits, increased capability of land resulting from irrigational facilities and the changing property rights and ownership patterns.

The present study proposes to analyze the major changes in Assam's economy as reflected in changes in land use pattern over a period of time. In other words, the study looks at shift in area under different land use categories as an attempt to accommodate the increase in population to an inelastic aggregate land area. By analyzing the data relating to the nine-fold classification of land use categories from 1961 onwards (collected by the Directorate of Land Revenue, published by the Directorate of Economics and Statistics, Government of Assam,) an attempt will be made to capture the major changes in Assam's economy since the inception of the Planning era.

Another major objective of the study is to examine the agricultural land use. The trends in area under major crops during the period under study at the State as well as the##

regional levels will be analyzed. This will enable to identify crops which have gained popularity amongst farmers, and the crops which are losing their popularity. The trends in production and average yield of important crops will also be studied and suggestions on improving productivity and average yield will be suggested.

1.3 HYPOTHESIS

The Central Hypothesis set up for testing is that in a predominantly agricultural economy like Assam, population pressure is likely to be reflected in an increase in the net sown area at the expense of cultivable waste and even area under forests. In case of agricultural land use, population pressure is likely to result in a more intensive use of land resources leading to increased cropping intensity and substitution of longer duration crops by shorter duration crops.

1.4 METHODOLOGY

The standard methodology of social science research has been adopted throughout the thesis. The appropriate statistical techniques have been used for the presentation of data. Relevant econometric methods and models are used in the analysis of data as well as for projection purpose.

The detailed methodology adopted in the study is described below briefly:

Starting from 1961, the study is carried upto 1997-98. Trends in land use are examined by fitting log linear regression on

area under each land use category. The equation used to calculate the growth rate is

$$Y_t = Ae^{rt}$$

Or, $\text{Log } Y_t = \text{Log } A + rt$

where Y is the area under a specific land use category;
 A is the constant;
 t is the time;
 r is the compound annual growth rate.

The rate of growth in area, production and average yield of major crops in Assam (1950-51 to 1999-2000) is computed using the same function

$$Y_t = Ae^{rt}$$

where Y is the area/production/average yield of the particular crop;
 A is the constant;
 t is the time; and
 r is the compound annual growth rate.

To arrive at the projected supply in the year 2011, output for each crop has been estimated separately by substituting the required value of t , assuming that the past growth rate would continue.

The methodology followed for demand projection includes the following steps-

- (a) Computation of per capita availability of commodities in the base year, 1999-2000 (separately for rural and urban areas) based on NSS data (55th Round). Per capita consumption of different commodities is converted into annual consumption.
- (b) Using a logarithmic functional form to estimate the income elasticity of demand ($\log Q_i = \log a + b \log E$, where Q_i represents quantity consumed of the commodity by i^{th}

household and E_i is the total consumption expenditure of the household; $\log a$ and b are the parameters) for different commodities based on cross-section household expenditure data separately for rural and urban areas. The elasticities thus obtained are used for demand projections with the assumptions that the consumer expenditure is insensitive to price changes and the income elasticities do not change over time or with price.

- (c) Demand is projected (per capita demand) for rural and urban areas by using the function

$$D = AY^B$$

where D is projected demand;
 A is the constant;
 Y is the projected income; and
 B is income elasticity of demand.

Total per capita projected demand has been obtained by adding projected rural demand and projected urban demand.

- (d) Aggregate demand of the State is arrived by multiplying aggregate demand by the projected population of Assam for 2011.

The collected information was tabulated and analyzed using the SPSS 8.0 package. Statistical accuracy of the regression coefficients was tested with the help of significance of 'T' values. Goodness of fit was examined with the help of adjusted R^2 .

1.5 PERIOD COVERED

Starting from 1961-62, the inter-region variation in land use pattern study is carried upto 1997-98. The agricultural land use is analyzed from 1951-52 to 1999-2000.

1.6 SOURCES OF DATA

The study is based on secondary data on the nine-fold classification of land use. Land use statistics have been taken from various issues of the 'Statistical Handbook of Assam' published annually by the Directorate of Economics and Statistics, Assam. The area presently covered by 21 plains districts of Assam have been regrouped into seven broad regions (Cachar, Goalpara, Kamrup, Darrang, Nagaon, Sibsagar and Lakhimpur), by taking into account geographical proximity and agro-climatic factors. Area covered by the present two hills districts has not been included in the study as the mode of cultivation prevalent there (shifting cultivation) is different from that of the plains areas. Moreover, there is no firm estimate of area actually cultivated in a particular area under shifting cultivation. Statistics relating to area and production of different crops in Assam and Assam's Net State Domestic Product have also been taken from various issues of 'The Statistical Handbook of Assam'. Population data have been taken both from 'The Statistical Handbook of Assam' and from 'The Report of the Technical Group on Population Projections, Government of India'. Livestock and Pisciculture statistics have been taken from Directorate of Animal Husbandry and Veterinary, Government of Assam, and Directorate of Fisheries, Government of Assam, respectively.

1.7 CHAPTERIZATION

After the Introduction in Chapter 1, Chapter 2 looks at the proportion of land put to various land use categories. This has helped to ascertain whether or not the proportions conform to the national set norms. This exercise has been done for the regions as well as the State as a whole.

Also with a view to ascertaining the temporal changes, if any, in the proportion of land put to various land use categories, log linear regression estimate has been computed at the region level and State level. This has helped in understanding to what extent the areas (proportion) under different land use categories are responding over time. The trend thus emerging indicates the nature of public intervention to be made in case the trends are towards imbalances.

Chapter 3 deals with agricultural land use. The trends (calculated by log linear estimate) in area under major crops during the period under study at the State as well as region level has been analyzed. This helps in identifying the crops that have gained popularity amongst farmers, and the crops that are losing their popularity. The trends in production and average yield of various crops have also been analyzed at the State as well as region levels. This chapter also includes a discussion on cropping intensity.

In Chapter 4, the trend (estimated by log linear regression) of Assam's population growth at the State and regional level has been analyzed. The population projected by The Registrar General of India for year 2011 has been taken to make an estimate of normative requirement of foodgrains, assuming that 80% of the foodgrains requirement of the State is met from the State's domestic production.

Chapter 5 studies the movement in Assam's State Domestic Product in order to arrive at the parametric growth rates by sectors. This study unfolds the structural changes taking place in Assam's economy during the period under study. The rate of growth of per capita State Domestic Product has been computed. Assam's SNDP and per capita SNDP for the year 2011 has been projected.

In chapter 6, demand projections of the major agricultural products for the year 2011 for Assam has been made to devise an optimum land use pattern for Assam, and in setting production targets. After making the demand projections, supply projections of the major agricultural products for the year 2011, has been done, involving an examination of the trends of output, production and average yield of major crops. Projected demand is then equated to projected supply. The gap between the two for the major agricultural products, if to be met by domestic production, indicates the dimension of efforts required in providing infrastructural and input support.

Chapter 7 deals with the livestock resources of Assam.

In Chapter 8, a similar exercise is carried out with regard to fisheries (pisciculture).

In Chapter 9, an optimum land use plan for the State of Assam (area under study) has been put forward and analyzed. This chapter summarizes the findings, and related policy implications. Additionally, limitations of the study are mentioned, with suggestions for further studies.

1.8 REVIEW OF LITERATURE

This section is addressed to making a brief presentation reviewing the works done on the topic dealt in the thesis.

Bora (1986) analyzed the data on land utilization pattern in Assam and focused upon the changes in land utilization pattern with a view to arriving at the basic premises that will benefit the posterity in increasing both the productivity and the production from land. The author discussed in detail the

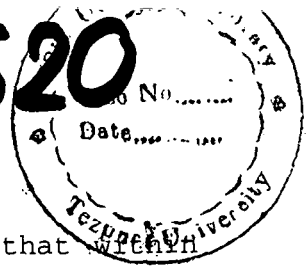
cropping pattern, the cropping intensity, fragmentation of holding of land and other aspects related to the extensiveness and efficiency of land use in the State, thus accelerating the process of economic prosperity of the region. The author elaborately discussed various geo-physical, socio-economic and institutional factors as well as the 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 author also made a micro level analysis of primary data, which projected the socio-economic, and institutional factors acting as impediments to optimum utilization of farm land in Assam. By analyzing both primary and secondary data, the author has made a number of suggestions so as to rectify these lacunae.

Singh, (1997) studied the land base of the Central Zone including land, forests, livestock and water resources and examined the trends in land use pattern over time. The projected requirement of food grains, fuel wood, fodder, etc., in the year 2001 A.D. was juxtaposed against the past trends and present productivity levels. Estimates of area under various types of wastelands were presented and a strategy of wasteland development was outlined. An optimum land use pattern for 2000 A.D. was suggested and the institutional requirements of an integrated land use policy spelt out.

Sharma, (1991) attempted to map out the land use of the Tarai Tract in Eastern Uttar Pradesh and has analyzed the spatial and temporal aspects of land use.

Venkataraman and Prahaladachar (1981) estimated and analyzed the growth rates in area, yield and output of major crops in six States for the period 1950-51 to 1974-75, and also examined the impact of growth rates on cropping pattern in these States.

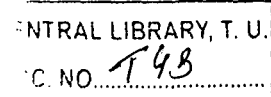
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In Bihar, the study of cropping pattern indicated that the cereals like rice, maize and wheat gained in area whereas barley lost in area during 1950-75. In the cropping pattern, the relative importance of wheat and maize improved from 6 to 15 per cent and 6 to 18 per cent respectively. The study concluded that the cropping pattern shifted in favour of cereals at the cost of pulses and oilseeds.

Rath (1980) examined the performance of agricultural production in India. An exponential trend function was used to estimate production, area and yield rates for the period 1945-50 to 1977-78. This analysis found that the total agricultural production of India grew at an average rate of 2.38 per cent per year during the years 1955-56 to 1978-79. The rate of growth was found to be somewhat higher during the ten years ending 1964-65 than during the subsequent thirteen years when it was only 2.42 per cent. It was also observed that the sustained growth of food grains was entirely due to cereals. Wheat recorded a growth rate of 3.9 per cent and rice of about 3 per cent. In the post-1965 period, with the advent of new HYVs, the growth rate of wheat almost doubled to 7.06 per cent, of this about half was due to increase in area and other half was due to increase in productivity of this crop. However, wheat production, which increased at the rate of about 11 per cent during 1964-72, registered only 3 per cent growth rate during seventies. This was mainly because high yielding wheat had already reached very large areas and achieved economically high level of yield.

Bhagat (1982) in his study on "Growth Rates of Output of Coarse Grains and Pulses in a Backward Economy: A Study of Temporal-Spatial Variations in Chotanagpur" examined the magnitude and direction of changes in area, yield rate and output of major coarse food grains and pulses in relation to their competing



crops in the districts of Chotanagpur region in Bihar, in the two sub-periods, i.e., pre-HYV (1956-57 to 1965-66) and post-HYV (1967-68 to 1976-77) periods along with the causes bringing about these changes and variations. It was found that there was no marked difference in the growth rates of crops grown during the rabi season in the pre-HYV period but the growth rates of area and output of barley and gram were found to be much lower than that of wheat in the post-HYV period, indicating the farmers' preference for growing wheat as against barley and gram. However, the reasons for comparatively higher growth of wheat area and output were not investigated.

Malik et al. (1988) conducted a study to find out linear and compound growth rates of area, production and productivity of wheat in Haryana for the period 1962-63 to 1983-84. It was observed that during the period 1962-63 to 1985-86, the area under wheat in Haryana increased by 170.54 per cent, production increased by 545.82 per cent and yield per hectare increased by 138.73 per cent. Such a tremendous increase in production of wheat in the State was due to combined effect of increased acreage and productivity. The compound growth rates of area, production and productivity of wheat for 1960-61 to 1983-84, increased significantly at an average annual growth rate of 4.83 per cent, 9.65 per cent and 7 per cent respectively.

Venkata Rao (1991) conducted a study on the production of 22 crops in the North-Eastern region and revealed that for major crops like rice, other pulses, rapeseed and mustard, sugarcane, etc., stagnancy has set in. There is accelerating trend in the production of potato and relatively minor crops like tur (red gram) and groundnut. On the whole, principal crop groups exhibited less fluctuation in yield per hectare. The major contribution to the growth of crop output in agriculture came from area expansion, the contribution of yield increase was

only one-third and the changes in cropping tended to lower the growth of crop output in the entire north eastern region.

Raj (1979) analyzed the economic trends and changes in strategy of crop output in India. He agreed with the viewpoint that irrigation is the crucial factor in agricultural growth. He further observed that the increase in agricultural output has been achieved in a few States, whereas area under irrigation has been extended the most. For instance, nearly three-fifth of increase in food grain output between 1967-68 and 1977-79 (from 95 to over 125.5 million tones) was in six States of Haryana, Tamil Nadu, Uttar Pradesh, Andhra Pradesh, West Bengal and Punjab. The conclusion is based on tabular analysis.

Iyengar (1960) worked out the expenditure elasticity of demand for food grains, using three different methods, viz., concentration curve method, ordinary least square and weighted least square method. In all the cases, data relating to per capita total expenditure and per capita expenditure on the specific items of consumption collected from family budget data of 10th round National Sample Survey (NSS) were used. The expenditure elasticities for food grains obtained from the three methods were observed to be 0.58, 0.49 and 0.54, respectively.

Madala (1960) estimated the demand for food grains in India by the end of Third Five Year Plan through a demand equation using the growth rate of population, per capita disposable income and income elasticities of demand. The estimated demand for food grains was found to be 97 million tones by the end of the plan as against 80 million tones in the base period, 1960-61.

Sinha (1966) in his study estimated the expenditure elasticity of demand for food using cross sectional data of various rounds

of the National Sample Survey. He observed that the expenditure elasticity for food slightly declined between 1951 and 1957. The author also observed differences in expenditure elasticity among different regions as well as higher expenditure elasticity of food especially food grains in rural than in the urban areas.

Bal (1970) estimated the expenditure elasticity for selected commodities in rural Punjab, using concentration curve and weighted least square method. Cross section data of the 19th round of National Sample Survey (1964-65) on per capita total expenditure and per capita expenditure on specific item were used to estimate the expenditure elasticity. The estimates of expenditure elasticity for food obtained from the two methods were observed to be 0.44 and 0.40, respectively.

Patel and Vyas (1971) estimated the demand for rice, wheat, other cereals and pulses for three different periods, viz., 1967-68, 1973-74 and 1980-81. For this purpose, they first estimated the population separately for rural and urban sector assuming separate growth rates for rural and urban population. Secondly, based on Fourth Five-Year Plan estimate of income, income and expenditure were estimated separately for rural and urban sector. The expenditure elasticities were taken from different published sources. Finally they arrived at the rates of growth of demand for food grains (rice, wheat, other cereals and pulses) by taking into account the rate of growth of population, growth of per capita expenditure and expenditure elasticity of demand for rural and urban sectors.

Singh and Singh (1971) estimated the expenditure elasticity for selected commodity groups (cereals and pulses) in Punjab by fitting linear, semi log and double log form of Engel functions to the cross sectional data on monthly per capita expenditure

on specific commodity and monthly per capita total expenditure collected from the 19th round of National Sample Survey for Punjab. They used the expenditure elasticity for cereals obtained from double log and for pulses obtained from linear form of Engel function along with projected population, growth rate of per capita income in estimating the aggregate demand for different commodity groups (cereals and pulses) in value terms separately for rural and urban areas for the year 1973-74. While estimating the demand, it was assumed that the consumption habit and relative prices of different commodities would remain more or less unchanged but a change in the proportion of population between urban and rural areas during 1964-65 and 1973-74.

Singh et al. (1972) estimated the demand for food grains in Bihar State for the period 1971-81 on the basis of rate of growth of population and income, and the income elasticity of demand. Taking 1961 as base, population of the State was projected up to the year 1981 by 'Component Method' where a constant fertility was assumed. Following the Fourth Five Year Plan's estimation of the growth of national income between 1968-69 and 1980-81 for the country as a whole, national income of Bihar State was estimated for the year 1970-71, 1975-76 and 1980-81. Thereafter, per capita income was arrived at for the three periods by dividing the State income of the concerned years by their respective projected population. Using the elasticity coefficient for food stuffs collected from various published sources and projected per capita income, the per capita demand for selected foods like cereals, pulses, milk and milk products, sugar, fats and oils were estimated at 433.3 grams, 45.5 grams, 93.6 grams, 11.7 grams, 5.9 grams for the year 1976 and 472.2 grams, 50.9 grams, 120.8 grams, 13.3 grams and 7.0 grams, respectively, for the year 1981. Using these figures of per capita demand and projected population for the

years 1976 and 1981, the total effective demand for the selected food stuffs were estimated for the State as a whole.

Kanan et al. (1983) made projection of consumer demand for selected foodstuffs in India for four periods, viz., 1985-86, 1990-91, 1995-96 and 2000-01. In estimating the demand, they first worked out the expenditure elasticity using log linear equation for cereals, semi log for pulses, sugar, milk and edible oils; double log for meat, fish and egg to the data on per capita total expenditure on all the commodities and per capita expenditure on specific commodity collected from household consumption expenditure data of 25th round National Sample Survey. The expenditure elasticities were estimated separately for rural and urban areas. Secondly, they projected the population. Two different rates of population growth, one based on SFYPD (Six Five-Year Plan Document) and the other based on the rate of natural increase were used to estimate the population for the future periods. Corresponding to the two estimates of population, two types of growth rate for total private consumption expenditure were also assumed. Per capita net availability of different food stuffs derived from the "commodity flow method" was used as proxy for All India per capita consumption of different commodities during the base period (1970-71). The rural and urban estimate of per capita consumption of different commodities in the base period were derived by using the rural-urban ratio of per capita consumption expenditure of respective items according to NSS data for the base period. On the basis of the two types of population estimates and two types of consumption expenditures, the aggregate demand for different food items were projected for the year 1985-86, 1990-91, 1995-96 and 2000-01. The demand projection revealed that demand for food grains on an average increased by 16 per cent during each 'quinquennial' period.

Among cereals, demand for wheat increased faster than that of rice.

Pandey et al. (1984) used a log form of Engel function to estimate the income elasticity of demand where quantity consumed of the commodity by the household is a function of total consumption expenditure of the household. The elasticity, thus, obtained was used for demand projection with the assumption that the consumer expenditure is insensitive to price changes and the income elasticities do not change over time or with prices.

Dhillon et al. (1993) used linear and log-linear form of Engel functions to arrive at the estimates of expenditure elasticity for different commodity groups and specific food items in Punjab. Data relating to expenditure on specific commodity and total expenditure were collected from family budgets published by Economic and Statistical Organization (ESO), Punjab. Expenditure elasticity obtained from the log linear form of equation was found to be 0.67, 1.28 and 1.00 for wheat, rice and pulses, respectively.

Raj Krishna (1963) utilized the data of pre-independence period for Punjab and arrived at two important conclusions that the Punjab farmers adjusted acreage under competing crops like wheat and cotton and responded to economic stimuli.

The dynamic aspect of the decision-making process occupied the main theme of the paper by Maji et al. (1971). They argued that from the assumption of profit maximization follows the certainty-equivalence notion, which implied that for every point of realized income there exists a probability distribution of uncertain income. They included the farmer's risk aversion in the supply behavior. The underlying hypothesis

was that given the subjective price and yield probability distributions, farmers would seek to maximize expected utility, that is to maximize the expected return for a given level of variance in the expected return. The ratio of the actual standard deviation of the price of the crop relatively to the standard deviation of the price of the alternative crop was taken to serve as the proxy for the relative price risk. Similarly, the actual standard deviation of yields over the three preceding years is taken as representative of yield risk.

CHAPTER TWO

*LAND USE IN ASSAM
BY
NINE-FOLD
CLASSIFICATION*

CHAPTER TWO

LAND USE IN ASSAM BY NINE-FOLD CLASSIFICATION

2.1 PHYSICAL SETTING

The pattern of land utilization of a region is influenced by both location and physical environment. Its topography, climate and vegetation determine the amount of land available for different uses in an area.

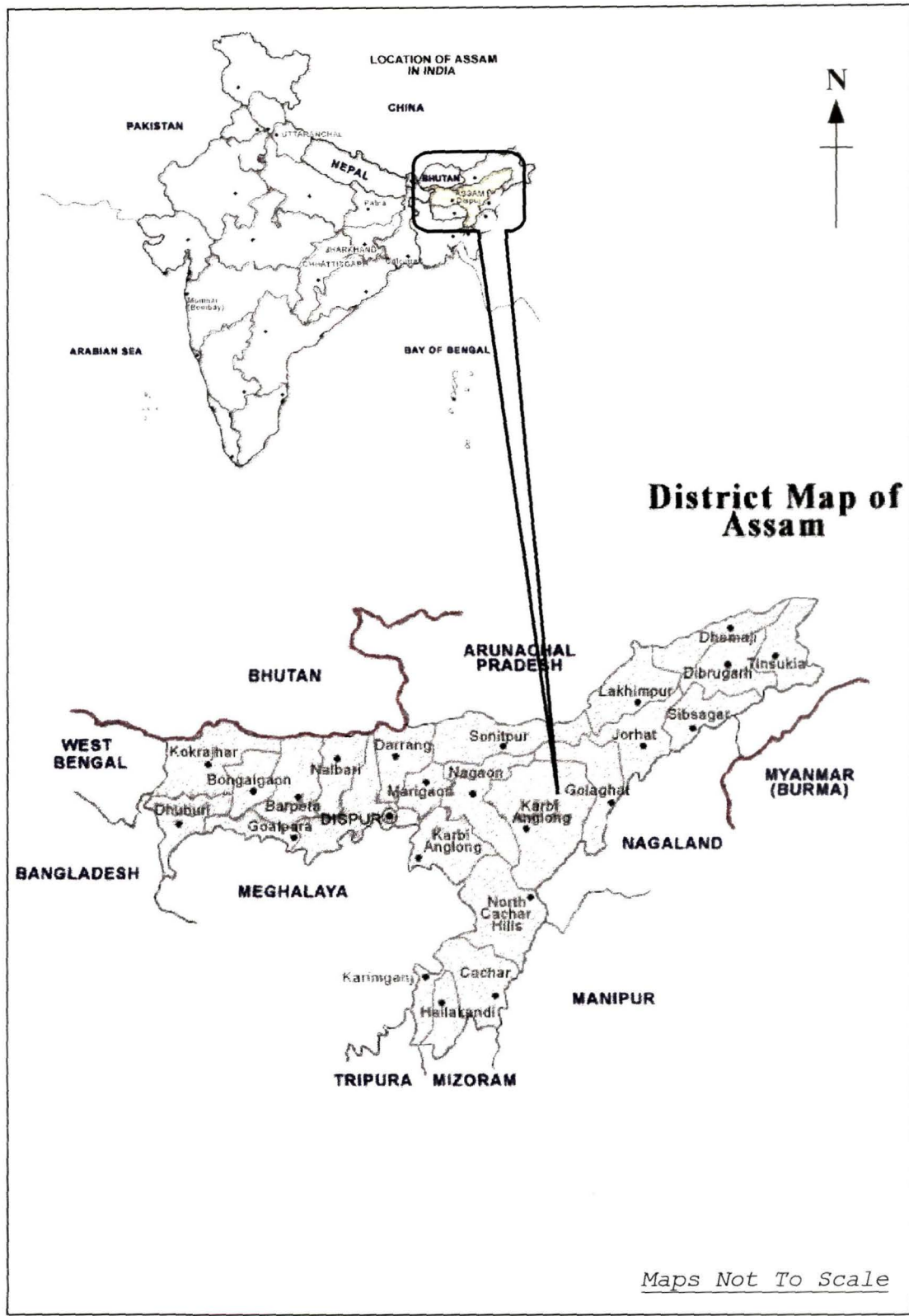
2.2(a) LOCATION

The State of Assam is situated in the north-east corner of India approximately between 24°08'N and 27°09'N latitude and between 89°42'E and 96°10'E longitude. Assam is the gateway to the North-East India comprising the states of Assam, Meghalaya, Manipur, Tripura, Arunachal Pradesh, Nagaland and Mizoram. Its connection with the rest of India is through a small corridor of 20-km width in the North of West Bengal lying below the foothills of Bhutan and Sikkim. The State has a total geographical area of 78,523 sq. km and is bounded by Bhutan and Arunachal Pradesh in the north, Arunachal Pradesh, Nagaland and Manipur in the east, Nagaland, Manipur, Mizoram, Meghalaya and Bangladesh in the south and Bangladesh, Tripura and West Bengal in the west.

(Fig 2.1 - Geographical Location of Assam)

Fig 2.1

GEOGRAPHICAL LOCATION OF ASSAM



Assam has a total number of 23 districts, including the two hill districts of Karbi Anglong and North Cachar Hills. The present study excludes the two hill districts, as their topography does not permit settled cultivation. Shifting cultivation is extensively used in both the hill districts. Moreover, cadastral survey in the two districts has not yet been completed and hence land utilization statistics are not available.

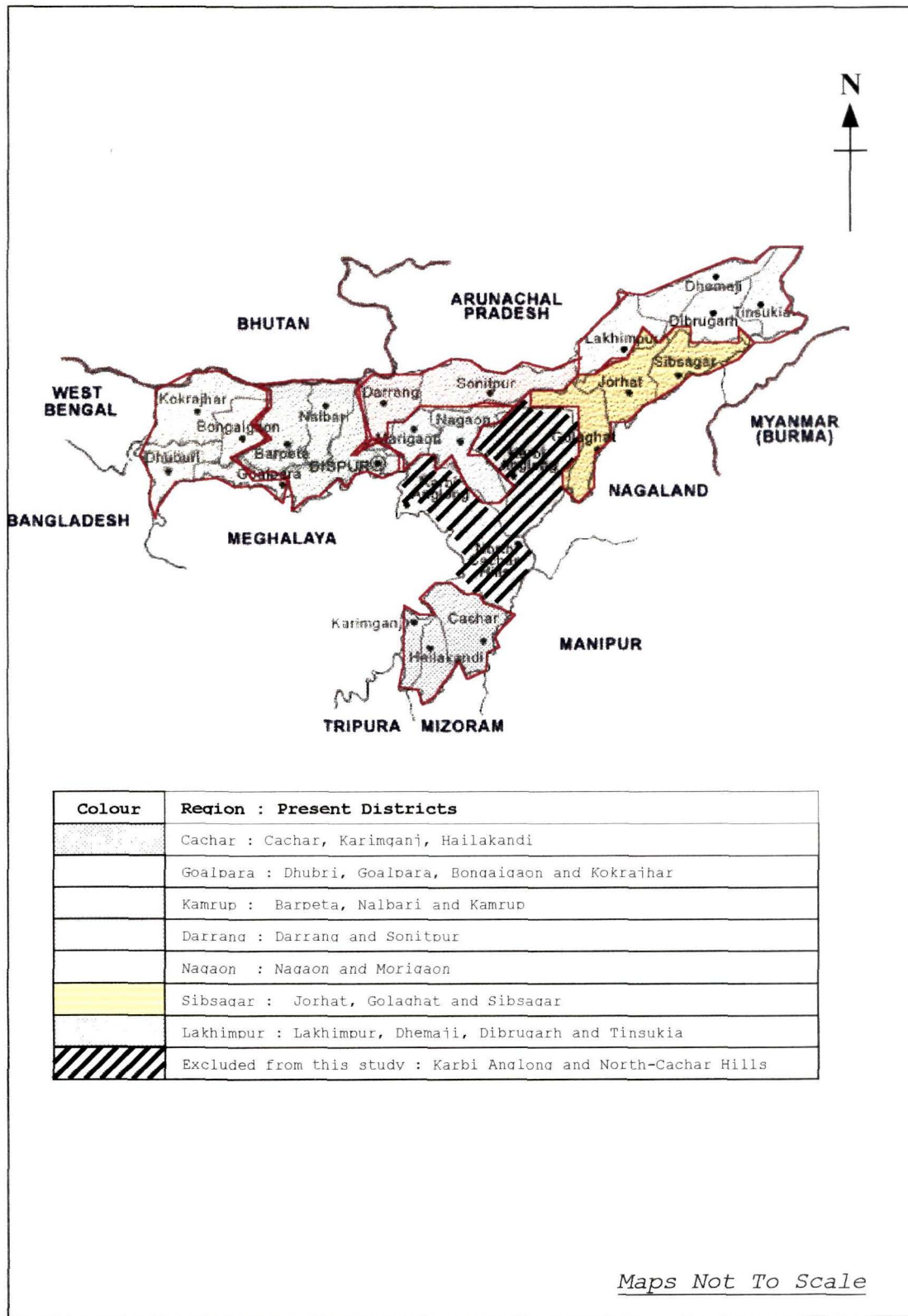
The remaining twenty-one plains districts have been regrouped into seven broad regions for the sake of convenience of analysis, particularly to ascertain both temporal and spatial changes during the study period 1961-62 to 1997-98. The seven broad regions are :

Sl.No.	Region	Includes the present districts of
1.	Cachar	Cachar, Hailakandi and Karimganj
2.	Goalpara	Dhubri, Goalpara, Bongaigaon and Kokrajhar
3.	Kamrup	Barpeta, Nalbari and Kamrup
4.	Darrang	Darrang and Sonitpur
5.	Nagaon	Nagaon and Morigaon
6.	Sibsagar	Jorhat, Golaghat and Sibsaagar
7.	Lakhimpur	Lakhimpur, Dhemaji, Dibrugarh and Tinsukia

(Fig 2.2 - Map of Assam depicting the area under study)

Fig 2.2

MAP OF ASSAM DEPICTING THE AREA UNDER STUDY



2.1(b) PHYSIOGRAPHY

Assam can be divided into two principal natural regions - the Plains comprising the Brahmaputra Valley and the Barak Valley, and the Hills.

The Brahmaputra Valley has an area of 56,339 sq. km, accounting for 72 percent of the total geographical area of the State, and covering the regions of Goalpara, Kamrup, Darrang, Nagaon, Sibsagar and Lakhimpur. The valley is built up of alluvial deposits of the river Brahmaputra and its tributaries.

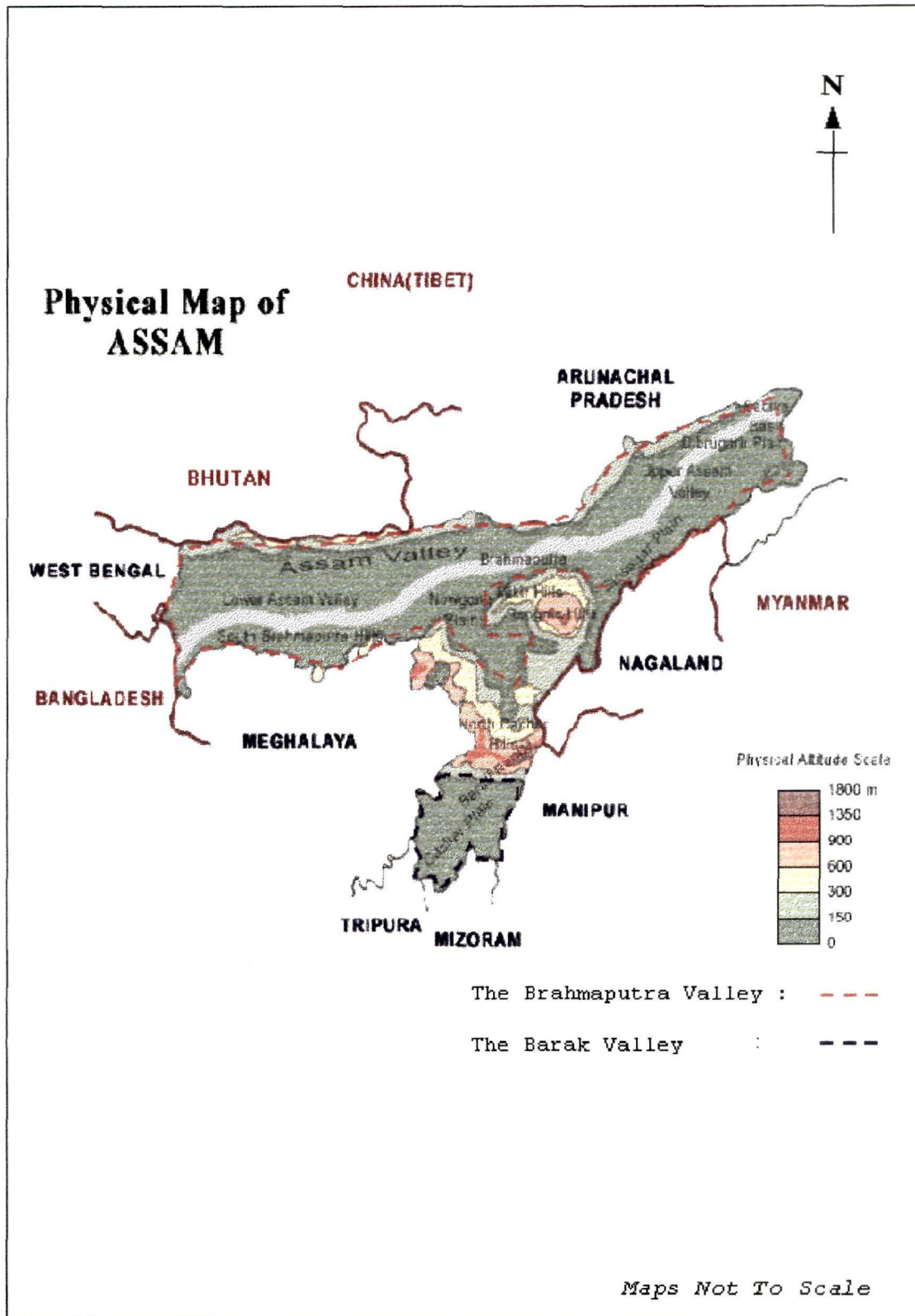
The Barak valley is created by both aggradational and degradational action of the river Barak and its tributaries. The valley comprises the Cachar region. It has an area of 6,962 sq. km, and is encircled by hills on three sides.

The Hill zone comprising of Karbi Anglong and North Cachar Hills covers an area of 15,222 sq. km. The Karbi Hills (erstwhile known as Mikir Hills) are a part of the Meghalaya hills, and the North Cachar hills are of tertiary origin, with steep slopes towards the southern side adjoining the Cachar plains.

(Fig 2.3 - Physical Map of Assam)

Fig 2.3

PHYSICAL MAP OF ASSAM



2.1(c) CLIMATE

Assam's climate is characterised by hot summer and mild to moderately cold winter. There is marked spatial variation in the climatic pattern in the State primarily because of

- i) its location and physiography,
- ii) the seasonal change in the pressure condition over the Bay of Bengal and North-West India,
- iii) the tropical oceanic air-masses of South-West monsoon,
- iv) flow of local mountain and valley winds, and
- v) presence of water bodies and rivers.

The annual rainfall in a region greatly influences its crop production. In Assam, the annual rainfall varies from 1,044 mm in certain parts of Nagaon district to more than 3,000 mm in the districts of Kokrajhar and Lakhimpur. The Lower Brahmaputra Valley, with the exception of Kokrajhar district, receives less rainfall than the Upper Brahmaputra Valley and the Barak Valley. Due to the difference in the topography within short distances, there are marked climatic variations in different parts of the State - which has great significance in respect of land use.

Assam normally experiences four climatic seasons -

- a) Pre-Monsoon,
- b) Monsoon,
- c) Retreating Monsoon, and
- d) Dry Winter.

Pre-Monsoon begins in the early part of March, and continues up to the end of May. Temperature starts rising from the beginning of the season onward. Occasionally the State experiences thunder showers. Rainfall increases both in amount and

frequency as the season advances, which favours the cultivation of tea, jute and ahu-rice.

Monsoon sets in by the last week of May or early June, and it lasts up to September or the first part of October. June, July and August are the months when the State receives more than 70 percent of the total annual rainfall. Sali-rice, the principal crop of the State is cultivated during this period. It is during these months that the Brahmaputra and the Barak, along with their tributaries inundate large areas, both cultivated and otherwise every year.

The period of retreating monsoon starts when the south-west monsoon withdraws sometime in between the last part of September and first part of October. Intensity of rainfall decreases and this season continues up to the middle of November.

The dry winter season begins in the middle of November, and continues up to the end of February. This season is characterised by low temperature, morning fogs and little rainfall. December and January are the driest months of the year.

2.1(d) SOILS

Soil is one of the most valuable natural resource. It comprises a complex mixture of mineral (inorganic) and biological (organic) materials. Soils determine the relative fertility of lands, which support all agricultural activities. Soil is formed by the interaction of various factors - climate, topography, time, etc. As regards the soil of Assam, geology (parent material), topography and climate have played vital

roles in their formations. Thus due to differences in topographical, climatic and geographical conditions of Assam, different types of soil are found in the hills, piedmonts, plateaus and plains. The soil of Assam can be generally divided into four groups :

- a) Alluvial soils,
- b) Piedmont soils,
- c) Hill soils, and
- d) Lateritic soils.

The alluvial soils are extensively distributed over the Brahmaputra and the Barak plains. These soils are fertile in nature. There are two types of alluvial soil a) the young alluvium, and b) the old alluvium.

The younger alluvial soil is found in the active floodplains of the Brahmaputra and the Barak rivers. It is mostly composed of sandy to silty loam and is slightly acidic. This soil is deficit in phosphoric acid, nitrogen and humus. The old alluvial soil is found in some places of Kokrajhar, Barpeta, Nalbari, Darrang, Sonitpur, Lakhimpur and Dhemaji districts between the northern piedmont soil belt and the southern new alluvial soils of the Brahmaputra valley. In the south bank districts of the valley, this soil occurs in a narrow belt bounded between the southern hill soils and the northern new alluvial soils. In the Nagaon district also the old alluvial soil is found. In the Barak plains, patches of old alluvial soil is found between the new alluvial soils of the active floodplain and the hill soils bordering Mizoram. The old alluvium soil is slightly to moderately acidic.

The piedmont soils are found in the northern narrow zone along the piedmont zone of the Himalayan foothills. These soils cover the Bhabar and Terai belt of the Brahmaputra valley. This soil

is characterised by unassorted detritus of boulders, pebbles, cobbles, sands and silts.

The hill soils are found in the southern hilly terrains of the State. The fertility of these soils are different in different regions. These soils are rich in nitrogen and organic matters. Based on the physical texture and chemical composition, the hill soils can be divided into a) red sandy soils and b) red loamy soils. Red sandy soils are distributed along a narrow belt along the Assam-Meghalaya border, the Karbi plateau, southern parts of Barail ranges of the North Cachar Hills district and some parts of the foothills along the eastern border of the Cachar district. These soils are brownish to yellowish red in colour and are moderately acidic with high organic content. The red loamy soils are found in the southern foothill belt running along Assam's border with Arunachal Pradesh and Nagaland, and also in the southern fringes of the Karbi plateau and the Barail hills of the North Cachar Hills district. Patches of these soils are also found along the Assam-Mizoram hill ranges. Red loamy soils are lightly to moderately acidic, and they lack in nitrogen, potash, phosphoric acid and lime.

The lateritic soils are found in the North Cachar Hills district covering some parts of the southern Karbi Plateau. Few patches of these soils are found in the Hamren sub-division of Karbi-Anglong district, on the southern border of Golaghat district and the northern part of the Barak plains along the foothills of the Barail range. These soils are deficient in nitrogen, potash, phosphoric acid and lime.

In general, the soils found in the plains of Assam are rich in nitrogen and organic matter. The alluvial soils of the Brahmaputra valley and the Barak valley are highly fertile and

suitable for raising cereals, oilseeds, pulses and plantation crops. Acidic alluvial soils of the upper Brahmaputra valley which contains a high proportion of phosphoric acid, is suitable for tea cultivation. New alluvial soils that occur in the char-lands of the Brahmaputra are suitable for growing oilseeds, pulses and rabi crops. The alluvial soils of the inter-hill plains are good for cultivating rice and vegetables. Soils in the hill slopes are favourable for horticultural and plantation crops. And soils of the lower part of the hill slopes and narrow valleys can be best utilised for paddy and vegetables.

But the soils of Assam suffer from a number of soil degradation problems, like heavy erosion in the hill slopes, flooding and water logging in the low lying areas and high acidic nature of the soils. Due to heavy precipitation and humid climate, loss of top soil through surface runoff is the most common type of soil degradation in the entire State. The problem of top soil loss is severe in the plains during the flood season. It is estimated that about 3.2 million hectares of land of the plains districts of the State are vulnerable to top soil loss with varying severity. Terrain deformation through mass movement is another type of soil degradation in the hill districts of North Cachar and Karbi Anglong covering an area of 1.53 million hectares. Waterlogging due to high ground water level in and around the depressed area and marshy tracks is another factor responsible for soil degradation in the high moisture region. In the State about 0.92 million hectares of land suffer from waterlogging. Besides most of the soils of Assam, irrespective of their types, are acidic in nature which leads to chemical degradation of soils.

Frequent occurrence of floods in Assam is another factor responsible for soil degradation. Though floods in Assam is a

recurring feature since early times, in the recent past a number of newly emerged causes have led to increase in frequency of floods (three-four times a year) in both the Brahmaputra and Barak valleys.

Floods have some beneficial effects, such as fertile silt deposition on agricultural land, recharge of soil moisture, increase in fish population, and washing of dirty environment. But they also cause substantial damage to standing crops, dwelling houses and developmental infrastructures. Generally, inundation and associated bank erosion cause the damages during floods. Presently, Assam accounts for nearly eight percent of the total flood-damaged area in India. Cropped areas damaged and number of people affected by floods in Assam have been increasing. The flood of 1988, which occurred in four severe waves has been the most devastating one in recent times. This flood, characterised by high water levels throughout the Brahmaputra from Dibrugarh to Dhubri caused tremendous devastation and extensive inundation in about 62 percent of the Brahmaputra valley.

Floods in Assam are due to a number of factors - natural, hydrometeorological and anthropogenic. Floods are more severe in the Brahmaputra valley. Heavy monsoons, devastating landslides alongwith easy erosion of rocks and high seismicity are the major natural causes of floods in Assam.

Besides the natural factors, human-induced factors are also highly responsible for devastating floods in the State. Deforestation and indiscriminate felling of trees in the hilly catchments of the Brahmaputra and Barak act as aggravating factors of floods in the State. Shifting cultivation practiced in the hills leads to destruction of protective cover of vegetation which results in massive soil erosion. These

sediments get deposited on the riverbeds raising its level. In recent years, increasing encroachment on the floodplains and low-lying areas for habitation and cultivation has aggravated the flood problem. Also the structural measures of flood control, especially the poorly managed embankments often cause sudden floods.

2.1(e) GEOLOGY

The geological formations occurring in Assam belong to the Archaean, Pre-Cambrian, Tertiary and Quaternary periods. These formations can be broadly classified into five categories :

- a) The Archaean group of rocks,
- b) The Pre-Cambrian rocks,
- c) The Lower Tertiary sediments,
- d) The Upper Tertiary sediments, and
- e) The Quaternary alluvial sediments.

The Archaean group of rocks comprises the metamorphic rock type of gneisses and schists. These rocks occur in the northern and central parts of Karbi Plateau and the northern foothills of the Meghalaya Plateau along the Assam-Meghalaya border. The isolated monadnocks like remains consisting of gneisses and granites scattered along the north and south bank of the Brahmaputra in Goalpara, Kamrup, Darrang, Sonitpur and Nagaon districts also belong to the Archaean group of rocks.

The Pre-Cambrian rocks consisting of quartzite and phyllite are found in the western part of the Karbi Plateau and the northern parts of the North Cachar Hills.

The Lower Tertiary sediments known as the Jaintia Group is composed mainly of sandstone and limestone, and are found in

the Kopili valley, the southern and eastern slopes of the Karbi plateau and some parts of the North Cachar Hills.

The Upper Tertiary sediments of sandstone, sandy shale and siltstone are found in the southern flank of the Karbi plateau, the North Cachar Hills the hills of the Barak valley of Cachar district, the foothills of the Naga-Patkai ranges bordering the southern margin of undivided Sibsagar and undivided Dibrugarh districts and the narrow belt of the Himalayan foothills along the northern border of Assam.

The Quaternary alluvial sediments of older and newer alluviums comprise the recent alluvial deposits of the Brahmaputra and the Barak valleys, the red river-bank soils and high level terrace deposits.

2.2 LAND USE PATTERN AND TRENDS

Land use pattern is usually studied in terms of the nine-fold classification of land use categories. For the present study, statistics relating to the nine-fold classification in Assam have been taken from the 'Statistical Handbook of Assam', published annually by the Directorate of Economics and Statistics, Assam.

The area presently covered by 21 plains district of Assam have been regrouped into seven broad regions, viz. Cachar, Goalpara, Kamrup, Darrang, Nagaon, Sibsagar and Lakhimpur. It is to be noted that these seven 'regions' constituted the parent districts of the present 21 plains districts of Assam. Analysis of data over time is greatly facilitated by such a grouping. As mentioned earlier, area covered by the present two hills districts have not been included in the study as the mode of cultivation practiced therein, i.e. shifting cultivation, is

different from that of the plains districts. Moreover there is no firm estimate of area actually cultivated in a particular year under shifting cultivation.

As stated earlier, the present study covers the period 1961-62 to 1997-98. However it is to be noted that the land use data by nine-fold classification are not available for the period 1981-82 to 1992-93.

Inter-group shift of area as per the nine-fold classification of land use has been analysed both at the State and regional levels.

The trend in land use have been examined by fitting the exponential function

$$Y_t = Ae^{rt} \quad (1)$$

where Y is the area under a specific land use category and t is the time. The compound annual growth rate is given by r.

2.2(a) LAND USE CLASSIFICATIONS

The details of the nine-fold land use classification are as follows :

1. FORESTS

Area under forests includes all land classified as forests under any legal enactment dealing with forest or administered as forests, whether State owned or private, and whether wooded or maintained as potential forest land. The area under a crop raised or open for grazing within the forest should remain included under the forest areas.

2. BARREN AND UNCULTIVABLE LAND

This category consists of all barren and uncultivable land like mountains, deserts, etc. Land which cannot be brought under cultivation unless at a high cost is classed as uncultivable, whether such land is in isolated blocks or within cultivated holdings.

3. LAND PUT TO NON-AGRICULTURAL USES

This category includes land occupied by buildings, roads, railways, graveyards, cremation grounds or land under water (i.e. rivers, canals) and any other land put to use for purposes other than agricultural use.

4. CULTIVABLE WASTE

This category includes lands available for cultivation but not cultivated during the current year, and last five years or more in succession. Such lands may be either fallow or covered with shrubs and jungles that are not put to any use.

5. PERMANENT PASTURES AND OTHER GRAZING LANDS

This category includes all grazing lands, whether or not they are permanent pastures and meadows. Village common grazing lands are also included under this category.

6. LAND UNDER MISCELLANEOUS TREE CROPS AND GROVES.

This category includes all cultivable lands which are not included under net area sown but are put to some agricultural use.

7. CURRENT FALLOWS

Current fallows are lands which are left fallow during the current year only.

8. OTHER FALLOWS

This category includes all lands which were cultivated but has been left out of cultivation for a period of not less than one year and not more than five years.

9. NET AREA SOWN

This category represents net area sown under crops, the area sown more than once during the year being counted only once.

2.2 (b) STATE LEVEL TRENDS

Table 2.1 shows the details of land use pattern in the State of Assam based on the nine-fold classification since 1961-62. An analysis of the table reveals that area both in absolute and percentage terms under forest, barren and uncultivable land, cultivable wasteland, current fallows, and other fallows have declined. Area under miscellaneous tree crops and groves and permanent pastures and other grazing lands have remained almost constant whereas it has increased in case of land put to non-agricultural uses and net area sown.

Area under forest has declined considerably from 1,745 thousand hectares (27.92 percent of reporting area) in 1961-62 to 1,545 thousand hectares (24.48 percent of reporting area) in 1997-98. The proportion of area under barren and uncultivable land have also declined since 1961-62 from 10.99 percent of reporting area to 7.49 percent of reporting area in 1997-98. Cultivable wasteland has declined from 197 thousand hectares (3.15 percent of reporting area) in 1961-62 to 86 thousand hectares (1.36 percent of reporting area) in 1997-98. Area under current fallows and other fallows have decreased from 153 thousand hectares (2.45 percent of reporting area) and 170 thousand

Table 2.1
LAND USE - STATE

(in thousand hectares, with the percentage w.r.t. State Total given just below each in italics)

Year	Land Use Classifications									
	State Total	Forests	Land put to Non-Agril Use	Barren and Uncultivable Land	Permanent Pastures and Other Grazing Land	Land Under Misc. Tree Crops and Groves	Cultivable Waste Land	Current Fallows	Other Fallows	Net Area Sown
1961-62	6250	1745 <i>27.92</i>	742 <i>11.87</i>	687 <i>10.99</i>	240 <i>3.84</i>	257 <i>4.11</i>	197 <i>3.15</i>	153 <i>2.45</i>	170 <i>2.72</i>	2053 <i>32.85</i>
1962-63	6250	1735 <i>27.76</i>	742 <i>11.87</i>	687 <i>10.99</i>	240 <i>3.84</i>	257 <i>4.11</i>	197 <i>3.15</i>	131 <i>2.10</i>	170 <i>2.72</i>	2071 <i>33.14</i>
1963-64	6250	1740 <i>27.84</i>	754 <i>12.06</i>	681 <i>10.90</i>	237 <i>3.79</i>	255 <i>4.08</i>	197 <i>3.15</i>	149 <i>2.38</i>	199 <i>3.18</i>	2059 <i>32.94</i>
1964-65	6265	1740 <i>27.77</i>	765 <i>12.21</i>	673 <i>10.74</i>	236 <i>3.77</i>	249 <i>3.97</i>	186 <i>2.97</i>	157 <i>2.51</i>	185 <i>2.95</i>	2470 <i>39.43</i>
1965-66	6273	1744 <i>27.80</i>	767 <i>12.23</i>	671 <i>10.70</i>	234 <i>3.73</i>	247 <i>3.94</i>	185 <i>2.95</i>	195 <i>3.11</i>	154 <i>2.45</i>	2075 <i>33.08</i>
1966-67	6229	1744 <i>28.00</i>	768 <i>12.33</i>	671 <i>10.77</i>	234 <i>3.76</i>	237 <i>3.80</i>	184 <i>2.95</i>	140 <i>2.25</i>	189 <i>3.03</i>	2102 <i>33.75</i>
1967-68	6317	1744 <i>27.61</i>	768 <i>12.16</i>	671 <i>10.62</i>	234 <i>3.70</i>	229 <i>3.63</i>	183 <i>2.90</i>	134 <i>2.12</i>	183 <i>2.90</i>	2125 <i>33.64</i>
1968-69	6317	1744 <i>27.61</i>	768 <i>12.16</i>	671 <i>10.62</i>	233 <i>3.69</i>	228 <i>3.61</i>	183 <i>2.90</i>	129 <i>2.04</i>	172 <i>2.72</i>	2136 <i>33.81</i>
1969-70	6318	1744 <i>27.60</i>	768 <i>12.16</i>	671 <i>10.62</i>	234 <i>3.70</i>	225 <i>3.56</i>	183 <i>2.90</i>	124 <i>1.96</i>	166 <i>2.63</i>	2146 <i>33.97</i>
1970-71	6269	1679 <i>26.78</i>	851 <i>13.57</i>	570 <i>9.09</i>	261 <i>4.16</i>	235 <i>3.75</i>	179 <i>2.86</i>	122 <i>1.95</i>	164 <i>2.62</i>	2165 <i>34.54</i>
1971-72	6273	1779 <i>28.36</i>	854 <i>13.61</i>	548 <i>8.74</i>	235 <i>3.75</i>	235 <i>3.75</i>	167 <i>2.66</i>	114 <i>1.82</i>	152 <i>2.42</i>	2246 <i>35.80</i>
1972-73	6329	1777 <i>28.08</i>	842 <i>13.30</i>	540 <i>8.53</i>	214 <i>3.38</i>	234 <i>3.70</i>	159 <i>2.51</i>	116 <i>1.83</i>	154 <i>2.43</i>	2294 <i>36.25</i>
1973-74	6317	1777 <i>28.13</i>	831 <i>13.15</i>	530 <i>8.39</i>	208 <i>3.29</i>	235 <i>3.72</i>	153 <i>2.42</i>	152 <i>2.41</i>	110 <i>1.74</i>	2333 <i>36.93</i>
1974-75	6318	1693 <i>26.80</i>	843 <i>13.34</i>	505 <i>7.99</i>	198 <i>3.13</i>	268 <i>4.24</i>	153 <i>2.42</i>	110 <i>1.74</i>	148 <i>2.34</i>	2411 <i>38.16</i>
1975-76	6318	1659 <i>26.26</i>	856 <i>13.55</i>	510 <i>8.07</i>	186 <i>2.94</i>	267 <i>4.23</i>	145 <i>2.30</i>	112 <i>1.77</i>	130 <i>2.06</i>	2465 <i>39.02</i>
1976-77	6318	1627 <i>25.75</i>	881 <i>13.94</i>	501 <i>7.93</i>	185 <i>2.93</i>	249 <i>3.94</i>	129 <i>2.04</i>	109 <i>1.73</i>	132 <i>2.09</i>	2525 <i>39.97</i>
1977-78	6317	1648 <i>26.09</i>	881 <i>13.95</i>	505 <i>7.99</i>	185 <i>2.93</i>	257 <i>4.07</i>	138 <i>2.18</i>	101 <i>1.60</i>	113 <i>1.79</i>	2504 <i>39.64</i>
1978-79	6317	1648 <i>26.09</i>	888 <i>14.06</i>	505 <i>7.99</i>	184 <i>2.91</i>	256 <i>4.05</i>	134 <i>2.12</i>	98 <i>1.55</i>	110 <i>1.74</i>	2507 <i>39.69</i>
1979-80	6338	1648 <i>26.00</i>	898 <i>14.17</i>	505 <i>7.97</i>	184 <i>2.90</i>	256 <i>4.04</i>	124 <i>1.96</i>	104 <i>1.64</i>	98 <i>1.55</i>	2520 <i>39.76</i>
1980-81	6318	1646 <i>26.05</i>	911 <i>14.42</i>	503 <i>7.96</i>	184 <i>2.91</i>	250 <i>3.96</i>	107 <i>1.69</i>	91 <i>1.44</i>	86 <i>1.36</i>	2548 <i>40.33</i>
1981-82	6318	1647 <i>26.07</i>	915 <i>14.48</i>	503 <i>7.96</i>	184 <i>2.91</i>	246 <i>3.89</i>	104 <i>1.65</i>	88 <i>1.39</i>	83 <i>1.31</i>	2559 <i>40.50</i>
1992-93	6312	1603 <i>25.40</i>	1013 <i>16.05</i>	476 <i>7.54</i>	163 <i>2.58</i>	220 <i>3.49</i>	89 <i>1.41</i>	72 <i>1.14</i>	70 <i>1.11</i>	2620 <i>41.51</i>
1993-94	6312	1614 <i>25.57</i>	1020 <i>16.16</i>	463 <i>7.34</i>	159 <i>2.52</i>	214 <i>3.39</i>	93 <i>1.47</i>	75 <i>1.19</i>	70 <i>1.11</i>	2622 <i>41.54</i>
1994-95	6312	1614 <i>25.57</i>	1030 <i>16.32</i>	463 <i>7.34</i>	159 <i>2.52</i>	210 <i>3.33</i>	88 <i>1.39</i>	89 <i>1.41</i>	68 <i>1.08</i>	2607 <i>41.30</i>
1995-96	6312	1614 <i>25.57</i>	1030 <i>16.32</i>	463 <i>7.34</i>	159 <i>2.52</i>	212 <i>3.36</i>	89 <i>1.41</i>	122 <i>1.93</i>	69 <i>1.09</i>	2559 <i>40.54</i>
1996-97	6312	1545 <i>24.48</i>	1045 <i>16.56</i>	473 <i>7.49</i>	169 <i>2.68</i>	244 <i>3.87</i>	87 <i>1.38</i>	114 <i>1.81</i>	69 <i>1.09</i>	2583 <i>40.92</i>
1997-98	6312	1545 <i>24.48</i>	1045 <i>16.56</i>	472 <i>7.48</i>	169 <i>2.68</i>	244 <i>3.87</i>	86 <i>1.36</i>	108 <i>1.71</i>	67 <i>1.06</i>	2591 <i>41.05</i>

Data not available between 1981-82 and 1992-93
Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

hectares (2.72 percent of reporting area) respectively in 1961-62 to 108 thousand hectares (1.71 percent of reporting area) and 67 thousand hectares (1.06 percent of reporting area) respectively in 1997-98. Area under Permanent Pastures and Other Grazing Lands declined from 240 thousand hectare in 1961-62 to 169 thousand hectares in 1997-98.

Area under miscellaneous tree crops and groves has remained almost constant during the study period. It covered 4.11 percent of the reporting area (257 thousand hectares) in 1961-62, increased slightly during the mid-seventies to 4.24 percent (268 thousand hectares) but declined gradually to 3.86 percent of reporting area (244 thousand hectares) in 1997-98.

Area under land put to non-agricultural uses has increased considerably during the study period. It covered 11.87 percent of reporting area (742 thousand hectares) in 1961-62, which increased to 16.56 percent (1045 thousand hectares) in 1997-98. Net area sown has also shown a steady increase since 1961-62. Area under this category stood at 2053 thousand hectares (32.85 percent) in 1961-62, and increased gradually to 2591 thousand hectares (41.05 percent) in 1997-98.

The land use patterns in Assam shows some disturbing features. Area under forests constitutes only 24.5 percent of reporting area which is below the norms set by the National Forest Policy according to which atleast one-third of the area should be under forests for ecological balance. This is a negative trend and should be reversed immediately. There are a number of factors responsible for the decline in forest cover in Assam. The Forest Department has strict rules for harvesting forest produce from reserved forests and for checking illegal felling and movement of forest produce. But despite the stringent rules, their poor implementation has been responsible for the

decline in forest area in Assam. The decline in forest area is also due to encroachment in forest area for human settlements, mostly by illegal migrants. The report of the Working Group on Development of the North-Eastern Region during the Seventh Five Year Plan published by North Eastern Council (NEC) states that among the different factors responsible for the rapid depletion of forest cover in the North East, the two most important ones are :

- i) The reckless exploitation of forest, and
- ii) Extensive jhum cultivation.

Another reason cited by some for the decline in forest area in Assam is that some forest land along the State's border are reportedly under the occupation of the neighbouring States. For example, Nagaland is allegedly occupying about 19 thousand hectares of forest land illegally in the Disoi and Tiru hills reserved forest of Jorhat district. It has also occupied 2,950 hectares of forest land of Galeki forest land in Sibsagar district. Assam-Arunachal Pradesh border covers 10,24,297 hectares of reserved forests, and of these Arunachal Pradesh has encroached upon more than 15,384 hectares of land. Some forest areas along the Assam-Meghalaya border are also being occupied by Meghalaya.

The increase in the Net Area Sown (NAS) is a positive sign. NAS should increase to feed the growing population, and to make the State self-sufficient in foodgrains. Land put to non-agricultural uses has increased due to increase in human habitation, and due to the process of economic development which puts an increasing demand on land for irrigation projects, transport and communication, residential and commercial uses, and also for tourism, sports and recreation, etc.

Land under Current Fallows (about two percent of reporting area) and Other Fallows (another two percent of reporting area) are not put to any productive use due to problems like lack of irrigation, waterlogging, salinity, etc. In addition, Area under Cultivable Wasteland (1.4 percent of reporting area) and Barren and Uncultivable Land (7.5 percent of reporting area) are also not put to any productive use. Thus about 11 percent of the reporting area are not under any productive use, i.e. unutilised and/or underutilised land. If these underutilised lands are put under region specific crops, foodgrain production will increase considerably. Proper utilisation of these lands will also reduce the pressure on agricultural land and may even release some land to forest and non-agricultural sectors. Fallow lands can also be put under agro-forestry which will lead to improvement of local ecology.

Using the exponential growth function in equation(1) above, the regression parameters and the rates of growth are estimated. The computed regression estimates and rates of growth of different land use categories are given in Table 2.2.

Table 2.2
ESTIMATES OF AREA UNDER MAJOR LAND USE CATEGORIES

Sl. No.	Categories	Constant	Beta	T Value	Adjusted R ²	Compound growth rate (%)
1	Forests	1793.05	-0.0045	-8.711	0.7422	-0.45
2	Barren And Uncultivable Land	708.66	0.0141	19.680	0.9369	1.41
3	Land Put To Non-Agricultural Uses	712.47	-0.0180	-13.928	0.8812	-1.80
4	Cultivable Waste Lands	261.17	-0.0184	-12.672	0.8599	-1.84
5	Permanent Pastures And Other Grazing Land	249.93	-0.0027	-1.629	0.0598	-0.26
6	Land Under Misc. Tree Crops And Groves	232.82	-0.0367	-18.804	0.9313	-3.67
7	Current Fallows	157.09	-0.0217	-5.727	0.5501	-2.17
8	Other Fallows	228.30	-0.0455	-14.423	0.8884	-4.50
9	Net Area Sown	2041.99	0.0102	10.151	0.7969	1.02

(Derived from the figures given in Table 2.1)

The T values show whether the r coefficients are significant or not. Adjusted R² gives the goodness of fit of regression coefficients. In almost all cases, the goodness of fit is found to be high.

2.2(c) REGIONAL TRENDS

Due to differences in climate, rainfall, soil, temperature, etc, as well as in density of human and livestock population, significant inter-regional variations in the pattern of land use are often noticed. In the case of Assam, these inter-regional variations and changes in them over time by the nine-fold classification of land use have been estimated by using the same exponential function.

1. FORESTS

Area under forests has increased slightly in three of the seven regions (as shown in Table 2.3). Growth in area under forests is 1.16 percent in Goalpara, followed by 0.76 percent in Darrang and 0.28 percent in Cachar during the period 1961-62 to 1997-98.

Table : 2.3

ESTIMATES OF AREA UNDER FORESTS

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	246.45	0.0028	3.515	0.3039	0.28
2	Goalpara	250.46	0.0116	4.394	0.4131	1.16
3	Kamrup	293.26	-0.0131	-8.368	0.7263	-1.31
4	Darrang	158.04	0.0076	5.104	0.4907	0.76
5	Nagaon	113.51	-0.0038	-3.354	0.2826	-0.38
6	Sibsagar	241.15	-0.0045	-14.187	0.8851	-0.45
7	Lakhimpur	501.54	-0.0224	-18.211	0.9271	-2.24

(Derived from the figures given in Table A.1)

Area under forests has declined in the other four regions. In Lakhimpur, the decrease in area under forest has been the maximum with a negative growth rate of 2.24 percent, followed by Kamrup where it has decreased by 1.31 percent, Sibsagar by 0.45 percent and Nagaon by 0.38 percent.

2. BARREN AND UNCULTIVABLE LAND

Area under this category of land has decreased in six of the seven regions under study. The only region which showed a positive growth of area under barren and uncultivable land is Lakhimpur where the growth rate is 0.75 percent. Amongst the regions which gives negative growth, it is highest in Goalpara (-4.51 percent), followed by Kamrup (-3.01 percent), Nagaon (-1.33 percent), Darrang (-1.2 percent), Cachar (-1.03 percent) and Sibsagar (-0.15 percent). The growth rates alongwith the T values and Adjusted R² are given in Table 2.4. A conclusion that can be derived from this table is that mostly due to increase in human population area under this land use category has declined to accommodate the increase in population.

Table : 2.4

ESTIMATES OF BARREN AND UNCULTIVABLE LAND

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	81.5544	-0.0103	-9.464	0.7730	-1.03
2	Goalpara	276.9710	-0.0451	-10.281	0.8010	-4.51
3	Kamrup	95.9884	-0.0301	-6.364	0.6030	-3.01
4	Darrang	74.5605	-0.0120	-10.561	0.8095	-1.20
5	Nagaon	41.8868	-0.0133	-6.234	0.5928	-1.33
6	Sibsagar	42.4918	-0.0015	-2.476	0.1648	-0.15
7	Lakhimpur	111.5036	-0.0075	11.928	0.8445	0.75

(Derived from the figures given in Table A.2)

3. LAND PUT TO NON-AGRICULTURAL USES

Area under this land use category has increased in four of the seven regions, as shown in Table 2.5. Regions which show a

positive growth of this category of land are Lakhimpur (2.21 percent), Sibsagar (1.75 percent), Darrang (0.90 percent) and Kamrup (2.36 percent), Goalpara (0.52) and Cachar (0.92). Negative growth rate of land put to non-agricultural uses was found in the only remaining region of Nagaon (-0.23 percent).

Table : 2.5

ESTIMATES OF LAND PUT TO NON-AGRICULTURAL USES

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	52.092	0.0092	3.226	0.2626	0.92
2	Goalpara	112.649	0.0052	4.521	0.4278	0.52
3	Kamrup	54.254	0.0236	10.397	0.8046	2.36
4	Darrang	155.047	0.0090	10.449	0.8062	0.90
5	Nagaon	52.6970	-0.0023	-1.498	0.0456	-0.23
6	Sibsagar	95.656	0.0174	16.553	0.9150	1.75
7	Lakhimpur	187.503	0.0221	12.061	0.8474	2.21

(Derived from the figures given in Table A.3)

Area under land put to non-agricultural uses category has increased in most of the regions to accommodate the increase in human habitation. Urbanization and industrialization are the two other factors that result in increase in this land use category.

4. CULTIVABLE WASTELAND

Area under cultivable wasteland has declined in all the regions of Assam, as evident from Table 2.6. Darrang shows the highest negative growth rate of -6.55 percent, followed closely by Sibsagar (-5.06 percent), Nagaon (-4.42 percent) and Kamrup (-3.32 percent).

The decrease in area under cultivable wasteland is usually taken as a positive development, since it indicates that some land hitherto kept as wasteland has been reclaimed for extension of cultivation.

Table : 2.6

ESTIMATES OF CULTIVABLE WASTELAND

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	11.0419	-0.0214	-3.023	0.2383	-2.14
2	Goalpara	19.8424	-0.0193	-6.354	0.6022	-1.93
3	Kamrup	21.8882	-0.0332	-11.141	0.8256	-3.32
4	Darrang	43.8834	-0.0665	-24.514	0.9584	-6.55
5	Nagaon	25.6639	-0.0442	-4.909	0.4704	-4.42
6	Sibsagar	51.5548	-0.0506	-16.120	0.9087	-5.06
7	Lakhimpur	60.7104	-0.0242	-17.621	0.9225	-2.42

(Derived from the figures given in Table A.4)

5. PERMANENT PASTURES AND OTHER GRAZING LAND

Area under this category has declined in all the regions of Assam except Kamrup where it has increased by 1.5 percent. Decline in area under this category has been highest in Darrang where it decreased by 3.99 percent. The other regions where area under Permanent pastures and other Grazing Land has declined are Goalpara (-2.78 percent), Lakhimpur (-2.79 percent), Sibsaagar (-2.74 percent), Nagaon (-2.12 percent) and Cachar (-0.68 percent). Growth rates alongwith the T values are shown in Table 2.7.

Table : 2.7

ESTIMATES OF PERMANENT PASTURES AND OTHER GRAZING LAND

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	7.1055	-0.0068	-3.649	0.3214	-0.68
2	Goalpara	38.9002	-0.0278	-7.632	0.6876	-2.78
3	Kamrup	38.8753	0.0150	2.707	0.1957	1.50
4	Darrang	49.7337	-0.0399	-13.141	0.8684	-3.99
5	Nagaon	33.4519	-0.0212	-11.338	0.8306	-2.12
6	Sibsagar	37.1217	-0.0274	-9.780	0.7844	-2.74
7	Lakhimpur	56.8480	-0.0279	-13.317	0.8715	-2.79

(Derived from the figures given in Table A.5)

The decrease in area under this land use category is not an encouraging sign. The primary reason behind the decrease in area under permanent pastures and other grazing land is the

rapid increase in population. Many migrants have also settled in these areas reducing the grazing land for the livestock population of the State.

6. LAND UNDER MISCELLANEOUS TREE CROPS AND GROVES

Area under miscellaneous tree crops and groves shows a decrease in five of the seven regions of Assam, as shown in Table 2.8. Kamrup shows a positive growth rate of 0.91 percent whereas Cachar shows a negligible positive growth rate of 0.01 percent. The rest of the regions returned a negative growth rates, i.e. Darrang (-1.42 percent), Nagaon (-0.89 percent), Sibsagar (-0.82 percent), Goalpara (-0.67 percent) and Lakhimpur (-0.28 percent).

The major reason behind the decline in area under miscellaneous tree crops and groves is the encroachment of these areas for dwelling purpose.

Table : 2.8

ESTIMATES OF LAND UNDER MISCELLANEOUS TREE CROPS AND GROVES

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	32.8503	0.0001	0.215	-0.0380	0.01
2	Goalpara	18.2266	-0.0067	-1.224	0.0188	-0.67
3	Kamrup	29.0369	0.0091	2.192	0.1276	0.91
4	Darrang	35.3768	-0.0142	-5.753	0.5525	-1.42
5	Nagaon	24.1818	-0.0089	-6.202	0.5903	-0.89
6	Sibsagar	57.0847	-0.0082	-5.645	0.5427	-0.82
7	Lakhimpur	53.1629	-0.0028	1.018	0.0013	-0.28

(Derived from the figures given in Table A.6)

7. CURRENT FALLOWS

Area under current fallows has declined in all the regions of Assam except in Goalpara, where it has increased by 3.25 percent. The decline in this category of land, shown by the negative growth rate has been highest in Nagaon (-6.32 percent) and Darrang (-6.24 percent), followed by -2.85 percent in

Cachar, -2.43 percent in Kamrup, -1.4 percent in Lakhimpur and -0.64 percent in Sibsagar.

Table : 2.9

ESTIMATES OF LAND UNDER CURRENT FALLOWS

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	30.4513	-0.0285	-7.055	0.6523	-2.85
2	Goalpara	6.4566	0.0325	2.313	0.1432	3.25
3	Kamrup	22.9137	-0.0243	-4.426	0.4169	-2.43
4	Darrang	36.4290	-0.0624	-12.296	0.8524	-6.24
5	Nagaon	19.1783	-0.0623	-4.795	0.4582	-6.23
6	Sibsagar	21.9319	-0.0064	-1.732	0.0714	-0.64
7	Lakhimpur	22.2495	-0.0140	-2.759	0.2026	-1.40

(Derived from the figures given in Table A.7)

A decrease in area under current fallows is a positive trend, since it indicates that fallow land have been brought under the plough to meet the growing demand of the population. Table 2.9 gives the details of this land use category.

8. OTHER FALLOWS

Area under current fallows has decreased in all the regions of Assam under study during the period under consideration. In fact, there has been rapid fall in this category of land use, as shown by the high negative growth rates in Table 2.10.

Table : 2.10

ESTIMATES OF LAND UNDER OTHER FALLOWS

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	40.3142	-0.0346	-13.3130	0.8714	-3.46
2	Goalpara	17.1378	-0.0327	-3.1760	0.2590	-3.27
3	Kamrup	38.5962	-0.0578	-0.0578	0.8903	-5.78
4	Darrang	40.7174	-0.0607	-14.4560	0.8888	-6.07
5	Nagaon	22.2135	-0.0750	-8.3180	0.7239	-7.50
6	Sibsagar	51.7968	-0.0544	-14.4680	0.8890	-5.44
7	Lakhimpur	45.6804	-0.0589	-14.9700	0.8956	-5.89

(Derived from the figures given in Table A.8)

Negative growth rate has been highest in Nagaon (-7.5 percent), followed by -6.07 percent in Darrang, -5.78 percent in Kamrup, -5.89 percent in Lakhimpur, -5.44 percent in Sibsagar, 3.46 percent in Cachar, and -3.27 in Goalpara. A decrease in area under current fallows in Assam is usually found to be associated with increase in the number of migrants settling in different areas. In fact, regions with high negative values are exactly the regions with more migrant population.

9. NET AREA SOWN

Net area sown has increased in all regions of Assam, though the growth rate is negligible in Cachar (0.49 percent), and somewhat moderate in the other regions, as shown in Table 2.11. Lakhimpur shows the highest growth of 1.86 percent, followed by 1.34 percent in Goalpara, 1.25 percent in Nagaon, 1.06 percent in Darrang, 1.00 percent in Sibsagar and 0.84 percent in Kamrup.

Table : 2.11

ESTIMATES OF NET AREA SOWN

Sl. No.	Regions	Constant	Beta	T Value	Adjusted R ²	Compound Growth rate (%)
1	Cachar	195.7940	0.0049	7.878	0.7013	0.49
2	Goalpara	299.4644	0.0134	12.674	0.8599	1.34
3	Kamrup	415.2390	0.0084	15.879	0.9091	0.84
4	Darrang	289.6243	0.0106	19.968	0.9386	1.06
5	Nagaon	243.1985	0.0125	12.549	0.8575	1.25
6	Sibsagar	304.9406	0.0100	13.677	0.8773	1.00
7	Lakhimpur	250.6337	0.0186	16.966	0.9168	1.86

(Derived from the figures given in Table A.9)

The increase in NAS is a positive sign, as agricultural production has to increase to feed the growing population. Moreover increase in NAS can make the State possibly self sufficient in agricultural production.

2.2 (d) CONCLUSION

An analysis of all the data given in this chapter reveals that there are serious imbalances in the land use pattern in the State. Moreover there is a high degree of variation in the pattern and trends of land use at the regional level. Area under forests has declined at the State level and this is due to decline in forest area of most of the regions. Area under permanent pastures and other grazing land has also decreased in most of the regions, which should be checked immediately. One positive aspect that has emerged from the study is that NAS has increased in the State level, and at all the regional levels.

The variations in the pattern and trends of land use based on macro data of nine-fold classification should be supplemented by region specific micro studies in order to study the reasons behind. A study of the agricultural land use of different regions of the State will provide a better insight of the variations in the efficiency of land use

CHAPTER THREE

*AGRICULTURAL LAND
USE IN ASSAM*

CHAPTER THREE

AGRICULTURAL LAND USE IN ASSAM

3.1 INTRODUCTION

Agricultural land use means the manner of cultivating soil for growing crops, leaving some areas for other uses like grasslands, horticulture, pisciculture and dairy farming.

The present pattern of agricultural land use in Assam is the result of different agricultural practices carried out for growing different crops. Differences in rainfall and temperature, terrain and soil characteristics and varying socio-economic factors have led to spatial variation in the pattern of agricultural land use within the State.

In Assam, there are two types of agricultural practices, viz. settled farming on the permanent and developed land in the plains and valley areas, and shifting cultivation or Jhumming on the hill areas of the State. As mentioned at the beginning, this study is confined to the first type of agricultural practice.

Assam's economy is heavily dependent on agriculture. More than 70 per cent of the total population in Assam derive their livelihood from the agricultural sector. As per the 1991 census, 64 per cent of the total workers in Assam are agricultural workers. Agriculture is the major contributor to Net State Domestic Product (NSDP) even today contributing 35 per cent in 1998-99.

Gross cropped area in the plain areas of the State stands at 3511 thousand hectares in 1997-98. And net area sown is 2591 thousand hectares in 1997-98 which is 41.05 per cent of the total geographical area of the State. In the net sown area, both food and cash crops are grown. Main food crops in Assam include Rice, Wheat, Pulses, Potato, Maize, etc. and the principal cash crops are Tea, Jute, Oilseeds, Tobacco, Sugarcane, Mesta, etc.

3.2(a) STATE LEVEL TRENDS IN AREA UNDER MAJOR CROPS

Table 3.1 shows the area under different crops in Assam during the period 1951-52 to 1999-2000. Area under all the cereals increased during this period, the increase being more in case of Summer Rice and Wheat. In case of Summer Rice, area under its cultivation increased from 2.11 thousand hectares in 1951-52 to 29 thousand hectares in 1999-2000 whereas area under Wheat increased from 1.88 thousand hectares to 74.88 thousand hectares during the same period.

Area under pulses has not shown any significant increase in Assam during the above mentioned period, In fact, area under Gram declined from 4.17 thousand hectares in 1951-52 to 2.22 thousand hectares in 1999-2000. Tur recorded an area of 3.46 thousand hectares in 1951-52, which increased to 6.14 thousand hectares in 1990-91 but declined to 6.02 thousand hectares in 1999-2000. Other Rabi Pulses had 73.11 thousand hectares under its cultivation in 1951-52 that increased to 103.87 thousand hectares in 1999-2000.

In case of oilseeds, Rape and Mustard have a significant area under their cultivation whereas the others occupy a negligible area. Area under Rape and Mustard increased from 117.25

thousand hectares in 1951-52 to 376.15 thousand hectares in 1999-2000. Area under Sesamum and Linseed increased from 4.33 thousand hectares and 1.58 thousand hectares respectively in 1951-52 to 12.22 thousand hectares and 10.16 thousand hectares in 1999-2000. Area under the cultivation of Castor remained almost constant throughout the period.

Table 3.1
AREA UNDER MAJOR CROPS IN ASSAM

(Area in thousand hectares)

Crop	Year	1951-52	1960-61	1970-71	1980-81	1990-91	1999-2000
Winter rice		1208.18	1288.28	1379.41	1525.62	1685.11	1634.13
Autumn rice		322.38	379.26	508.46	556.71	590.98	522.46
Summer rice		2.11	17.2	25.67	35.10	117.12	293.14
Maize		1.57	4.39	8.75	10.16	8.14	7.72
Wheat		1.88	3.66	20.03	83.63	76.46	74.88
Other cereals & small millets		2.17	3.61	4.25	19.09	10.27	10.47
Gram		4.17	1.42	1.53	3.50	2.63	2.22
Tur		3.46	2.24	3.71	5.38	6.14	6.02
Other rabi pulses		73.11	68.79	78.02	99.41	100.15	103.87
Rape and mustard		117.25	112.20	134.08	172.61	277.96	376.15
Sesamum		4.33	6.76	8.55	10.12	12.11	12.22
Linseed		1.58	0.86	0.70	5.65	8.12	10.16
Castor		1.03	2.04	1.59	1.76	1.28	1.12
Jute		123.24	125.27	126.47	103.39	93.37	71.42
Mesta		0.20	5.00	6.62	13.15	7.36	5.11
Sweet potato		-	-	-	8.80	8.99	8.67
Tapioca		-	-	-	1.16	1.98	2.5
Tobacco		7.62	9.00	8.10	5.56	2.44	1.25
Onion		-	-	-	5.31	5.87	7.13
Banana		-	-	-	22.69	33.49	39.71
Arecanut		-	-	-	46.08	64.62	71.76
Orange		-	-	-	-	2.84	3.11
Coconut		-	-	-	5.86	9.99	20.07
Turmeric		-	-	-	7.42	7.36	10.37
Chilli		3.55	5.36	7.74	10.33	12.38	13.85
Papaya		-	-	-	-	3.98	6.58
Potato		18.06	21.14	23.96	36.74	54.85	75.73
Pineapple		-	-	-	-	9.39	10.32

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Note : Those data positions marked "-" are not available as the same were either not cultivated during that period or data was not collected by the agencies.

Amongst the fibers, area under Jute declined from 123.24 thousand hectares in 1951-52 to 71.42 thousand hectares in 1999-2000. Area under Mesta cultivation initially increased from 0.20 thousand hectares in 1951-52 to 13.15 thousand hectares in 1980-81, but fell to 7.36 thousand hectares in 1990-91 and further to 5.11 thousand hectares in 1999-2000.

In the category of miscellaneous crops, area under all crops except Tobacco and Sweet Potato increased in varying degrees. Whereas area under Tobacco declined from 7.62 thousand hectares in 1951-52 to 1.25 thousand hectares in 1999-2000, area under Sweet Potato remained almost constant (8.80 thousand hectares in 1980-81, 8.99 thousand hectares in 1990-91 and 8.67 thousand hectares in 1999-2000). There has been considerable increase in area under certain crops - like Arecanut (46.08 thousand hectares in 1980-81 which increased to 71.76 thousand hectares in 1999-2000), Coconut (5.86 thousand hectares in 1980-81 which increased to 20.07 thousand hectares in 1999-2000) and Potato (18.06 thousand hectares in 1951-52 which increased to 75.73 thousand hectares in 1999-2000). There has also been marginal increase in area under crops like Onion, Tapioca, Banana, Orange, Turmeric, Papaya and Pineapple.

3.2(b) REGION-WISE TRENDS IN AREA UNDER MAJOR CROPS

Table 3.2 gives the growth rates of area under major crops in Assam at the regional levels. In case of cereals, Wheat recorded the highest growth of 9.80 per cent per annum in Assam, with Nagaon and Lakhimpur experiencing the highest growth rates of 11.30 per cent and 10.25 per cent respectively. Summer Rice also had a significant increase in area with a growth rate of 7.64 per cent for Assam. All the regions except Cachar and Sibsagar registered a high growth rate of this crop.

Other Cereals and Small Millets had a negative growth rate in Cachar, Darrang and Lakhimpur and low positive growth rates in Goalpara (2.28 per cent), Kamrup (0.07 per cent), Nagaon (1.76 per cent) and Sibsagar (0.02 per cent).

Table 3.2
GROWTH RATE OF AREA UNDER MAJOR CROPS IN ASSAM

(Assam and its constituent regions, from 1951-52 to 1999-2000)

Crop	Region	Assam	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Sibsagar	Lakhimpur
	Winter rice		0.75	0.58	0.71	0.61	0.51	0.58	0.66
Autumn rice		1.30	-0.87*	1.83	0.48	1.78	2.29	1.20*	3.14
Summer rice		7.64	2.87	7.30	9.99	9.45	9.76	0.72*	8.45
Maize		2.07	0.71*	4.66	1.84	0.99	4.88	4.22	1.80
Wheat		9.80	0.47	4.92	5.13	8.03	11.30	8.34	10.25
Other cereals & small millets		3.22	-2.44	2.28	0.07	-4.88	1.76	0.02	-4.56
Gram		0.77	-4.98	-2.11	-2.49	1.06	1.06	0.25	1.03
Tur		2.82	2.82	2.56	0.02	-0.27	11.49	5.32	2.55
Other rabi pulses		1.15	2.08	2.11	0.48	1.15	0.29*	1.55	2.94
Rape and mustard		2.57	1.87	2.49	1.53	2.21	1.55	2.70	6.05
Sesamum		1.93	1.69	2.74	2.39	-0.47*	1.42	3.96	4.55
Linseed		6.66	0.71	8.67	8.03	11.97	5.49	-2.15*	0.38
Castor		0.96	-5.00	3.19	-3.43	-1.70	-1.96	0.16	-1.32
Jute		-0.92	-1.36	0.21	-1.26	-0.57	-2.19	1.23	-1.63
Mesta		2.81	-	0.62	-2.57	-2.90	-5.12	-0.81	2.18
Sweet potato		-0.01	-1.32*	3.66	-2.03	-0.76	-0.05	-1.90	-3.87
Tapioca		4.60	4.26	7.33	5.10	2.91	-5.72*	-7.34*	-2.07
Tobacco		-4.19	-7.83	-3.95	-4.53	-4.58	-5.20	-4.10	-1.61
Onion		3.03	-1.81*	8.35	4.05	-1.29*	5.6	4.19	-3.09
Banana		3.79	6.15	3.46	4.56	2.32	5.34	3.36	2.45
Arecanut		3.07	3.55	2.43	4.46	0.98	4.56	2.69	2.72
Orange		2.64	-0.57*	9.56	1.75	0.78	2.42	-2.87*	2.00
Coconut		7.15	12.21	9.91	5.35	3.60	8.79	7.78	9.61
Turmeric		1.50	2.27	5.73	0.56	-0.10	3.94	1.71	0.19
Chilli		3.47	1.74	5.77	3.63	1.68	2.86	2.9	5.97
Papaya		6.46	8.85	3.53	5.45	1.58	13.12	3.74	8.91
Pineapple		2.88	3.81	-2.10*	-0.74*	3.54	18.28	-1.30*	6.02
Potato		3.29	2.61	1.87	3.94	3.14	4.04	3.65	3.94

Note : a) Above figures are derived from the cropping data of Appendix B.
b) All growth rates are significant at 5% level, except those marked '*' .

In case of pulses, the production of Tur increased by 2.82 per cent in Assam followed by 1.15 per cent in Other Rabi Pulses.

At the regional level, low positive growth rates of area were recorded by all regions in Other Rabi Pulses. In case of Tur, Nagaon had a very high growth rate of 11.49 per cent whereas there was moderate increase in area in the other regions. Area under Gram decreased in most of the regions--Cachar (-4.98 per cent), Goalpara (-2.11 per cent) and Kamrup (-2.49 per cent) with low positive growth in the regions of Darrang (1.06 per cent), Nagaon (1.06 per cent) and Sibsagar (0.25 per cent).

Amongst the oilseeds, Linseed recorded the highest growth rate (6.66 per cent) in area at the State level, with Darrang registering a very high growth of 11.97 per cent. In case of Rape and Mustard, only Lakhimpur had a moderate growth rate of 6.05 per cent; in other regions, the increase in the growth rates was insignificant. Area under Sesamum also increased very moderately both at the State and regional levels. Growth rates of area under Castor were found to be negative in Cachar, Kamrup, Darrang, Nagaon and Lakhimpur.

In case of fibers, Jute had a negative growth rate of area (-0.92 per cent) at the State level, with almost all the regions having negative growth rates. Mesta had a growth rate of 2.81 per cent at the State level with some regions having positive growth (Goalpara and Lakhimpur) and other regions (Darrang, Nagaon and Sibsagar) showing a decline in the growth rate.

In the category of miscellaneous crops, Coconut recorded the highest growth in area of 7.15 per cent in Assam. Among the seven regions, Cachar had the highest growth of 12.21 per cent followed closely by Goalpara (9.91 per cent) and Lakhimpur (9.61 per cent). Area under Papaya increased by 6.46 per cent in Assam with Nagaon recording a very high growth rate of 13.12 per cent. Banana also recorded a high growth rate in area with Cachar having the highest growth rate of 6.15 per cent followed

by Nagaon (5.34 per cent). Other crops which recorded a low but positive growth rate in area are Tapioca (4.60 per cent at the State level), Onion (3.03 per cent at the State level and negative growth rates in Cachar, Nagaon and Lakhimpur), Arecanut (3.07 per cent at the State level), Orange (2.64 per cent at the State level and a high growth rate of 9.56 per cent in Goalpara), Turmeric (1.5 per cent at the State level), Chillies (3.47 per cent at the State level, 5.97 per cent in Lakhimpur, followed by 5.77 per cent in Goalpara), Pineapple (a high growth rate of 18.28 per cent in Nagaon and negative growth rates in Goalpara, Kamrup and Sibsagar) and Potato (low positive growth at the State and regional levels). Area under Sweet Potato declined by 0.01 per cent in Assam with Cachar, Kamrup, Darrang, Nagaon, Sibsagar and Lakhimpur having negative growth and Goalpara having a positive growth of 3.66 per cent. It is apparent from the above that during the period under study (1951-52 to 1999-2000), significant increase in area was noticed in the case of Wheat, Summer Rice, Coconut and Papaya, while Tobacco and Jute witnessed considerable decrease.

3.3(a) STATE LEVEL TRENDS IN OUTPUT OF MAJOR CROPS

Output of all cereals increased in varying degrees during the period 1951-52 to 1999-2000 (as shown in Table 3.3). Winter Rice increased from 1172.01 thousand tonnes in 1951-52 to 2524.14 thousand tonnes in 1999-2000. Similarly, production of Autumn Rice increased from 210.3 thousand tonnes in 1951-52 to 493.31 thousand tonnes in 1999-2000. Summer Rice and Wheat recorded very large increase in output. Production of Summer Rice increased from 1.92 thousand tonnes in 1951-52 to 625.36 thousand tonnes in 1999-2000 whereas production of Wheat increased from 1.68 thousand tonnes in 1951-52 to 95.45 thousand tonnes in 1999-2000. Maize and Other Cereals and Small

Millets increased their production only by a slight margin. Noteworthy that Wheat and Rice are high value cereal crops while Maize and Small Millets are low value cereals.

Table 3.3
OUTPUT OF MAJOR CROPS IN ASSAM

(Production in thousand tonnes)

Crop	Year	1951-52	1960-61	1970-71	1980-81	1990-91	1999-2000
	Winter rice		1172.01	1324.56	1512.88	1777.86	2280.58
Autumn rice		210.30	266.45	351.84	449.07	492.99	493.31
Summer rice		1.92	14.78	31.44	44.67	182.19	625.36
Maize		1.14	2.28	4.86	5.57	4.48	4.76
Wheat		1.68	3.02	11.69	96.66	102.93	95.45
Other cereals & small millets		1.09	1.80	2.12	9.49	5.34	5.40
Gram		2.43	0.76	0.81	1.11	1.29	1.15
Tur		1.12	1.57	3.49	3.92	4.22	4.25
Other rabi pulses		24.52	23.44	27.81	39.31	40.95	56.94
Rape and mustard		50.61	42.75	53.46	88.17	145.12	121.81
Sesamum		1.66	3.18	4.04	5.05	5.91	6.15
Linseed		0.60	0.32	0.31	2.41	3.41	5.28
Castor		0.36	0.72	0.68	0.72	0.56	0.60
Jute		742.46	855.53	916.81	832.46	846.44	633.09
Mesta		-	18.33	25.17	53.36	34.56	22.55
Sweet potato		-	-	-	29.07	28.68	30.02
Tapioca		-	-	-	4.54	8.41	11.69
Tobacco		4.98	6.64	6.04	3.95	1.38	0.64
Onion		-	-	-	9.17	11.28	16.00
Banana		-	-	-	282.25	434.44	553.16
Arecanut		-	-	-	47.99	50.11	51.90
Orange		-	-	-	-	28.65	37.57
Coconut		-	-	-	48.83	78.79	149.09
Turmeric		-	-	-	4.52	4.58	7.18
Chilli		0.80	3.26	4.91	6.10	7.44	9.19
Papaya		-	-	-	-	61.38	89.85
Potato		88.17	101.31	99.35	216.35	380.77	709.73
Pineapple		-	-	-	-	116.80	156.25

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Note : Those data positions marked "-" are not available as the same were either not cultivated during that period or data was not collected by the agencies.

Amongst the pulses, production of Gram declined from 2.43 thousand tonnes in 1951-52 to 1.15 thousand tonnes in 1999-2000. Production of Tur increased from 1.12 thousand tonnes in 1951-52 to 4.25 thousand tonnes in 1999-2000. And Other Rabi

Pulses increased from 24.52 thousand tonnes in 1951-52 to 56.94 thousand tonnes in 1999-2000.

In case of oilseeds, production of Rape and Mustard increased from 50.61 thousand tonnes in 1951-52 to 145.12 thousand tonnes in 1990-91 but fell to 121.81 thousand tonnes in 1999-2000. Production of Sesamum and Linseed increased marginally from 1.66 thousand tonnes and 0.6 thousand tonnes respectively in 1951-52 to 6.15 thousand tonnes and 5.28 thousand tonnes in 1999-2000. Castor production remained almost constant during the entire period.

In case of fibres, production of Jute initially increased from 742.46 thousand tonnes in 1951-52 to 916.81 thousand tonnes in 1980-81 after which it declined gradually to 633.09 thousand tonnes in 1999-2000. Production of Mesta also increased in the initial period from 18.33 thousand tonnes in 1970-71 to 53.36 thousand tonnes in 1980-81 after which it declined to 22.55 thousand tonnes in 1999-2000. The fall in the production of fibres, particularly that of Jute may be the fall-out of the near closure of Silghat Cooperative Jute Mill, near Tezpur.

In the category of miscellaneous crops, production of Sweet Potato remained almost constant at 30 thousand tonnes during 1980-81 to 1999-2000. Production of Tapioca increased from 4.54 thousand tonnes in 1980-81 to 11.69 thousand tonnes in 1999-2000. It may be noted that Tapioca is a poor man's food. Tobacco production increased initially from 4.98 thousand tonnes in 1951-52 to 6.64 thousand tonnes in 1960-61. Its production fell to 6.04 thousand tonnes in 1970-71 and further to 0.64 thousand tonnes in 1999-2000. Banana production increased substantially from 282.25 thousand tonnes in 1980-81 to 553.16 thousand tonnes in 1999-2000. Noteworthy that Banana is a fruit having high income elasticity of demand.

Production of Arecanut increased from 47.99 thousand tonnes in 1980-81 to 51.90 thousand tonnes in 1999-2000 whereas that of Orange increased from 28.65 thousand tonnes in 1990-91 to 37.57 thousand tonnes in 1999-2000. Coconut production increased considerably from 48.83 thousand tonnes in 1980-81 to 78.79 thousand tonnes in 1990-91 and further to 149.09 thousand tonnes in 1999-2000. Production of these crops have become popular during more recent period. However, their continuous increase in production is a healthy sign as each one of these is a high value crop. The same observation is valid in the case of Chillies, Papaya and Potato. Production of Turmeric remained constant at 4.5 thousand tonnes during 1980-81 to 1990-91 but increased to 7.18 thousand tonnes in 1999-2000. In case of Chillies, its production increased substantially from 0.80 thousand tonnes in 1951-52 to 9.19 thousand tonnes in 1999-2000. Papaya production also increased considerably from 61.38 thousand tonnes in 1990-91 to 89.85 thousand tonnes in 1999-2000. Production of Potato increased from 88.15 thousand tonnes in 1951-52 to 101.31 thousand tonnes in 1960-61. Its production fell to 99.35 thousand tonnes in 1970-71 but increased substantially to 709.73 thousand tonnes in 1999-2000. Production of Pineapple increased from 116.8 thousand tonnes in 1990-91 to 156.25 thousand tonnes in 1999-2000.

3.3(b) REGION WISE TRENDS IN OUTPUT OF MAJOR CROPS

Table 3.4 gives the growth rates of production of different crops at the State as well as at the regional level during 1951-52 to 1999-2000. Wheat shows the highest growth rate of 11.49 per cent at the State level during the period 1950-51 to 1999-2000. Amongst the regions, high growth rates were recorded by Nagaon (6.56 per cent) and Lakhimpur (6.38 per cent)

followed by Goalpara (4.79 per cent). Summer Rice recorded next highest increase in output (8.71 per cent) at the State level. Kamrup and Darrang had high growth rates of 11.68 per cent and 11.51 per cent respectively in case of Summer Rice. Substantially high growth rates of Summer Rice were also recorded by Darrang (9.73 per cent), Lakhimpur (8.73 per cent) and Goalpara (8.22 per cent). Winter Rice shows an average growth rate of about 1.5 per cent at both the State and regional levels with a relatively higher growth rate of 2.05 per cent in Lakhimpur. Autumn Rice recorded the highest growth rate of 3.75 per cent in Lakhimpur followed by 3.51 per cent in Nagaon. Growth rate of Maize was the highest in Nagaon (5.08 per cent) followed by 4.5 per cent in both Sibsagar and Goalpara. The other regions did not experience any substantial increase in output. Other Cereals and Small Millets had a growth rate of 3.32 per cent at the State level whereas growth rates were negative in Cachar (-2.87 per cent), Darrang (-3.13 per cent) and Lakhimpur (-5.00 per cent).

During the period covered by the study, Gram recorded negative growth rates in Cachar (-5.4 per cent), Goalpara (-3.36 per cent), Kamrup (-4.52 per cent), Nagaon (-1.46 per cent) and Sibsagar (-1.51 per cent) whereas growth rates were positive in Lakhimpur (4.95 per cent) and Darrang (2.83 per cent). Production of Tur increased at the rate of 2.89 per cent at the State level. Darrang had a decline in Tur production by 1.17 per cent whereas all the other regions recorded positive growth with Nagaon having the highest growth rate of 11.02 per cent. Other Rabi Pulses had low positive growth rates at the State level (1.81 per cent) as well as at the regional levels.

Table 3.4

GROWTH RATE IN PRODUCTION OF MAJOR CROPS IN ASSAM

(Assam and its constituent regions, from 1951-52 to 1999-2000)

Crop	Region	Assam	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Sibsagar	Lakhimpur
Winter rice		1.55	1.56	1.17	1.69	0.93	1.46	1.74	2.05
Autumn rice		1.64	0.43	1.42	6.06*	1.63	3.51	2.20	3.75
Summer rice		8.71	3.05	8.22	11.68	9.73	11.51	1.03*	8.73
Maize		2.72	0.97*	4.50	2.12*	1.29	5.08	4.49	1.81
Wheat		11.49	2.58	4.79	3.27	3.43	6.56	3.74	6.38
Other cereals & small millets		3.32	-2.87*	2.61	0.60	-3.13*	2.04	1.05	-5.00
Gram		0.37	-5.40	-3.36	-4.52	2.83	-1.46	-1.51	4.95
Tur		2.89	0.74	3.81	0.54	-1.17	11.02*	6.49	4.05
Other rabi pulses		1.81	2.52	2.44	1.58	1.77	0.74	2.13	3.19
Rape and mustard		3.00	2.61	2.61	2.42	2.18	1.94	3.33	6.42
Sesamum		2.16	1.37	2.91	2.83	0.73*	1.15	4.08	4.41
Linseed		7.20	0.05*	8.72	8.57	11.89	5.39	-0.24*	0.41*
Castor		-1.02*	-2.15*	8.71	-3.75	-1.86*	0.16	3.41	1.43
Jute		-0.30	-0.68	0.67	-0.30	-0.05	-1.48	1.93	-0.94
Mesta		2.24	-4.07*	-2.74	-7.81	1.12	-8.89	3.76	10.76
Sweet potato		0.19*	-1.28	4.19	-2.70	-1.88	-0.16	-1.90	-3.89
Tapioca		5.26	7.09	6.89	8.23	1.92	-3.55	-6.80	-1.49
Tobacco		-5.09	-8.46	-4.94	-5.96	-4.42	-6.27	-4.67	-2.28
Onion		2.98	2.06	10.15	3.50	0.55	5.62	0.77	-2.90
Banana		4.14	5.96	4.17	5.29	2.42	5.68	3.40	2.74
Areca nut		2.61	1.45	0.54	2.72	-0.36	3.09	1.57	0.89
Orange		5.30	-2.55	8.53	2.43	0.58	13.05	-3.10*	7.11
Coconut		7.46	14.67	10.13	3.43	5.04	10.27	8.95	11.89
Turmeric		2.32	3.07	6.02	2.46	0.05	4.33	1.05	0.50
Chilli		4.23	1.28	5.81	3.74	1.49	3.17	3.16	5.45
Papaya		5.64	7.50	3.57	2.04	0.93	12.65	3.72	8.92
Pineapple		4.71	6.54	0.33*	2.28	3.84	19.10	3.05	6.33
Potato		4.82	3.09	3.85	5.73	4.28	6.39	4.98	4.93

Note : a) Above figures are derived from the cropping data of Appendix B.

b) All growth rates are significant at 5% level, except those marked '*'.

Linseed is the only oilseed, which recorded a substantially high growth rate (7.20 per cent), at the State level as well as at the regional levels. This is due to a low base. Darrang recorded the highest growth of 11.89 per cent followed by Goalpara (8.71 per cent) and Kamrup (8.57 per cent). The other two oilseeds which had a moderate growth rate at the State as well as the regional levels are Rape and Mustard (3 per cent at the State level) and Sesamum (2.16 per cent at the State

level). Lakhimpur had the highest growth (6.42 per cent) of Rape and Mustard followed by Sibsagar (3.33 per cent). Lakhimpur also had the highest growth rate (4.41 per cent) of Sesamum followed closely by Sibsagar (4.08 per cent). Castor is the only oilseed which had a negative growth at the State as well as at some of the regional levels (Cachar, Kamrup and Darrang).

In case of the two fibers, Mesta had a low positive growth rate of 2.24 per cent at the State level whereas Jute recorded a negative growth of 0.30 per cent at the State level. Jute experienced negative growth rate in output in all regions except Sibsagar (1.93 per cent) and Goalpara (0.67 per cent). Mesta also had negative growth in some regions (Lakhimpur, Nagaon, Kamrup, Goalpara and Cachar) and positive growth rates in Darrang and Sibsagar.

Highest growth rate in output in the category of miscellaneous crops was recorded by Coconut (7.46 per cent) at the State level with Cachar (14.67 per cent), Lakhimpur (11.83 per cent), Goalpara (10.13 per cent) and Nagaon (10.27 per cent) recording significantly high growth rates at the regional level. Tobacco is the only crop in this category which had negative growth rates both at the State and regional levels. Sweet Potato and Tapioca recorded positive growth of 0.19 per cent and 5.26 per cent respectively at the State level but negative growth rates in some regions. All the other crops had moderate positive growth in output at the State as well as at the regional levels. Onion had a significant increase in output as shown by the growth rate of 10.15 per cent in Goalpara. Similarly, Nagaon had a very high growth rate of 23.05 per cent in the production of Orange. Growth rates in production of Orange were also high in Goalpara (8.53 per cent) and Lakhimpur (7.11 per cent). Nagaon also experienced considerably high growth rates

in the production of Pineapple (19.10 per cent) and Papaya (12.65 per cent). As mentioned earlier, the continuous increase in production of Coconut, Orange, Pineapple and Papaya is a healthy sign as each one of these crops is a high value crop.

3.4(a) STATE LEVEL TRENDS IN AVERAGE YIELD OF MAJOR CROPS

Table 3.5 gives the changes taking place over time in the average yield of the crops in Assam. Average yield increased in all cereals except Maize during the period 1951-52 to 1999-2000. Average yield of Winter Rice increased from 0.97 tonne per hectare in 1951-52 to 1.54 tonne per hectare in 1999-2000 whereas average yield of Autumn Rice increased from 0.65 tonne per hectare to 0.94 tonne per hectare during the same period. Summer Rice recorded a relatively higher increase in average yield from 0.90 tonne per hectare in 1951-52 to 2.13 tonnes per hectare in 1999-2000. In the case of Maize, its average yield declined from 0.72 tonne per hectare in 1951-52 to 0.55 tonne per hectare in 1990-91 but increased to 0.61 tonne per hectare in 1999-2000. Similarly, average yield of Other Cereals and Small Millets declined from 0.52 tonne per hectare in 1951-52 to 0.49 tonne per hectare in 1980-81 but increased to 0.51 tonne per hectare in 1990-91 and 1999-2000.

Amongst the pulses, average yield of Gram declined initially from 0.58 tonne per hectare in 1951-52 to 0.31 tonne per hectare in 1980-81 but increased gradually to 0.51 tonne per hectare in 1999-2000. Average yield of Tur increased substantially from 0.32 tonne per hectare in 1951-52 to 0.94 tonne per hectare but declined to 0.72 tonne per hectare in 1980-81 and remained almost constant during the period 1980-

2000. Average yield of Other Rabi Pulses increased slightly from 0.33 tonne per hectare in 1951-52 to 0.54 tonne per hectare in 1999-2000.

Table 3.5
AVERAGE YEILD OF MAJOR CROPS IN ASSAM

(Tonnes per hectare)

Crop	Year	1951-52	1960-61	1970-71	1980-81	1990-91	1999-2000
Winter rice		0.970	1.208	1.096	1.164	10353	1.544
Autumn rice		0.652	0.702	0.691	0.806	0.834	0.944
Summer rice		0.909	0.859	1.234	1.272	10555	2.133
Maize		0.726	0.519	0.555	0.548	0.550	0.616
Wheat		0.893	0.825	0.583	1.155	1.346	1.274
Other cereals & small millets		0.502	0.498	0.498	0.497	0.519	0.515
Gram		0.582	0.535	0.549	0.317	0.490	0.518
Tur		0.323	0.700	0.940	0.728	.687	0.705
Other rabi pulses		0.335	0.340	0.356	0.395	0.408	0.548
Rape and mustard		0.431	0.381	0.398	0.510	0.522	0.403
Sesamum		0.383	0.470	0.472	0.499	0.488	0.503
Linseed		0.379	0.372	0.442	0.426	0.419	0.519
Castor		0.349	0.352	0.427	0.409	0.437	0.535
Jute		6.024	6.806	7.249	8.051	9.065	8.864
Mesta		-	3.670	3.802	4.057	4.695	4.412
Sweet potato		-	-	-	3.303	3.190	3.462
Tapioca		-	-	-	3.913	4.247	4.676
Tobacco		0.653	0.737	0.745	0.710	0.565	0.512
Onion		-	-	-	1.726	1.921	2.244
Banana		-	-	-	12.439	12.972	13.929
Arecanut		-	-	-	1.041	0.775	0.723
Orange		-	-	-	-	10.088	12.080
Coconut		-	-	-	8.332	7.886	7.428
Turmeric		-	-	-	0.609	0.622	0.692
Chilli		0.225	0.608	0.634	0.590	0.600	0.663
Papaya		-	-	-	-	15.422	13.655
Potato		4.482	4.792	4.146	5.888	6.942	9.371
Pineapple		-	-	-	-	12.438	15.140

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Note : Those data positions marked "-" are not available as the same were either not cultivated during that period or data was not collected by the agencies.

None of the oilseeds recorded any significant increase in average yield during the period 1951-52 to 1999-2000. Also

there has been fluctuations in the average yields of all oilseeds. Average yield of Rape and Mustard fell from 0.43 tonne per hectare in 1951-52 to 0.38 tonne per hectare in 1960-61. It increased to 0.39 tonne per hectare in 1970-71 and further to 0.52 tonne per hectare in 1990-91, which fell to 0.40 tonne per hectare in 1999-2000. Average yield of Sesamum increased from 0.38 tonne per hectare in 1951-52 to 0.50 tonne per hectare in 1999-2000 whereas average yield of Linseed fluctuated between 0.37 tonne per hectare in 1951-52 and 0.51 tonne per hectare in 1999-2000. Castor recorded an increase in average yield from 0.34 tonne per hectare in 1951-52 to 0.53 tonne per hectare in 1999-2000.

Average yield of Jute increased from 6.02 tonnes per hectare in 1951-52 to 9.06 tonnes per hectare in 1990-91, but fell to 8.86 tonnes per hectare in 1999-2000. Similarly, average yield of Mesta increased from 3.67 tonnes per hectare in 1960-61 to 4.69 tonnes per hectare in 1990-91 but fell to 4.41 tonnes per hectare in 1999-2000.

In the category of miscellaneous crops also, there has only been moderate increase in the average yield of some crops like Tapioca (from 3.91 tonnes per hectare in 1980-81 to 4.67 tonnes per hectare in 1999-2000), Onion (from 1.72 tonnes per hectare in 1980-81 to 2.24 tonnes per hectare in 1999-2000), Orange (from 10.08 tonnes per hectare in 1990-91 to 12.08 tonnes per hectare in 1999-2000), Chillies (from 0.22 tonne per hectare in 1951-52 to 0.66 tonne per hectare in 1999-2000), Potato (from 4.88 tonnes per hectare in 1951-52 to 9.37 tonnes per hectare in 1999-2000) and Pineapple (from 12.43 tonnes per hectare in 1990-91 to 15.14 tonnes per hectare in 1999-2000). The average yield of some crops has declined (Papaya - from 15.42 tonnes per hectare in 1990-91 to 13.65 tonnes per hectare in 1999-2000, Arecanut - from 1.04 tonnes per hectare in 1980-

81 to 0.72 tonne per hectare in 1999-2000 and Tobacco - from 0.65 tonne per hectare in 1951-52 to 0.51 tonne per hectare in 1999-2000) whereas the average yield of some crops have remained almost constant (Turmeric, Coconut, Banana and Sweet Potato).

3.4(b) REGION WISE TRENDS IN AVERAGE YIELD OF MAJOR CROPS

Table 3.6 gives the growth rate in average yield of the crops in Assam both at the State and regional levels. Since there has been frequent fluctuations in the average yield of crops during the period 1951-52 to 1999-2000, growth rates computed have been found to be insignificant in some cases.

Amongst the cereals, Wheat recorded the highest increase in average yield at the State level with a growth rate of 1.69 per cent per annum. At the regional level, high growth rates in Wheat was experienced by Cachar (1.59 per cent) and Goalpara (also 1.59 per cent). Winter Rice recorded a growth rate of 0.79 per cent in average yield at the State level with Kamrup and Sibsagar having high growth rates of 1.08 per cent and 1.07 per cent respectively at the regional levels. Average yield of Autumn Rice increased by only 0.34 per cent at the State level. At the regional level, Cachar with 1.30 per cent and Nagaon with 2.22 per cent had the highest growth. Average yield of Summer Rice increased considerably in Kamrup (1.68 per cent), Nagaon (1.74 per cent) and Sibsagar (1.53 per cent) whereas there was no increase in the growth rate of average yield of Maize at the State or regional levels. Similarly, Other Cereals and Small Millets recorded a low growth rate of 0.90 per cent at the State level with negative growth rates in some regions (Cachar,

Goalpara, Kamrup and Nagaon) and positive growth rates in Sibsagar, Lakhimpur and Darrang.

Table 3.6

GROWTH RATE IN AVERAGE YEILD OF MAJOR CROPS IN ASSAM

(Assam and its constituent regions, from 1951-52 to 1999-2000)

Crop	Region	Assam	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Sibsagar	Lakhimpur
Winter Rice		0.79	0.97	0.34	1.08	0.42	0.87	1.07	0.46
Autumn Rice		0.34	1.30	-0.22	0.21	-0.14	1.22	0.99	0.62
Summer Rice		1.06	0.17	0.92	1.68	0.24	1.74	1.53	-1.32*
Maize		0.64*	0.25	-0.16	0.27	0.30	0.19	0.26	0.25
Wheat		1.69	1.59	1.59	0.73	0.35	0.39	0.41	-0.06
Other Cereals & Small Millets		0.09	-0.65	-0.49	-0.03	1.60	-0.17	0.32	0.01
Gram		-0.43	-0.07	0.71	-1.66	1.75	-1.90	0.17	1.73
Tur		0.77	-0.38	0.73	0.70	0.45	0.59	0.57	0.98
Other Rabi Pulses		0.66	0.76	1.08	1.91	1.30	1.09	1.14	0.81
Rape And Mustard		0.43	0.74	0.11	0.89	-0.02	0.39	0.62	0.36
Sesamum		0.23	-0.35	0.16	0.43	1.21	-0.27	0.10	-1.87
Linseed		0.53	0.48	0.46	0.81	-0.05	0.35	0.90	-0.03
Castor		0.06*	-1.54	1.64	-0.03	-0.15	-0.23	0.22	0.32
Jute		0.62	0.69	0.50	0.96	0.52	0.71	0.70	0.68
Mesta		-	-	-	-	-	-	-	-
Sweet Potato		0.20	0.04	0.79	-0.70	-0.82	-0.11	-0.03	-0.08
Tapioca		0.65	2.70	-0.46	3.16	-1.05	2.43	0.55	0.42
Tobacco		-0.90	-0.84	-0.99	-1.43	0.17	-1.09	-0.54	-0.66
Onion		-0.05	3.90	1.81	-0.56	1.83	0.01	-3.45	0.19
Banana		0.34	-0.19*	0.71	0.72	0.09	0.34	0.04	0.29
Arecanut		-1.26	-2.03	-1.88	-1.92	-1.18	-1.42	-1.92	-1.83
Orange		2.70	-2.14	-1.05	0.71*	-0.10	-1.18	-0.17*	5.12
Turmeric		0.82	0.81	0.31	1.89	0.15	0.42	-0.65	0.28
Chilli		0.76	-0.03	0.09	0.44	-0.04	0.33	0.31	0.28
Papaya		-0.81	-1.40	0.05	-1.43*	-0.63	-0.45	-0.83	1.05
Coconut		0.27*	2.35	0.23	-1.93*	1.46	0.30	1.42	2.23
Pineapple		1.82	2.73	2.45	3.03	0.32	0.81	4.34	0.31
Potato		1.53	0.49	1.97	1.78	1.14	2.35	1.32	0.98

Note : a) Above figures are derived from the cropping data of Appendix B.

b) All growth rates are significant at 5% level, except those marked '*'

In case of pulses, Gram had a negative growth rate of 0.40 per cent in average yield at the State level with Cachar (-0.70 per cent), Kamrup (-1.66 per cent) and Nagaon (-1.90 per cent) having negative growth rates. Tur recorded a growth rate of 0.77 per cent in average yield at the State level with almost

similar growth rates at the regional levels. Growth rate in average of Other Rabi Pulses was 1.91 per cent in Kamrup followed by Darrang (1.30 per cent), Sibsagar (1.14 per cent), Nagaon (1.09 per cent) and Goalpara (1.08 per cent).

Castor is the only oilseed, which recorded a negative growth at the State level. Growth rates in average yield of Castor were negative in Cachar, Kamrup, Darrang and Nagaon whereas these were positive in Goalpara, Sibsagar and Lakhimpur. The other three oilseeds - Rape and Mustard, Sesamum and Linseed had very low positive growth rates in average yield of 0.43 per cent, 0.23 per cent and 0.53 per cent respectively at the State level but negative growth rates in some of the regions.

Jute had a growth rate of 0.62 per cent in average yield at the State level and almost similar growth rates at the regional levels.

In the category of miscellaneous crops, Tobacco (-0.90 per cent), Onion (-0.05 per cent), Arecanut (-1.26 per cent) and Papaya (-0.81 per cent) are the crops which had a negative growth rate in average yield. At the regional level, growth rates were negative in all the regions in case of Tobacco except Darrang which had a very low positive growth of 0.17 per cent. Similarly, growth rates in average yield of Arecanut and Papaya were negative in all the regions. Growth rates in average yield of Onion were negative in Kamrup (-0.56 per cent) and Sibsagar (-3.45 per cent) and positive in the other regions. Orange recorded the highest positive growth rate in average yield of 2.7 per cent at the State level with a high growth rate of 5.12 per cent in Lakhimpur. Pineapple also had a positive growth rate in average yield of 1.82 per cent at the State level followed by Potato which had a growth rate of 1.53 per cent at the State level. In case of Pineapple, Kamrup had

the highest growth rate of 3.03 per cent followed by 2.73 per cent in Cachar and 2.45 per cent in Goalpara. Highest growth rate in average yield of Potato was recorded by Nagaon (2.35 per cent) and the lowest by Cachar (0.48 per cent). The other crops, viz., Sweet Potato, Tapioca, Banana, Turmeric, Chillies and Coconut had low positive growth rates of 0.20 per cent, 0.65 per cent, 0.34 per cent, 0.82 per cent, 0.76 per cent and 0.27 per cent respectively at the State level with some of the regions experiencing negative growth rates. It is necessary to further increase the average yield of crops, particularly, Pineapple, Potato, Orange, Banana, Chillies and Coconut as these are high value crops.

Table 3.7 makes a comparison of the exponential growth rates (in percentages) in acreage, yield and production of the principal crops in Assam. As can be seen from the table, growth rate of yield has been lower for each crop compared to the corresponding growth rates in area and total production. This implies that the increased output is mainly a resultant of an increase in area. In fact, Arecanut recorded a negative growth rate in yield in spite of a positive growth in both area (by 3.07 per cent) and production (by 2.61 per cent). The implication of the above is that there is scope for increasing production by improving the yield level even if additional area cannot be brought under cultivation.

Table 3.8 shows the yield levels of different crops in Assam vis-à-vis national average. It is clear from the table that yield levels of all major crops in Assam are very low and well below their corresponding national average. What is more distressing is that the gaps in yield levels between Assam and the national average has widened over time for all crops.

(HYVs) seeds, pesticides, fertilizers, etc. and very poor extension services.

Table 3.9 shows the irrigation potential created and utilized in Assam during the period 1980-81 to 1996-97. As can be seen from the table, not only is the irrigated area as percentage of gross cropped area low (2.86 per cent in 1996-97), the irrigation potential created has declined over the years because of the fact that the lift irrigation infrastructure created have become defunct. Such low utilization rates mean that most of the crops are cultivated under unirrigated conditions.

Table 3.9
IRRIGATION POTENTIAL AND UTILISATION

Year	Irrigation potential		
	Created (Hectares)	Utilized (Hectares)	Utilization rate (%)
1980-81	-	118563	-
1981-82	-	145279	-
1982-83	-	157925	-
1983-84	280274	165199	58.9
1984-85	311107	172112	55.3
1985-86	-	203011	-
1986-87	-	225757	-
1987-88	-	222451	-
1988-89	-	235331	-
1989-90	-	223711	-
1990-91	-	239193	-
1991-92	-	227263	-
1992-93	455650	214922	47.2
1993-94	466498	129950	27.9
1994-95	477011	147249	30.9
1995-96	480078	113088	23.6
1996-97	480590	114100	23.7

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Many reasons have been put forward for the low utilisation rates, the most plausible ones being (as suggested by Khound and Borthakur, 1999) the stray cattle menace, labour shortage,

Table 3.7

EXPONENTIAL GROWTH RATES (%)

(Assam and its constituent regions, from 1951-52 to 1999-2000)

Crop	Factor	Acreage	Yield	Production
		Winter Rice	0.75	0.79
	Autumn Rice	1.30	0.34*	1.64
	Summer Rice	7.64	1.06	8.71
	Wheat	9.80	1.69	11.49
	Rape And Mustard	2.57	0.43*	3.00
	Jute	-0.92	0.62	-0.30
Banana	(1980-81 to 1999-2000)	3.79	0.34	4.14
Arecanut	(1980-81 to 1999-2000)	3.07	-1.26*	2.61
Coconut	(1980-81 to 1999-2000)	7.15	0.27*	7.46
	Chillies	3.47	0.76*	4.23
	Potato	3.29	1.53	4.82

Note : a) Above figures are collected from Tables 3.2, 3.4 and 3.6.

b) All growth rates are significant at 5% level, except those marked '*'.

Table 3.8

CROP-WISE YIELD, ASSAM versus ALL INDIA

(Yield levels in kg/hectare)

Crop	Period	1980-81 to 1984-85		1985-86 to 1989-90		1990-91 to 1994-95	
		Assam	All India	Assam	All India	Assam	All India
Rice		1071	1350	1114	1584	1313	1807
Wheat		1146	1770	1059	2066	1267	2388
Foodgrains		1037	1080	1073	1231	1271	1453
Rape And Mustard		458	624	475	772	521	874
Jute		1478	1467	1560	1696	1721	1876
Sugarcane		43201	57257	43602	61387	40084	66736
Potato		6566	14166	5922	15037	7354	15900
Arecanut		980	1083	1163	1167	780	1141

Source : a) Statistical Handbook of Assam, published annually by Govt. Of Assam.

b) Area and Production of Principal Crops, published by Govt. of India

One of the possible reasons for this gap is the relatively slow acceptance and adoption of improved agricultural practices in Assam resulting from a variety of reasons, including failure to control floods during kharif season, lack of adequate irrigation facilities particularly during the rabi season, poor delivery system of modern inputs like High Yielding Varieties

cultural inhibitions, lack of proper distribution channels to carry water to the farmers' fields and lack of suitable cropping pattern.

Table 3.10 presents the irrigation potentials utilized, or the actual areas under irrigation, in the plain regions of Assam from 1980-81 to 1996-97.

Table 3.10
AREA UNDER IRRIGATION IN ASSAM (PLAINS)

(Hectares)

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Sibsagar	Lakhimpur	Assam
1980-81	384.60	8110.00	25942.00	35316.00	34678.00	2620.00	775.00	107825.60
1981-82	549.37	10454.00	36900.00	37469.00	39800.00	5413.00	2897.00	133482.40
1982-83	634.51	13487.00	42549.00	38189.00	42037.00	5526.00	3580.00	146002.50
1983-84	936.16	17325.00	42146.00	39913.00	43832.00	5157.00	3714.00	153023.20
1984-85	2822.95	20287.00	34550.00	43249.00	43892.00	9149.00	4854.00	158804.00
1985-86	4570.92	24534.00	44476.00	48637.00	44530.00	12688.00	5757.00	185192.90
1986-87	4695.14	23130.00	51323.00	55489.00	52902.00	16999.00	4641.00	209179.10
1987-88	4215.42	24343.00	58009.00	61348.00	49496.00	13417.00	5287.00	216115.40
1988-89	3537.00	23820.00	51040.00	60228.00	60332.00	16765.00	3207.00	218929.00
1989-90	2493.00	20081.00	42060.00	50334.00	70437.00	14307.00	4506.00	204218.00
1990-91	5066.00	20321.00	50557.00	49409.00	65372.00	18838.00	4000.00	213563.00
1991-92	4421.00	17647.00	57065.00	47623.00	60384.00	15721.00	5210.00	208071.00
1992-93	3533.00	18252.00	49410.00	48281.00	57419.00	13247.00	6491.00	196633.00
1993-94	698.00	11738.00	31908.00	39542.00	22141.00	2771.00	2052.00	110850.00
1994-95	1247.00	12822.00	39883.00	41432.00	28312.00	5815.00	2481.00	131992.00
1995-96	800.00	9148.00	24699.00	34389.00	20401.00	3365.00	819.00	93621.00
1996-97	283.00	8214.00	25547.00	35001.00	24683.00	2818.00	1127.00	97673.00

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

It is evident from the table that area under irrigation in Assam increased in the initial period from 107825.6 hectares in 1980-81 to 218929 hectares in 1988-89 but started declining from 1989-90 and got reduced to 93621 hectares in 1995-96. There was a slight increase to 97673 hectares in 1996-97. This trend is true not only at the State (plains) level but also at the regional levels. Of the total irrigated area, the proportion claimed by the seven regions in 1996-97 stood as follows: Cachar (0.28 per cent), Goalpara (8.41 per cent),

Kamrup (26.16 per cent), Darrang (35.83 per cent), Nagaon (25.27 per cent), Sibsagar (2.88 per cent) and Lakhimpur (1.15 per cent). These proportions were not very dissimilar with those in 1980-81.

As mentioned earlier, the most likely reason for the yield gap between Assam and rest of India is the adoption of the package of improved agricultural practices, which include, among others, assured irrigation, HYV seeds, chemical and bio fertilizer, pesticides, extension services etc. Table 3.11 gives the data on the use of high yielding variety (HYV) seeds in paddy cultivation and fertilisers in Assam, Punjab and in the country as a whole.

Table 3.11

HYV SEEDS ADOPTATION RATES AND FERTILISER USAGE

Year	Paddy area under HYV (%)			Fertilizer consumption (Kg/Ha)		
	Assam	Punjab	India	Assam	Punjab	India
1980-81	25.4	93.0	45.4	2.8	111.4	31.9
1981-82	39.0	95.0	48.4	3.3	118.4	34.3
1982-83	41.1	94.9	49.2	3.8	128.9	37.1
1983-84	42.8	95.5	52.7	5.0	142.1	42.9
1984-85	44.4	96.3	55.3	3.9	149.4	46.6
1985-86	41.2	95.1	57.1	4.6	153.4	47.5
1986-87	45.0	94.5	58.4	4.8	154.6	49.0
1987-88	41.2	88.8	57.3	6.7	151.7	51.4
1988-89	46.1	94.3	60.9	7.3	151.0	60.6
1989-90	51.5	94.8	62.2	6.6	154.9	63.5
1990-91	40.3	94.2	64.2	10.4	159.7	67.5
1991-92	45.5	96.9	65.5	9.6	165.6	69.8
1992-93	47.6	92.3	65.8	7.2	158.8	65.5
1993-94	46.3	91.4	67.5	5.0	157.4	66.3
1994-95	49.0	92.9	72.2	10.3	167.0	72.1
1995-96	49.9	94.4	73.2	13.5	155.8	74.4
1996-97	57.1	94.5	77.2	N/Avl	N/Avl	N/Avl

Source : a) Statistical Handbook of Assam, published annually by Govt. Of Assam.

b) Fertilizer Statistics published by Govt. Of India.

The difference is glaring in the sense that only in half of the area under paddy cultivation in Assam HYV seeds are used

whereas the corresponding figures are more than 90 per cent in Punjab and 77 per cent at the all India level. And though fertiliser use in Assam has grown over time, it is still very low at about 14 kg per hectare in 1996-97 compared to the national average of 74 kg.

Thus there is a tremendous scope for increasing output to bring about an improvement in the yield level through adoption of the package of improved agricultural practices, which include, among others, assured irrigation, HYV seeds, chemical and bio fertiliser, pesticides, extension services etc.

Realizing the importance of assured water supply through proper irrigation with a view to increasing output and bringing about an improvement in the yield level, the Government of Assam undertook the scheme of installation of shallow tube wells (STWs) in 1996-97 under the Samridha Krishak Yojana (SKY) with funds made available by NABARD (National Bank for Agriculture and Rural Development) and ARIASP (Assam Rural Infrastructure and Agricultural Service Project) financed by the World Bank to accelerate the pace of agricultural development in the State. The Government of Assam installed 1,47,250 STWs (1,00,000 under SKY and 47,250 under ARIASP) by March 2001. This has created an additional irrigation potential of about 294 thousand hectares of land in the State.

Expansion of irrigation facility has influenced the cropping pattern, particularly of rice, to a considerable extent as can be seen from Table 3.12. With the expansion of irrigation facilities, the farmers, particularly of the flood affected areas, have started cultivation of Summer Rice. The area under Summer Rice in the State has increased by almost 68 per cent from 1997-98 to 1999-2000; its production has increased by more than 107 per cent while its average yield per hectare has gone

up to 22.19 quintals in 1999-2000 from 17.97 quintals in 1997-98. However, Autumn Rice acreage as well as yield has declined during the same period.

Table 3.12

PRODUCTION AND PRODUCTIVITY OF MAJOR CROPS IN ASSAM

Crops	1997 - 98			1998 - 99			1999-2000		
	A	P	AY	A	P	AY	A	P	AY
Autumn Rice	607.40	597.48	10.00	594.97	520.60	8.89	557.22	514.16	9.38
Winter Rice	1743.32	2470.95	14.39	1635.23	2288.14	14.21	1793.99	2692.71	15.24
Summer Rice	174.97	314.44	17.97	223.91	446.11	19.92	294.65	653.7	22.19
Total Rice	2525.69	3382.87	13.59	2454.12	3254.83	13.45	2645.86	3860.65	14.79
Wheat	84.69	110.05	12.99	89.59	90.51	10.10	76.31	97.58	12.79
Maize	19.22	14.72	7.66	19.81	13.96	7.05	19.71	14.06	7.13
Pulse	117.91	64.46	5.47	138.10	74.82	5.42	127.48	70.59	5.54
Oilseed	341.79	173.77	5.49	342.97	174.74	5.09	348.46	174.79	5.02

Legends > A: Area ('000 Ha) P: Production ('000 tonnes) AY: Average Yield (Tonnes per Ha)

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Winter Rice has been maintaining its predominant position due to its higher demand in spite of its average yield being lower compared to that of Summer Rice. The production of Winter Rice is constrained mainly by erratic monsoon rainfall resulting in floods and drought combined with the use of traditional practices of production. The decline in area under Winter Rice and its average yield in 1998-99 are due to heavy floods in the year. Area under this crop again increased in 1999-2000 along with a significant improvement in its average yield.

3.5 CROPPING INTENSITY

Cropping intensity is measured by the ratio of gross cropped area to net cropped area, in percentage. It is an important indicator of the efficiency in land utilisation. Bringing about an improvement in cropping intensity becomes all the more significant in recent times as increase in output has to be

obtained mainly through expansion of double cropped area and improvement in yield levels, the possibility of increasing net area sown being extremely limited.

Table 3.13 shows the cropping intensity in Assam (plains) as well as at the regional levels. As can be seen from the table, cropping intensity has increased both at the State and regional levels though with some fluctuations.

Table 3.13
CROPPING INTENSITY IN ASSAM (PLAINS)

Year	Assam	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Sibsagar	Lakhimpur
1961-62	133.6	142.1	152.1	152.5	126.8	148.5	113.7	115.6
1971-72	149.2	157.7	177.4	177.6	137.6	148.9	118.5	116.2
1981-82	157.5	150.2	163.0	175.7	146.4	163.6	140.5	155.1
1992-93	190.7	175.3	196.6	189.2	144.3	206.3	161.0	179.0
1993-94	185.4	181.7	205.1	189.1	168.1	207.1	154.7	190.4
1994-95	188.6	169.4	209.7	196.9	171.5	213.9	152.5	196.9
1995-96	189.4	173.9	212.5	196.2	175.0	216.2	153.2	193.4
1996-97	191.9	172.6	213.6	200.6	176.2	215.8	154.1	201.8
1997-98	180.0	167.0	218.2	202.8	177.1	207.1	107.9	168.1

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Table 3.14
CROPPED ACREAGE AND CROPPING INTENSITY

Year	Cropping intensity (%)		Year	Cropping intensity (%)	
	Assam	All India		Assam	All India
1980-81	129.8	123.3	1990-91	140.3	129.9
1981-82	127.6	124.5	1991-92	142.6	130.1
1982-83	131.9	123.2	1992-93	141.8	130.1
1983-84	132.7	125.7	1993-94	141.1	131.0
1984-85	137.9	125.2	1994-95	137.7	131.5
1985-86	140.2	126.7	1995-96	141.7	131.2
1986-87	134.7	126.4	1996-97	140.8	130.6
1987-88	136.7	127.3			
1988-89	135.0	128.5			
1989-90	138.7	128.1			

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Also cropping intensity in Assam has been somewhat higher compared to India as a whole (Table 3.14). But this has not resulted in commensurate increase in output. The all crop index of agricultural production in Assam (Table 3.15) has grown by less than one per cent per annum (average over 1992-93 to 1998-99), in comparison with an average growth of about 2.7 per cent per annum at the all India level over the same period.

Table 3.15
INDEX OF AGRICULTURAL PRODUCTION

Year	Assam			All India		
	Food	Non-food	All crops	Food	Non-food	All crops
1992-93	144	142	143	144	164	152
1993-94	148	149	148	150	170	157
1994-95	146	154	150	156	181	165
1995-96	150	157	153	146	185	161
1996-97	148	157	153	161	201	176
1997-98	149	161	155	156	181	165
1998-99	143	158	151	165	198	177

Source : Economic Survey - Assam:2000-2001, published by Govt. Of Assam.

One possible explanation for this apparent contradiction is as follows: Agriculture in Assam continues to be, by and large, subsistence in nature, i.e., farmers produce not for the market but for meeting their own consumption. Since the yield levels of the crops are low (owing to reasons mentioned earlier), for meeting consumption requirements, farmers have to raise more than one crop on the same land.

3.6 AGRICULTURAL DEVELOPMENT IN ASSAM: THE MAJOR CONSTRAINTS

The constraints to agricultural development in Assam can be discussed under the following categories -

- (1) Agronomic/Environmental constraints
- (2) Technological constraints
- (3) Social/Institutional constraints

The main agronomic/environmental constraints to agriculture in Assam are

- a) soil conditions,
- b) short sun shine hours,
- c) excessive humidity and
- d) frequent floods.

As discussed earlier in Chapter Two, Assam has a wide variety of soils. And about 75 per cent of soils in Assam are acidic in nature. Acidic conditions of the soil along with poor nutrient contents, particularly in the Upper Brahmaputra Valley, limit the varieties of crops that can be successfully cultivated.

An overcast sky is a frequent occurrence in Assam. This results in short sun shine hours, which reduces the photosynthetic efficiency of the HYV seeds.

Assam receives abundant rainfall during the kharif season which raises the humidity level. The hot and humid conditions during the kharif season make the spread of pests and disease easier, resulting in loss of crops. Also the grain harvested during the kharif season contains a level of moisture higher than the required level. This makes the grains perishable because of which sometimes farmers are forced to sell their output at a very low price.

Frequent floods and extensive water logging during the kharif season in Assam result in loss of crop and property. Farmers thus adopt a risk averting strategy in this season and use sparingly inputs like HYV seeds, fertilisers, pesticides etc., resulting in kharif crop being cultivated more for subsistence than for commercial purposes.

The constraints to the adoption of modern farming techniques in Assam include lack of irrigation, credit availability and access to markets.

As mentioned earlier, irrigated area as a percentage to gross cropped area stands at 3.59 per cent in 1997-98. This condition has somewhat improved after the installation of STWs, but much more needs to be done in this respect.

Credit availability to agriculture is another major problem in Assam. Table 3.16 which gives the credit disbursement per hectare (at 1980-81 prices) in Assam and all India shows a very disturbing feature. Not only is the credit disbursement per hectare in Assam far below the national average, it has fallen over time which is contrary to the trend observed at the national level. Under such tight credit situations, farmers in Assam would be unable to adopt improved agricultural practices.

Table 3.16
CREDIT ADVANCED TO AGRICULTURE (1980-91 PRICE)

(Rupees Per Hectare)

Year	Assam	All India	Punjab
1988-89	343.2	592.4	989.7
1989-90	374.2	598.2	1060.4
1990-91	320.5	538.7	997.0
1991-92	315.2	543.4	997.1
1992-93	266.4	604.8	1187.5
1993-94	249.3	576.9	1168.0
1994-95	272.4	541.6	1169.4
1995-96	240.8	758.1	1000.5
1996-97	237.9	788.2	1053.1

Source : Indian Agriculture in Brief, CMIE, various issues

Another problem of agricultural development in Assam is the lack of markets and storage facilities. Assam has only 34 regulated markets whereas Punjab has 667. Even in these few markets in Assam, the necessary infrastructures required for

proper functioning (like Warehouses, Cold storages, Auction hall, Buying and selling complex, Retailers shed, Fish-cum-vegetable shed, Market complex, etc) has not yet come up in sufficient quantities. Besides marketing facilities, it is also true that Assam lacks storage facilities for agricultural produce.

The lack of marketing and storage facilities is clearly a disincentive for farmers to improve production and productivity by adopting modern farming techniques and improving input use efficiency.

Besides the lack of agricultural infrastructure, Assam also lacks in general infrastructure such as all-weather roads, efficient transportation network, communication, etc. which leads to high transaction costs to farmers, both while purchasing inputs and selling their output.

Agriculture in Assam is also subject to various social and institutional constraints, the most glaring being the land holding pattern which is dominated by small holdings. Nearly three-fourths of all operational holdings are either 'marginal' (i.e., less than two hectares) or 'small' (i.e., between two and four hectares). Thus the average size of holdings in Assam is only about 1.27 hectares. Small farmers face severe capital constraints as capital scarcity limits their capacity to adopt modern practices. Small farm size also limits the scope for undertaking commercial farming. In such a situation, small farmers operate on leased in lands. The nature of tenancy contracts then becomes a critical determinant for farmers to invest on land improvement and on modern farm inputs.

The strategy mentioned above should be supplemented by tenancy reforms. Although Assam has on paper the most progressive

tenancy acts, under which the tillers of land become owners with three years of successive cultivation, this has actually resulted in land owners not allowing the tenants to cultivate the land for more than two years. Thus the tenants have no incentive to effect land improvement. What is more distressing is that there is no record of share-croppers in Assam. In the perception of the State Government this class does not exist at all. Thus the productivity of the tenanted land is extremely low. It is the Gram Panchayats which may be empowered to compile a list of sharecroppers (who do not have a legal entity at present) even by amending the above law in the State Legislature for future remedial measures.

3.7 STRATEGY FOR AGRICULTURAL DEVELOPMENT IN ASSAM

Agricultural development in Assam can be attained by

- (1) Putting emphasis on the crops grown in the rabi season and,
- (2) Commercialisation of agriculture in Assam.

As mentioned earlier, agronomic factors in Assam limit the varieties of crops that can be cultivated, especially in the kharif season due to risks from floods and high humidity. The farmers therefore, adopt a risk avoiding strategy and do not use inputs like HYV seeds, fertilisers, pesticides, etc. resulting in the kharif crop being cultivated more for subsistence and less for commercial purposes. On the other hand, the rabi season is free from such problems like floods and high humidity. Thus the crops grown in this season can bring about agricultural development in Assam and the Government policies should emphasise on increasing the area and production of these crops by providing the necessary pre-requisites.

Government policies must be designed in such a way as to make agriculture in Assam commercially viable. Rice is the most dominant crop in Assam. Assam can emerge as the sole producer and distributor of rice in the whole of north-east and can also supply it to neighbouring countries like Bangladesh, Bhutan and Nepal if proper emphasis is put on the quality and quantity of rice in Assam. In fact, the disadvantage of proper transport system between north-east and rest of India can be turned into an advantage for Assam as it will be cheaper to transport rice from Assam to the rest of north-east than from Punjab or Andhra Pradesh, provided there is no qualitative difference. Assam has a tremendous potential for increasing the output of not only rice but also fruits, vegetables, tea and spices. Vegetables, fruits and spices are high value income-elastic crops with enormous scope for commercialization. Many processed food products (like chips, semi-processed/frozen vegetables, juices, jams, spice preparations, etc.) can be produced using these crops as raw materials. These processed food products not only have storage and transportation advantage, they also ensure a higher price. These food-processing units can be small-scale units with scope for local employment.

The two above mentioned strategies for agricultural development in Assam can be achieved only with improved infrastructural facilities (irrigation, marketing and storage facilities in particular and roads, railways, power etc. in general).

CHAPTER FOUR

*POPULATION GROWTH
IN ASSAM :
ITS TRENDS*

CHAPTER FOUR

POPULATION GROWTH IN ASSAM : ITS TRENDS

4.1 INTRODUCTION

Population plays an important part (both as a consumer and as a producer) in the process of development of a region. Thus a proper appraisal of its size, growth, composition and quality is necessary to formulate effective plans for balanced and sustainable socio-economic development of a region.

4.2 SIZE AND STRUCTURE

According to 2001 Census, total population of Assam as on March 1, 2001 stands at 26,638,407 out of which 13,787,799 are males and 12,850,608 females yielding a sex-ratio of 932 females per 1000 males. The total population of the country is 1,027,015,247 consisting of 531,277,078 males and 495,738,169 females. The sex-ratio worked out to 933 females per 1000 males. With an area of India's 2.39 per cent, Assam shelters 2.59 per cent of the country's population.

4.3 POPULATION GROWTH

Assam's rate of population growth has been higher than the country's average growth throughout the twentieth century except during the post 1971 period. At the beginning of the

present century, Assam's population was 3,290 thousand (Table 4.1). It increased to 8029 thousands in 1951, which increased to 26,638 thousand in 2001. The increase in Assam's population during the last century was slightly more than eight times. In contrast, India's population during the same period increased from 238,300 thousand to 1,027,015 thousand; the increase is slightly above four times. Thus Assam's population as a percentage of India's population had a continuous rise till 1971 after which this percentage share had marginally declined in the subsequent decades.

Table 4.1

TRENDS IN POPULATION GROWTH RATE : ASSAM & INDIA

Year	Total population ('000)		Decadal growth (%)		Share #
	Assam	India	Assam	India	
1901	3290	238300	-	-	1.38
1911	3849	252000	16.99	5.75	1.52
1921	4637	251200	20.48	-0.31	1.84
1931	5560	278900	19.90	11.00	1.99
1941	6695	318500	20.40	14.22	2.10
1951	8029	361000	19.93	13.31	2.22
1961	10867	439100	34.98	21.51	2.46
1971	14625	548200	34.95	24.80	2.66
1981	18041	685200	23.36	24.66	2.64
1991	22295	846300	24.24	23.56	2.65
2001	26638	1027015	18.85	21.34	2.59

State's population as the percentage of the India's population.

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

The faster rate of population growth in Assam, particularly during the initial seven decades, has been due to both natural increases in population and migration.

There were broadly three streams of migrants to Assam starting from the British annexation in 1826. For meeting the sudden increase in demand for labour in the rapidly growing tea plantation sector (dominated by British capitalists), a large

number of people from other provinces had to be brought to work as tea garden labourers. 'Although started as early as 1853, migration of tea garden labourers from other provinces on a large scale took place in the seventies of the nineteenth century. It continued till 1937, the number falling low after 1931, by which time the tea garden labourers numbered just under ten lakh in Assam' (Census of India, 1961 : Assam, General Report, Page 134). These indentured tea garden labourers consisted of the first stream of migrants to Assam.

The second stream of migration was that of Muslim peasants from the then East Bengal districts of Mymensingh, Pabna, Bogra and Rangpur. Driven apparently by the pressure on the soil at home, and lured by the cheap and plentiful supply of both virgin and exceptionally fertile lands in Assam with the freedom of settlement of the 'ryotwari' system, land hungry peasants began to pour into Assam from the beginning of the twentieth century, their first target being the then district of Goalpara (where their number increased from 49.1 thousand in 1901 to 118.2 thousand in 1911). Enumerated first in 1911 on the char lands of Goalpara, these migrants in the words of 1961 Census Superintendent, Pakyntein, 'were merely the advance guards or rather scouts of a huge army following closely on their heels.' His words proved prophetic. Migration of peasants from the then East Bengal districts continued unabated till 1971 after which the rate of migration from this source had declined.

The third stream of migrants consisted of Bengali Hindu refugees from the then Sylhet district to the adjoining areas of present Assam and Tripura as a result of partition.

Another stream of migrants into Assam, which went more or less unnoticed, consisted of Nepali graziers, who from the beginning

of the twentieth century started settling in the uncultivated and unowned hill slopes.

In the post independence period, the Muslim immigrants had moved into other districts, the char areas in the initially occupied districts being exhausted. As a result, we notice increased decadal rate of growth in districts like Dhemaji, Lakhimpur, Kamrup, Nalbari and Bongaigaon. However, the increased rate of growth noticed in the two hill districts cannot be attributed solely to migration (Table 4.2).

Table 4.2

PERCENTAGE DECADAL VARIATION IN POPULATION SINCE 1901

State/ District	Percentage Decadal Variation									
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1971-91	1991-01
Assam	16.99	20.48	19.91	20.40	19.93	34.98	34.95	-	53.26	18.85
Kokrajhar	29.97	26.92	15.76	14.83	9.25	46.44	54.28	-	76.75	15.05
Dhubri	29.97	26.92	15.76	14.83	9.25	27.44	40.45	-	56.47	23.42
Goalpara	29.97	26.92	15.76	14.83	9.25	37.10	45.88	-	54.12	23.07
Bongaigaon	29.94	26.94	15.94	14.97	9.31	60.81	40.29	-	64.64	12.23
Barpeta	20.02	34.04	69.02	44.06	18.77	32.62	35.81	-	43.02	18.53
Kamrup	11.10	7.06	9.38	19.21	17.17	37.73	38.80	-	65.72	25.75
Nalbari	13.33	14.20	27.92	29.43	17.89	49.62	42.02	-	49.27	11.98
Darrang	-0.25	11.78	26.00	35.30	24.13	44.75	43.24	-	55.63	15.79
Morigaon	15.84	31.94	41.35	15.37	36.65	37.89	37.51	-	60.90	21.29
Nagaon	15.84	31.94	41.35	15.37	36.65	35.91	38.99	-	51.26	22.30
Sonitpur	24.33	40.69	20.50	19.73	24.26	35.82	27.62	-	57.14	17.80
Lakhimpur	26.29	34.07	23.91	22.70	17.94	50.46	43.39	-	56.29	18.34
Dhemaji	26.29	34.07	23.92	22.69	17.94	75.21	103.42	-	107.50	18.93
Tinsukia	26.29	34.07	23.92	22.70	17.94	35.92	31.02	-	47.03	19.52
Dibrugarh	26.29	34.07	23.91	22.70	17.94	30.64	22.93	-	37.78	12.43
Sibsagar	13.41	20.46	14.44	15.64	15.98	23.36	19.47	-	38.76	15.95
Jorhat	16.90	17.26	8.88	15.27	14.87	24.17	17.47	-	33.10	15.84
Golaghat	16.55	19.83	18.29	1.27	19.76	26.04	30.85	-	58.12	14.21
Karbi-Anglong	-	-	-	-	30.96	79.21	68.28	-	74.72	22.57
N.C. Hills	-33.12	5.92	13.60	13.75	6.16	36.95	40.00	-	98.30	23.47
Cachar	12.33	5.98	7.60	13.08	23.92	22.60	23.96	-	47.59	18.66
Karimganj	12.94	3.19	5.91	9.52	29.87	22.96	25.13	-	42.08	21.35
Hailakandi	16.09	7.59	7.08	10.29	17.48	27.23	23.61	-	45.94	20.52

Note : 1981 Census could not be conducted in Assam, due to Socio-political reasons.

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Depending upon the nature and extent of migration, population growth within the state has been different in different regions

and at different times. Before independence, population growth was considerably higher in the districts of middle and lower Brahmaputra valley (having large tracts of cultivable wasteland) due to immigration mainly from East Bengal and Nepal.

The spatial pattern remained more or less even after independence. Growth of population has been higher throughout the present century in the present plain districts of Kokrajhar, Bongaigaon, Darrang, Morigaon and Dhemaji. However, the two tribal dominated hill districts (Karbi Anglong and North Cachar Hills) started experiencing high growth of population from 1941-51 and 1951-61 respectively. Availability of vacant land in the hilly areas as against a heavy pressure of population on the plains attracted the migrants to Karbi Anglong and N. C. Hills districts resulting in high population growth in these districts.

4.4 DENSITY OF POPULATION

Density of population in Assam is not uniform district-wise (Table 4.3). For obvious reasons, the two hill districts are least densely populated. The reasons for valley districts being more densely populated include, among others, availability of cultivable land, better transport and communication facilities and the ongoing process of urbanisation and industrialisation. Among the valley districts, the density of population is the highest in the district of Nagaon, followed by Dhubri and Kamrup districts.

Table 4.3

RANKING OF DISTRICTS BY POPULATION DENSITY

District	Population density (2001)	Rank in 2001	Population density (1991)	Rank in 1991
Nagaon	604	1	494	1
Dhubri	584	2	473	2
Kamrup	579	3	460	3
Karimganj	555	4	457	4
Barpeta	506	5	427	6
Nalbari	504	6	450	5
Morigaon	455	7	375	7
Goalpara	451	8	366	9
Darrang	432	9	373	8
Hailakandi	409	10	338	11
Sibsagar	395	11	340	10
Lakhimpur	391	12	330	12
Cachar	381	13	321	14
Bongaigaon	361	14	322	13
Jorhat	354	15	306	16
Dibrugarh	347	16	308	15
Sonitpur	315	17	268	17
Tinsukia	303	18	254	19
Kokrajhar	294	19	255	18
Golaghat	270	20	236	20
Dhemaji	176	21	148	21
Karbi-Anglong	78	22	64	22
N.C. Hills	38	23	31	23

Note : Population Density in person per sq. km.

Source : Statistical Handbook of Assam, 2001, Govt. Of Assam.

4.5 POPULATION PROJECTION

With the availability of age-sex distribution of population from the 1991 Census, latest statistics relating to family planning performances, and recent levels and trends in fertility and mortality as revealed from the Sample Registration Sample (SRS), the Technical Group was constituted by the Planning Commission in August, 1996 under the chairmanship of the Registrar General, India to make accurate population projections. The Technical Group projected the

population of India and the states till the year 2016. The projected population of the Technical Group is used here in our analysis (Table 4.4). Based on the projected population figures by the Registrar General, population is expected to grow by 15 per cent between 2001 and 2011.

Table 4.4

PROJECTED POPULATION OF ASSAM

(in thousands)											
Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Projected population	26,492	26,785	27,129	27,520	27,955	28,426	28,897	29,332	29,735	30,113	30,468

Source : Technical Group On Population Projection, Registrar General Of India.

There is not much difference in Assam's population figures of 2001 Census and the projected figure of the Technical Group. Hence, the projection is likely to be very close to reality.

It is to be noted that population projection is needed in order to make an estimate of total demand for various consumable goods in the year 2011. Based on the NSS estimate of per capita consumption of various goods, per capita demand for these goods will be projected for 2011 and these projected consumption figures will then be multiplied by the projected population for estimating the total demand for these goods in 2011. A slight modification in the projected population has been made, as we have not included in our study the two hill districts of the state. Since the decadal variation in population during 1991-2001 in the two hill districts and Assam as a whole are not very dissimilar, therefore, 2011 projected population of the two hill districts (projection based on the assumption that the proportion of these districts' population to total population of Assam will remain unchanged) will be subtracted from the total projected population of Assam for the year 2011.

Assam's population in 1991 stood at 22,294,562. Population of the two hill districts of Karbi Anglong and North Cachar Hills were 655,415 (2.94 per cent of Assam's population) and 149,346 (0.67 per cent of Assam's population) respectively. Thus, 3.61 per cent of the population were found in these two hill districts in 1991. This percentage share increased marginally to 3.75 per cent in 2001. Projected population in Assam in 2011 is 30,468,000. Since the population growth in the two hill districts have been slightly higher in the last decade, we assumed that the population of these two districts will constitute four per cent of the population (i.e., four per cent of 30,468,000 is 1218720) in 2011. Thus the projected population of Assam (plains) stands at 29, 249,280.

NOTE:

The Technical Group, in making population projections, considered net migration to be negligible. But migration is a major problem not only in Assam but in the North-East as a whole. Massive and unchecked influx of population into Assam from Bangladesh, Nepal and other states of India has not only adversely influenced the demographic, economic and socio-cultural condition but it has also become one of the main reasons of social tension and ethnic unrest in the whole north-eastern region. In fact, illegal immigration into some parts of North-East has increased so alarmingly that the identity of the indigenous people is being threatened.

Making population projection assuming positive migration is outside the scope of this research work. Thus the figures of the Technical Group has been taken where net migration is assumed to be zero.

CHAPTER FIVE

*NET STATE DOMESTIC
PRODUCT (NSDP) OF
ASSAM :
ITS COMPOSITION AND
TRENDS*

CHAPTER FIVE

NET STATE DOMESTIC PRODUCT (NSDP) OF ASSAM : ITS COMPOSITION AND TRENDS

5.1 INTRODUCTION

A study of the National Income (N.I.) of a country over a period of time is necessary to ascertain whether or not the country is progressing economically over the period. Such a study also helps to analyse the performance of the economy. Sector-wise performance of the economy can be assessed only with the help of N.I. statistics. The State counterpart of N.I. is known as Net State Domestic Product (NSDP), which measures the value of output (amount of income) originating within the geographical boundary of a State during a particular period (the financial year). The estimate of State income provides the most comprehensive single indicator of the level of development of a particular State. In Assam, the Directorate of Economics and Statistics makes yearly estimates of the State income.

5.2 SECTOR-WISE NSDP OF ASSAM (1950-51 to 1999-2000)

Table 5.1 shows the contribution of different sectors to the Net State Domestic Product in Assam. It can be seen from the table that in 1950-51, the primary sector accounted for 66.6 per cent of the total State income. In the same year, the contribution of the secondary sector to the State income was 15.3 per cent and the share of the tertiary was 17.3 per cent.

CHAPTER FIVE

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Table 5.1.

**SECTORAL CONTRIBUTION OF NET STATE DOMESTIC PRODUCT (NSDP)
BY INDUSTRY OF ORIGIN AT CONSTANT PRICES (1980-81)**

(In Crore Rupees)

Year	Primary Sector	Secondary Sector	Tertiary Sector	Total (NSDP)
1950-51	136.00 (66.54)	31.30 (15.31)	35.40 (17.32)	204.40
1970-71	175.80 (45.09)	79.50 (20.39)	116.80 (29.96)	389.90
1980-81	1268.79 (53.85)	277.07 (11.76)	810.20 (34.39)	2356.06
1981-82	1394.76 (52.82)	378.81 (14.35)	866.81 (32.83)	2640.38
1982-83	1553.17 (54.85)	357.09 (12.61)	921.21 (32.53)	2831.47
1983-84	1512.34 (51.91)	431.82 (14.82)	969.47 (33.27)	2913.63
1984-85	1547.04 (49.03)	581.85 (18.44)	1026.57 (32.53)	3155.46
1985-86	1612.07 (49.12)	573.41 (17.47)	1096.42 (33.41)	3281.90
1986-87	1585.23 (46.82)	589.45 (17.41)	1161.19 (34.30)	3385.87
1987-88	1687.01 (48.09)	595.74 (16.98)	1225.31 (34.93)	3508.06
1988-89	1670.50 (45.61)	654.40 (17.87)	1337.16 (36.51)	3662.61
1989-90	1654.30 (43.34)	713.50 (18.69)	1449.60 (37.97)	3817.30
1990-91	1750.60 (42.65)	823.50 (20.06)	1531.10 (37.30)	4104.70
1991-92	1685.63 (38.95)	901.68 (20.83)	1740.59 (40.22)	4327.90
1992-93	1568.50 (43.41)	369.20 (10.22)	1675.39 (46.37)	3613.09
1993-94	1607.21 (42.81)	377.53 (10.06)	1769.18 (47.13)	3753.92
1994-95	2216.20 (47.25)	657.61 (14.02)	1816.96 (38.73)	4690.79
1995-96	2244.29 (46.73)	647.02 (13.47)	1911.20 (39.80)	4802.53
1996-97	2216.59 (45.06)	680.96 (13.84)	2021.14 (41.09)	4918.70
1997-98	2307.15 (45.19)	697.39 (13.66)	2101.18 (41.15)	5105.74
1998-99	2333.14 (47.73)	684.55 (14.00)	1870.62 (38.27)	4888.31
1999-2000	2446.69 (46.26)	728.72 (13.78)	2113.18 (39.96)	5288.60

Note : The figures within bracket are the percentage of the column figures
w.r.t. the corresponding 'NSDP' figures.

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

In 1970-71, the percentage share of the primary sector got reduced but still it continued to play an important role contributing 45.9 per cent of the total State income. The percentage share of the secondary and tertiary sectors increased to 20.7 per cent and 29.3 per cent of NSDP respectively in the same year (i.e. 1970-71). In 1980-81, the share of the primary sector increased to 53.9 per cent of NSDP in contrast to 45.9 per cent in 1970-71. The share of the secondary and tertiary sectors stood at respectively 11.8 per cent and 34.3 per cent in that year (1980-81). Although

declining, the share of the primary sector in Assam's NSDP has been high throughout the study period and it still contributes 46.26 per cent in 1999-2000. The contribution of the secondary sector to NSDP increased from 11.8 per cent in 1980-81 over the years to 20.83 per cent in 1991-92. After that, the share of the secondary sector decreased to 10.22 per cent in 1992-93. In 1999-2000, the share of the secondary sector stood at 13.77 per cent. The contribution of the tertiary sector increased from 34.3 per cent of NSDP in 1980-81 to 47 per cent in 1993-94. After that, there has been some decline in the contribution of this sector and this percentage contribution stood at 39.95 in 1999-2000.

Thus from Table 5.1, it is clear that the primary sector still continues to play the dominant role in determining the State income of Assam. The contribution of the secondary sector, it is distressing to note, has been declining. The share of the tertiary sector, by and large, at the cost of the secondary sector.

Assam's trend in the sector-wise contribution to NSDP is in contrast to that of the country as a whole. Table 5.2 gives sector-wise Gross Domestic Product (GDP) at factor cost. While the share of the primary sector in the country's GDP has declined from 59.19 per cent in 1950-51 to 27.49 per cent in 1999-2000, in the case of Assam, the decline in the percentage share of the primary sector has not been that glaring. The contribution of the secondary sector has increased considerably at the all India level. Its percentage share increased from 13.29 of GDP in 1950-51 to 24.6 in 1999-2000. As mentioned earlier, in the case of Assam, the percentage contribution of the secondary sector to NSDP has been on the decline. So far as the tertiary sector is concerned, its percentage contribution has been on an increase by and large in both the State and the

all India levels; the only difference being the rate of increase at the national level is much higher compared to the Assam's rate.

Table 5.2
GROSS DOMESTIC PRODUCT (GDP) AT FACTOR COST
BY INDUSTRY OF ORIGIN

(at 1993-94 PRICES)
(In Crore Rupees)

Year	Primary Sector	Secondary Sector	Tertiary Sector	Total (GDP)
1950-51	83154 (59.19)	18670 (13.29)	39389 (28.04)	140477
1960-61	112848 (54.75)	34239 (16.61)	59809 (29.02)	206121
1970-71	142581 (48.12)	58997 (19.91)	95353 (32.18)	296303
1980-81	167770 (41.82)	86605 (21.59)	146787 (36.59)	401162
1990-91	242012 (34.92)	169703 (24.49)	281336 (40.59)	693051
1995-96	275153 (30.59)	229098 (25.47)	395312 (43.94)	899563
1996-97	299461 (30.87)	246848 (25.45)	423774 (43.68)	970083
1997-98	295050 (29.03)	256105 (25.20)	465111 (45.77)	1016266
1998-99	314396 (29.03)	265434 (24.51)	503217 (46.46)	1083047
1999-2000	316780 (27.50)	283716 (24.63)	551495 (47.87)	1151991

Note : The figures within bracket are the percentage of the column figures
w.r.t. the corresponding 'GDP' figures.

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

In short, unlike the economy of India which has witnessed some structural changes during the plan period, the percentage share of both secondary and tertiary sectors increasing at the expense of the primary sector, in the case of Assam, no such structural change in the economy, measured by the relative contribution of the three sectors is noticeable.

5.3 TRENDS IN PER CAPITA STATE DOMESTIC PRODUCT

Per capita income, more particularly, its movement over time, provides a better indicator of the performance of an economy as it relates income to population changes. Table 5.3 presents the per capita income of Assam at constant (1980-81) prices.

But a comparison of the per capita income in Assam and the per capita income of India as a whole (as shown in Table 5.4) shows a difference in the per capita income between the two which has increased steadily over the years. This is because the growth of per capita income in Assam has not been able to grow at the same rate as the increase in per capita income in all India leading to a huge negative gap between these two.

Table 5.3

**PER CAPITA NET STATE
DOMESTIC PRODUCT OF ASSAM**

(at 1980-81 PRICES)

Year	Per Capita NSDP (Rs)	Year	Per Capita NSDP (Rs)
1980-81	1284	1990-91	1544
1981-82	1402	1991-92	1575
1982-83	1437	1992-93	1557
1983-84	1470	1993-94	1583
1984-85	1447	1994-95	1602
1985-86	1510	1995-96	1593
1986-87	1437	1996-97	1969
1987-88	1468	1997-98	2012
1988-89	1446	1998-99	1899
1989-90	1517		

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Table 5.4

**PER CAPITA INCOME
IN ASSAM & INDIA**

(at 1980-81 PRICES)

Year	PER CAPITA INCOME		Gap
	Assam	India	
1980-81	1284	1630.10	-346.10
1985-86	1510	1841.40	-331.40
1989-90	1517	2157.10	-640.10
1990-91	1544	2222.20	-678.20
1991-92	1575	2175.10	-600.00
1992-93	1557	2243.10	-686.10
1993-94	1582	2337.20	-754.20
1994-95	1602	2473.20	-871.20
1995-96	1958	3645.54	-1687.14
1996-97	1969	3864.58	-1894.98
1997-98	2012	3986.57	-1974.17
1998-99	1899	4187.64	-2288.14

Source :

a) National Income Statistics, CMIE, various issues

b) Statistical Handbook of Assam, published annually by Govt. Of Assam

5.4 INCOME PROJECTIONS

To make income projections, the trends in NSDP and per capita NSDP have been estimated taking the period 1980-81 to 1998-99 and using the function $Y_t = Ae^{rt}$. The annual compound growth rate (given by 'r' in the function) of NSDP and per capita NSDP of Assam were found to be 3.81 per cent and 1.89 per cent

respectively during the above mentioned period. Based on these trends, Assam's NSDP and per capita NSDP can be expected to grow respectively at the rate of four per cent and two per cent. The projected NSDP of Assam in 2010-11 at 1980-81 prices is likely to reach the figure Rs.8194.12 crores and per capita NSDP Rs. 2319.12.

The above projections are based on the assumption that the past trends will continue in the next decade also. But the current deceleration of growth in the manufacturing sector is likely to be checked to some extent and this sector is expected to recover in the near future due to the commissioning of the Numaligarh Refinery. At the same time, it seems unlikely that the public administration sector will be able to grow at the same rapid pace of the past due to the fiscal hardship faced by the State Government. Thus the actual NSDP and per capita NSDP of Assam may be somewhat higher than the projected ones.

So far, the pace of economic growth in Assam has been very slow. And the tardy growth experienced till now is mainly due to the expansion of the service sector, particularly 'public administration', 'banking and insurance' and 'real estate, ownership of dwelling and business service'.

The above underscores the importance of improving the performance of Assam's agricultural and manufacturing sectors, more particularly, the agricultural sector. Improving the performance of this sector calls for an optimal use of land resources, which is not possible without stepping up investment in agricultural infrastructure, especially irrigation. With better agricultural infrastructure, farmers are likely to respond favourably to the use of HYV seeds, chemical fertilisers and pesticides, in the process increasing the yield

rate of the existing crops, besides inducing them to introduce additional crops.

The industrial sector of Assam, as a growth booster of the economy is a more difficult proposition. Started at the initiative of colonial capitalists during the British rule, industrialisation of Assam got disrupted in the post-independence period. Partition of India geographically isolated Assam (along with other units of the north-east) from the rest of the country. The increased cost of transport acted as a disincentive to the private investors to take up new industrial ventures. The public sector industrial units, because of their poor performance, could not improve the deteriorating industrial climate. Greater regional cooperation with neighbouring countries and opening up of trade with these countries appear to be the only solution for removal of constraints on industrialisation of Assam arising from geographical isolation and lack of access to a wider market within the national economy.

CHAPTER SIX

*DEMAND AND SUPPLY
PROJECTIONS FOR
ASSAM'S AGRICULTURAL
COMMODITIES AND
THEIR COMPARISON*

CHAPTER SIX

DEMAND AND SUPPLY PROJECTIONS FOR ASSAM'S AGRICULTURAL COMMODITIES AND THEIR COMPARISON

6.1 INTRODUCTION

An attempt has been made in this chapter to make demand projections for agricultural commodities up to 2011 for the State of Assam. These projections are likely to help in devising an optimum land use pattern for Assam and in setting appropriate production targets. While recognizing the fact that each region of the country is not required to plan for self-sufficiency in agricultural production, a State like Assam, which is endowed with fertile soil suitable for raising a number of agricultural crops, achieving self-sufficiency in agriculture or even producing a surplus becomes a necessity. This can also provide a base for a number of agro-processing industries.

Projections of long-term demand are unlikely to be accurate, as various assumptions have to be made regarding the behaviour of a number of economic variables (e.g. taste and preference, income, population growth etc.). Subject to these limitations, demand projections have to be seen here as broad guidelines which will identify the areas requiring action immediate as well as on a longer time basis. The National Commission of Agriculture, 1976 observed "*that the functional role of the projections may be said to have been fulfilled even if the problem areas are identified.*"

6.2 METHODOLOGY

As mentioned in Chapter One, the methodology followed for demand projection includes the following steps -

- (a) Computation of per capita availability of commodities in the base year, 1999-2000 (separately for rural and urban areas) based on NSS data (55th Round). Per capita consumption of different commodities is converted into annual consumption.
- (b) Using a logarithmic functional form to estimate the income elasticity of demand ($\log Q_i = \log a + b \log E_i$, where Q_i represents quantity consumed of the commodity by i th household and E_i is the total consumption expenditure of the household; $\log a$ and b are the parameters) for different commodities based on cross-section household expenditure data separately for rural and urban areas. The elasticities thus obtained are used for demand projections with the assumptions that the consumer expenditure is insensitive to price changes and the income elasticities do not change over time or with price.
- (c) Demand is projected (per capita demand) for rural and urban areas by using the function

$$D = AY^B$$

Where, D is projected demand;
 A is the constant;
 Y is the projected income; and
 B is income elasticity of demand.

Total per capita projected demand has been obtained by adding projected rural demand and projected urban demand.

- (d) Aggregate demand of the State is arrived by multiplying aggregate demand by the projected population of Assam for 2011.

6.3 RESULTS AND ANALYSIS

Table 6.1 gives the estimated income elasticities of demand for different commodities based on NSS cross-section household expenditure data computed separately for rural and urban areas in Assam for the year 1999-2000. The 't' values of the elasticity coefficients are also shown in brackets.

Table 6.1
ESTIMATED INCOME ELASTICITY COEFFICIENTS FOR ASSAM
BY RURAL AND URBAN AREAS : 1999-2000

Commodity	Elasticity coefficient	
	Rural	Urban
1. Rice	0.1834 (3.336)	0.0185 (0.543)
2. Wheat	0.6900 (3.335)	0.5130 (4.738)
3. Gram	1.6015 (9.277)	1.6536 (4.836)
4. Arhar	1.7564 (7.145)	1.0200 (3.843)
5. Other Pulses	0.7432 (5.217)	0.5318 (8.276)
6. Total Cereals	0.2185 (4.112)	0.0842 (3.093)
7. Pulses And Pulse Products	0.8190 (7.908)	0.5895 (8.895)
8. Total Food	0.7365 (13.013)	0.7223 (24.940)
9. Milk And Milk Products	1.4299 (6.507)	1.2732 (9.442)
10. Edible Oil	0.8095 (18.187)	0.7436 (14.400)
11. Egg, Fish And Meat	1.0350 (15.807)	1.0503 (10.101)
12. Vegetables	0.6482 (7.216)	0.6459 (20.197)
13. Fruits	1.5952 (16.805)	1.6813 (21.239)
14. Sugar	0.8150 (8.520)	0.6308 (8.150)
15. Salt	0.4497 (5.042)	0.3226 (6.924)
16. Spices	0.7952 (11.480)	0.7280 (17.445)
17. Beverages	1.4739 (23.905)	1.2600 (14.389)
18. Total Nonfood	1.4066 (21.652)	1.3323 (93.110)

Note : the figures inside brackets are the 't' values of the elasticity coefficients.

Source : Level and Pattern of Consumer Expenditure in India, NSS Report No. 457, 1999-2000.

Table 6.2 gives the projected per capita demand of Assam by combining the projected demand of urban and rural areas.

Table 6.3 gives the projected aggregate demand of different commodities which has been obtained by multiplying the projected per capita demand by projected population of 2011.

Table 6.2

ASSAM'S PROJECTED PER CAPITA DEMAND - 2011

Demand items	Projected Per capita Demand		
	Rural	Urban	Total
1. Rice	127.63	126.71	254.25
2. Wheat	4.82	7.94	12.76
3. Gram	0.06	0.05	0.11
4. Arhar	0.04	0.12	0.17
5. Other Pulses	3.10	3.62	6.72
6. Total Cereals	131.38	130.98	262.36
7. Pulses And Pulse	3.13	3.81	6.95
8. Total Food Products	1975.77	1961.58	3937.35
9. Milk And Milk Products	51.89	77.05	128.95
10. Edible Oil	95.28	107.66	202.94
11. Egg, Fish And Meat	183.10	173.62	356.73
12. Vegetables	258.13	238.33	496.47
13. Fruits	12.84	11.37	24.22
14. Sugar	46.72	51.90	98.63
15. Salt	11.25	13.23	24.48
16. Spices	46.15	53.06	99.21
17. Beverages	54.73	93.90	148.64
18. Total Nonfood	514.50	596.86	1111.36

(Items 1 to 8 are expressed in kgs, and items 9 to 18 are expressed in Rs.)

Source : Level and Pattern of Consumer Expenditure in India, NSS Report No. 457, 1999-2000.

Table 6.3

ASSAM'S PROJECTED AGGREGATE DEMAND - 2011

(Thousand Tonnes)

Commodity / Demand Items	Projected Aggregate Demand
1. Rice	7439.6
2. Wheat	373.5
3. Gram	3.37
4. Arhar	5.00
5. Other Pulses	196.84
6. Total Cereals	7674.00
7. Pulses And Pulse Products	203.36
8. Total Food	11516.36
9. Milk And Milk Products	377.17
10. Edible Oil	593.6
11. Egg, Fish And Meat	1043.4
12. Vegetables	1452.13
13. Fruits	70.85
14. Sugar	288.51
15. Salt	71.63
16. Spices	290.21
17. Beverages	434.78
18. Total Nonfood	3250.64

According to the Census of 1991, total population of Assam was 2,22,94,562 where the population of the two hill districts of N.C.Hills and Karbi Anglong was respectively 1,49,346 (0.67 per cent of Assam's population) and 6,55,415 (2.94 per cent of Assam's population). That is, a total of 3.61 per cent of Assam's population were found in the two hill districts in

1991. According to the Census of 2001, this percentage increased to 3.75 of Assam's population due to high growth rate of population in the two districts during the period 1991-2001. Projected population of Assam for 2011 is 30,468,000. If four per cent of this population (i.e., 1,218,720) is expected to be found in the two hill districts, projected population in Assam's plains will be 29,249,280 i.e., 29249 thousand approximately.

6.4 SUPPLY PROJECTIONS

In this section, supply of agricultural output is projected for the year 2010-11 based on past trends. It has been assumed that agricultural output will grow at the same rate as observed earlier (during the period 1960-61 to 1999-2000). Supply has been projected by using the function

$$Y_t = Ae^{rt}$$

Where Y_t is the output in time t
 A is the constant
 r is the compound growth rate, and
 t is the time period.

Data for agricultural output has been taken from 1961-62 to 1999-2000 and based on the growth rate during this period, supply of agricultural output has been projected to the year 2011. This period has not been divided into pre-green revolution period and post-green revolution period because the tremendous increase in output due to the green revolution experienced in some parts of the country was absent in Assam (as explained in Chapter Three).

Table 6.4 summarizes the calculated supply projections of agricultural commodities in Assam for the year 2011.

Table 6.4
ASSAM'S PROJECTED OUTPUT OF MAJOR CROPS - 2011

(in thousand tonnes)

	Crop	Projected output
1	Summer Rice	832.33
2	Winter Rice	2813.24
3	Autumn Rice	655.35
4	Maize	9.03
5	Wheat	1174.82
6	Other Cereals And Small Millets	12.19
	Total Cereals	4119.59
7	Gram	1.32
8	Tur	7.66
9	Other Rabi Pulses	69.00
	Total Pulses	78.56
10	Total Foodgrains	4199.43
11	Rape And Mustard	215.85
12	Sesamum	9.48
13	Linseed	14.84
14	Castor	0.36
15	Jute	762.89
16	Mesta	61.99
17	Sweet Potato	30.30
18	Tapioca	21.89
19	Tobacco	0.58
20	Onion	23.49
21	Banana	1008.01
22	Arecanut	100.69
23	Orange	85.63
24	Coconut	376.78
25	Turmeric	8.63
26	Chillies	20.16
27	Papaya	204.00
28	Pineapple	298.99
29	Potato	947.30

6.5 COMPARISONS OF PROJECTED DEMAND AND SUPPLY

Table 6.5 makes a comparison of the projected demand and supply of major agricultural commodities for the year 2011 for the State of Assam (plains).

It is assumed here that the growth rates in output of the past are sustained. In such a case, it can be seen from the table that Assam will be deficient in the case of both cereals and

pulses. Amongst the crops, wheat is the only crop which is likely to have a surplus. Thus there is an urgent need to increase the production of both cereals and pulses if the demand of the State's population is to be met by its own production. For this an action plan will be necessary.

Table 6.5

DEMAND-SUPPLY COMPARISONS

(in thousand tonnes)

	Items	Demand	Supply
1	Rice	7439.6	4300.92
2	Wheat	373.5	1174.82
	Total Cereals	7674.00	4119.59
3	Gram	3.37	1.32
4	Arhar	5.00	7.667
5	Other Pulses	196.84	69.00
	Total Pulses	203.36	78.56

6.6 SUGGESTED ACTION PLAN

A meaningful action plan to increase agricultural production in Assam should include, among others, the following points -

- (a) Increase in land productivity,
- (b) Bringing more areas into cultivation by sowing new areas and introducing multiple cropping in already cultivated lands,
- (c) Switching from longer duration crops to shorter duration crops and adjusting the cropping pattern to tide over possible floods, and
- (d) Increasing production of horticultural crops on a commercial scale.

Low productivity in Assam's agriculture is because of a number of reasons as explained earlier in Chapter 3. Insufficient use of pesticide, insecticide and fertilizer, lack of adequate irrigation and credit facilities, etc. are some of the reasons of low productivity of Assam's agriculture.

Agricultural production can be increased by bringing new areas under cultivation. Although the extent of increasing area under cultivation is limited, special attention should be given to the development of the unexploited areas (e.g. char areas). Productivity per hectare is high in the char areas, especially for Rabi and horticultural crops. Effective area under crops can also be increased by the introduction of multiple cropping on a larger scale. It is an economic loss to the State if only one crop is raised in a year. Provision of adequate irrigation facilities, timely supply of seeds and fertilizers, easy system of credit, etc. makes cultivation of more than one crop a year possible.

In the flood-affected areas also, cultivation of more than one crop is possible by switching over to shorter duration crops which can be harvested before the onset of floods. In order to protect the interest of the farmers, provisions can be made for crop insurance for hedging against possible flood damages. In flood prone areas, the Gaon Panchayats may be empowered to implement this scheme, the cost (premia) being shared equally by the State Government and the Panchayats.

Another area of activities, which has been neglected so far in Assam, is horticulture. Assam is a deficient State in the production of vegetables but its agro-climatic factors, in fact, favour a prosperous cultivation of such crops. Horticulture crops can also be highly remunerative and high value crops, capable of earning foreign exchanges and creating employment opportunities.

However, due to primitive transport and non-availability of storage and processing infrastructure in Assam, a major percentage of horticultural produce goes waste. Because of the lack of processing units, farmers do not get adequate price for

their produce. Processed food-items like jams, jellies, juice, pickles, etc., fetch higher price to the producer of horticultural commodities used as raw materials. Since setting up processing plants involves high cost, the government should take the initiative in establishing them.

Agro-climatically, Assam is capable of raising a large variety of flowers and orchids. The commercial viability of floriculture has not been explored in Assam, which needs to be done urgently.

Another reason for low productivity of agriculture in Assam is insecurity of tenancy. Although Assam has apparently one of the most progressive pieces of legislation (*The Assam Temporarily Settled Areas Tenancy Act 1971*), the Act instead of guaranteeing security of tenancy to the share croppers, have only succeeded in making them concealed tenants. The Act provides for conferring ownership right to the tenants themselves with three consecutive years' of cultivation on the tenanted land. In order to shield themselves from this provision, the landlords make sure that their land is not tenanted for more than two years consecutively. In effect, the Act has succeeded in increasing insecurity of tenancy. What is more distressing is that there is no record of sharecroppers in Assam. In the perception of the State Government, this class does not exist at all. Thus the productivity of the tenanted land is extremely low. The Gaon Panchayats may be empowered to compile a list of sharecroppers (who do not have a legal entity at present) even by amending the above law in the State Legislature for future remedial measures.

CHAPTER SEVEN

*LIVESTOCK RESOURCES
IN ASSAM*

CHAPTER SEVEN

LIVESTOCK RESOURCES IN ASSAM

7.1 INTRODUCTION

Livestock constitutes one of the important homestead activities in almost all households in Assam. In the rural household economy, livestock is regarded as an inseparable component in farm business, since it is the source of commercial products like milk, meat, egg and manure, besides providing draught and transportation. Livestock resources (consisting of cattle, buffaloes, sheep, goat, pigs, duck, etc.) also provide nutrition to farm families. Most of these animals in Assam (in fact, in the whole of north-east) are of non-descript type, poorly reared and hence less productive. Whatever development has taken place in production or productivity in the livestock sector can be attributed mainly to the efforts of the farmers and natural growth of animals rather than technological intervention introduced by public authorities.

7.2 LIVESTOCK POPULATION DYNAMICS

Livestock resources in Assam consist of cattle, buffaloes, sheep, goats, pigs, horses and ponies (Table 7.1). Cattle population constitutes a major bulk (about 64 per cent) of total livestock population in Assam. Usually cattle are used for farm work but sometimes they are also used for breeding plus farm work. Crossbred cows are used mostly as milch animals. However, this group has recorded a moderate growth rate of 18.96 per cent over the years (1982 to 1997).

Table 7.1

LIVESTOCK POPULATION IN ASSAM

(in thousands)

Livestock species	1982	1988	1994	1997	Percentage variation in 1997 over 1982
1. Cattle	6750	7278	7776	8030	18.96
2. Buffaloes	558	623	651	727	30.28
3. Goats	1729	2135	2644	2677	54.82
4. Pigs	578	642	828	1082	87.19
5. Sheep	46	67	77	83	80.43
6. Horses and ponies	16	13	14	12	-25.00
Total	9677	10758	11990	12611	30.31

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Buffaloes in Assam, constituting 5.76 per cent of total livestock population in 1997, are an important source of milk and draught power. The buffalo population has recorded a growth rate of 30.28 per cent over the years 1982 to 1997. Goat and sheep are important sources of meat. Both have increased phenomenally by 54.82 per cent and 80.43 per cent respectively over the years. Pig is reared for its meat mostly by the tribal people of the State. Pig population increased considerably by 87.19 per cent during the period 1982 to 1997. Population of horses and ponies has registered a decline over the years from a total of 16 thousand in 1982 to 12 thousand in 1994.

Table 7.2 shows the fowls and ducks population, which constitutes the poultry resources in Assam.

Table 7.2

POULTRY POPULATION IN ASSAM

(in thousands)

Poultry species	1988	1994	1997	Percentage variation in 1997 over 1988
1. Fowls	8460	9295	12931	52.84
2. Ducks	2993	3846	4996	66.92
Total	11453	13141	17927	56.52

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

In case of poultry, population of duck increased by 66.92 per cent during the years 1982 to 1997 whereas fowls increased by 52.84 per cent during the same period.

7.3 PRODUCTION OF LIVESTOCK AND POULTRY

As the livestock population of Assam belongs mainly to the indigenous non-descript type, average productivity of livestock in Assam is low. The major livestock and poultry products and its change over time are shown in Table 7.3.

Table 7.3

PRODUCTION OF MILK, EGG AND MEAT IN ASSAM

Year	Milk production (million litres)	Egg production (million numbers)	Meat production (thousand tonnes)
1980 - 81	480	284	14.5
1981 - 82	491	298	15.2
1982 - 83	497	315	15.8
1983 - 84	512	329	16.0
1984 - 85	512	329	12.4
1985 - 86	526	347	12.9
1986 - 87	539	351	11.1
1987 - 88	565	373	12.46
1988 - 89	578	392	12.61
1989 - 90	592	394	12.55
1990 - 91	614	404	12.65
1991 - 92	639	422	12.77
1992 - 93	658	434	13.1
1993 - 94	676	449	15.0
1994 - 95	699	460	15.0
1995 - 96	699	470	15.0
1996 - 97	711	481	15.2
1997 - 98	719	483	15.6
1998 - 99	726	486	15.8
1999 - 2000	733	488	16.0

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Production of milk, egg and meat has increased by 52.70 per cent, 71.83 per cent and 10.34 per cent respectively during the period 1980-81 to 1999-2000.

7.4 STRATEGY OF LIVESTOCK DEVELOPMENT

The importance of livestock resources cannot be ignored in an agrarian economy like Assam and special attention should be given for its development. In addition to providing milk, meat and eggs, livestock development programmes are likely to create employment opportunities through adoption of dairy, poultry and piggery schemes.

Some programmes for development of livestock in the State have been taken up which include establishment of Intensive Cattle Development Project (ICDP), Frozen Semen Bank, Stockman Centres, Key Village Centres, Livestock Farms, Poultry and Duck Farms, Veterinary Hospitals and Dispensaries etc. The performance of the veterinary hospitals and dispensaries of Assam is shown in the Table 7.4.

Table 7.4

PERFORMANCE OF VETERINARY HOSPITALS AND DISPENSARIES

Year	Total no of hospitals and dispensaries	Treated		Castrated	Vaccinated	
		Livestock	Poultry	Livestock	Livestock	Poultry
1995	477	1993	867	139	322	178
1996	477	1792	850	138	414	232
1997	477	1265	523	111	294	277

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Till 1996-97, 29 veterinary hospitals, 290 dispensaries, 25 mobile dispensaries, 133 block dispensaries, 36 Rural Artificial Insemination Centre, nine Livestock Farms, 16 Poultry and Duck Farms, three Sheep Breeding Farms, 13 Pig farms, six Bull rearing farms, two cattle demonstration farms, four goat farms and 14 Gosadons were established, according to the available data in the Statistical Handbook of Assam, published annually by Govt. Of Assam.

Development of animal husbandry needs vigorous encouragement to supplement farmers' income and generate additional employment opportunities. The demand for various livestock products is expected to rise with rising income as the demand for such products is income elastic. Although the potential for development of animal husbandry exists in the entire north-east, various factors are impeding its development. Some of the factors which are acting as constraints are -

- (1) There has been a sharp decline in area under permanent pastures and other grazing lands in Assam (from 240 thousand hectares in 1961-62 to 169 thousand hectares in 1998-99). There is hardly any area specifically earmarked to grow fodder for cattle, resulting in severe shortage of fodder. Neither is there a plan to bring some areas under fodder cultivation.
- (2) Illegal encroachment of village grazing land for cultivation appears to have led to a decline in area under pasture and other grazing land.
- (3) Production of milk per animal in Assam is very low because of the existence of a large number of indigenous and non-descript type of animals.
- (4) Poor quality and lack of proper livestock feed acts as a constraint in improving livestock productivity. The few feed mills in operation in Assam are not able to produce quality animal feed.
- (5) Crossbred cattle usually gives good yield in the first generation but its productivity diminishes in subsequent generations unless a new stock is crossed with an improved pure breed. Also, stall-feeding of animals is not done in the rural households mainly due to lack of animal feed and its high cost, which results in low milk yield of these animals.
- (6) During the 1950s to 1970s, there were places called 'khutis' where large herds of buffaloes were kept mainly

for production of milk. However, with shrinkage of swamp, marshy area and grazing land, most of these 'khutis' have disappeared.

- (7) In Assam, goats and sheep are not reared scientifically and hardly any attention is given to these non-bovine animals. These animals are not reared commercially though they have great potential for development.
- (8) Pigs are reared mainly the by tribal people. Proper rearing of this livestock can considerably increase the income of the rearers.

The existing livestock population in Assam has low productivity, mostly because it is underfed and undernourished. The existing availability of fodder is not sufficient to maintain the present level of livestock population. Thus the strategies for developing the livestock resources in Assam should aim at reducing the number, and improving of quality of livestock. This can be achieved by -

- i) Development of local and non descript stock through artificial insemination programme. The local stock should be improved in a phased manner and total replacement of first and second generation stock with the freshly improved breeds should take place to maintain productivity of milk.
- ii) Setting up of chilling plant and other infrastructure facilities to handle storage and marketing of milk and other livestock products.
- iii) Veterinary extension services should be strengthened. Rural households should be able to avail these facilities.
- iv) Steps should be taken to increase the supply of feed and fodder. Possible steps are -

- a) Farmers can be encouraged to take up cultivation of green fodder crops on a commercial basis and should be provided with quality seed and other inputs.
- b) Since there is large seasonal and regional variation in the supply of fodder, arrangements should be made for collection, storage and transport of properly prepared fodder.
- c) The existing pastures and grazing lands have to be effectively preserved and developed to yield their full biological potential through control of free grazing, cultivation of more nutritious and high yielding grasses, supply of good quality grass seed etc.
- d) To overcome the problem of overgrazing, particularly in the forest areas, farmers should be encouraged and educated to take up stall-feeding.
- e) Developing the culturable wasteland of the state to grow fodder for livestock is also very important.

However, a programme of development of livestock and fodder supply in line with these suggestions cannot succeed without full involvement and co-operation of the villagers. The voluntary agencies can play a vital role in this regard. In fact, a number of developmental agencies, both of National as well as Regional level, are either actively involved in this endeavor or should be called in. These include Government agencies, Semi-Government agencies, Local bodies, NGOs (Non-Government Organization) and SHGs (Self-Help Group). At the micro level by working at the grassroots, the SHGs can be the most effective amongst the lot.

CHAPTER EIGHT

*PISCICULTURE IN
ASSAM*

CHAPTER EIGHT

PISCICULTURE IN ASSAM

8.1 INTRODUCTION

Assam abounds in aquatic resources necessary for development of fisheries. It has been estimated (Department of Fisheries, Government of Assam) that Assam has a production potential of 4.04 lakh tonnes of fish annually from the available resources by adopting standardised technologies. Adopting improved technologies can enhance this production potential. The Brahmaputra and the Barak along with their tributaries and numerous floodplain lakes (beels) and ponds constitute traditional sources of fishing in the State. But despite high potential for production of fish in Assam, the region is deficient in fish production and presently fish is imported from other States like Andhra Pradesh, Bihar, Uttar Pradesh and West Bengal. There is a dearth of reliable data, and no specific and scientific calculation has been done to find the demand for fish in Assam. However, a per capita fish consumption of 11 kg per year is generally considered as the nutritional requirement (Asom Prakalpa, 2000^{#1}). In Assam, about 90 per cent people take fish. To meet the nutritional requirement of 11 kg per capita per year, the quantum of fish required is 2.80 lakh tonnes. But per capita per year consumption of fish in Assam stands at only 6.70 kg (The Sentinel, 2002^{#2}). Thus, annual consumption of fish in the State is around 268 thousand tonnes. Internal production of fish is about 160 thousand tonnes according to data provided by the Department of Fisheries, Government of Assam. Which means that there is a gap between production and consumption of about

108 thousand tonnes of fish in Assam. This deficiency is met by importing fish from other States, especially Andhra Pradesh. Thus, Assam in spite of having 1.5 lakh hectares of inland water bodies and 5500 km long river stretches, imports fresh water fish from other States, spending about Rs 80 crore annually.

8.2 FISHERY RESOURCES IN ASSAM

Inland fishery systems in Assam can be discussed under three broad heads -

- i) Capture fishery, which includes riverine fishery;
- ii) Culture fishery (aqua-culture) that includes ponds and tanks, and integrated culture systems; and
- iii) Culture-based fishery that includes beel fisheries, reservoir fisheries, and swamps and low-lying areas.

8.2(a) RIVERINE FISHERIES

Capture fishery refers to fishing in open waters like rivers, where the catch depends on the natural fish stock. The Brahmaputra and the Barak river systems constitute capture fisheries in Assam. The Brahmaputra flows through the Assam valley from the east to the west for a distance of 730 km, with an average width of eight km. Numerous tributaries (about 47), both from the north and the south feed the Brahmaputra during its course. In its initial course of 530 km till Guwahati, the Brahmaputra has a steep slope and strong surface and under current. This makes commercial fishing difficult with the existing indigenous methods of fishing. The remaining 230 km from Guwahati to Dhubri is exploited commercially for fishing.

The river Barak rises in the Japfu peak and flows south-west for 100 km parallel to two ranges lying on both sides and then turns first to the north and then to the west through the Cachar plains. Thirteen tributaries, seven from the north and six from the south join the Barak during its course. Commercial fishing is practiced across the entire river.

Some of the finest fish species in the world are found in the Brahmaputra such as the Indian major carps (*Labeo rohita*, *Labeo ralbasu*, *Catla catla* and *Cirrhinus mrigala*) and catfishes (*Wallagoattu*, *Silondia silondia*, *Pangasius pangasius*, *Aorichthys seenghala*, *Bagarius bagarius* and *Ompok bimaculatus*). There is no official statistics of fish catch in the rivers of Assam but according to the Central Inland Fisheries Research Institute, fish catch has declined in Assam due to habitat loss.

8.2(b) BEEL FISHERIES

Wetlands associated with the floodplains of rivers are known as floodplain wetlands. These include cut-off river meanders (oxbow lakes), sloughs, backswamps and tectonic depressions. All such aquatic formations on the floodplains, irrespective of their origin are called beels. Floodplain wetlands are nursery grounds for several fish species including a host of fauna and flora. They also help in regulating the water regime, facilitating nutrient exchange and acting as natural filters. But due to certain environmental changes, heavy siltation, habitat destruction and excessive weed infestation, beels have been isolated from the seasonal floods depriving them of natural sources of fish stock.

8.2(c) REGISTERED FISHERIES

Reservoirs have been added recently to the State's potential fishery resources with the construction of two reservoirs in North Cachar Hills by Kopille Hydro Electric Project. Umrong reservoir, the smaller of the two lies within Assam whereas Khandong extends to Meghalaya (about 60 per cent water spread of Khandong is in Meghalaya). Though organized fishing in these reservoirs has not started, there is good potential for planned scientific exploitation of these reservoirs.

8.2(d) PONDS

Ponds are the most important source of culture fisheries in Assam. Fish culture in ponds is a deep-rooted tradition in the State.

Category-wise fishery resources in Assam are as follows

1. River Fisheries	- 5,500 km river length
2. Beel/Ox-bow lakes	- 1,00,000 hectares
3. Forest Fisheries	- 5,017 hectares
4. Derelict water bodies/Swamps	- 10,000 hectares
5. Reservoir Fisheries	- 1,713 hectares
6. Ponds/Tanks	- 25,423 hectares.

(Source: Department of Fisheries, Government of Assam)

The district-wise distribution of fisheries in Assam is given in Table 8.1. As can be seen from the table, Nagaon possesses maximum fishery resources in terms of hectares in the State with a total length of 20442.42 hectares.

Table 8.1
DISTRICT-WISE DISTRIBUTION OF
AREA UNDER FISHERIES IN ASSAM

(Hectares)			
District	Ponds/Tanks	Beels/Swamps	Total
Dhubri	726.36	7287.42	8007.78
Kokrajhar	451.93	913.50	1365.43
Bongaigaon	330.35	1759.09	2088.44
Goalpara	754.49	10487.29	11241.78
Barpeta	1659.71	6764.80	8424.51
Nalbari	2245.19	2863.83	5109.02
Kamrup	1500.00	1607.16	3107.16
Darrang	2008.00	6092.37	8700.37
Sonitpur	1226.69	7390.45	8617.14
Lakhimpur	621.03	5255.97	5875.00
Dhemaji	270.00	7015.98	7285.98
Morigaon	587.14	2955.96	3543.10
Nagaon	3910.00	16532.40	20442.40
Golaghat	795.33	2819.21	3114.54
Jorhat	289.30	6778.98	7068.28
Sibsagar	956.27	5068.31	6024.58
Dibrugarh	125.73	4755.85	4881.58
Tinsukia	182.82	3907.27	4090.09
Karbi Anglong	503.07	97.18	600.25
N.C.Hills	51.45	1725.87	1777.32
Karimganj	2267.26	4310.44	6577.70
Hailakandi	1261.69	2103.05	3364.74
Cachar	3200.00	4812.58	8012.58
State Total	25423.81	113295.96	138719.77

(Source: Department of Fisheries, Government of Assam)

8.3 FISH PRODUCTION IN ASSAM

Table 8.2 gives the official fish production statistics of Assam from 1985-86 to 2000-01.

Table 8.2
FISH PRODUCTION IN ASSAM

(in thousand tonnes)			
Year	Production	Year	Production
1985-86	50.00	1993-94	151.60
1986-87	52.00	1994-95	153.00
1987-88	61.00	1995-96	155.00
1988-89	66.00	1996-97	154.60
1989-90	58.00	1997-98	155.10
1990-91	76.02	1998-99	155.70
1991-92	134.07	1999-2000	159.77
1992-93	140.60	2000-01	160.00

(Source: Department of Fisheries, Government of Assam)

As evident from the table, fish production in Assam increased from 50 thousand tonnes in 1985-86 to 76 thousand tonnes in

1990-91 (i.e. an increase of 34 per cent with an average growth rate of five tonnes per annum). But production almost doubled in 1991-92 to 130 thousand tonnes. This is, however, not possible because 85 per cent of the catch is from sources like rivers and beels which cannot increase their productivity in such a geometric progression. "Considering the area under aquaculture and the level of technology, such a drastic increase in one year cannot be expected. Moreover, such unprecedented increase in catch would have been accompanied by a glut in the market. No such drop in price was noticed. Also, such large increase in production was not noticed in subsequent years" (Asom Prakalpa, 2000^{#1}). Moreover growth rate has been modest in subsequent years in spite of the initiation of an eight-year programme for improvement of pisciculture in the State in 1995-96 under the World Bank aided 'Assam Rural Infrastructure and Agriculture Services Programme' (ARIASP). The annual growth rate of fish production was just 0.6 per cent during the period 1995-96 to 1999-2000.

The district-wise production of fish in Assam, as well as a trend figure, is given in Table 8.3. As can be seen from the table, Nagaon has the highest production of fish of 13065 tonnes followed by Dhubri with a production of 10088 tonnes. High growth rates in fish production has been recorded by Hailakandi, Golaghat, Dhemaji and N.C. Hills. Fish production has declined in some districts during the period 1993-94 to 1997-98. Nalbari, Kokrajhar and Karbi Anglong are some districts that have registered considerable decline in fish production.

Table 8.3
DISTRICT-WISE TREND IN FISH PRODUCTION IN ASSAM

District	1993-94	1994-95	1995-96	1996-97	1997-98	(in tonnes)
						Growth rate (percent per annum)
Dhubri	11012	11402	11605	9978	10088	-1.68
Kokrajhar	5997	5592	4576	4049	4150	-6.16
Bongaigaon	5434	4412	3900	5050	5243	-0.70
Goalpara	5547	5801	5776	5812	5873	1.18
Barpeta	9173	9286	9528	9760	9956	1.71
Nalbari	12902	9762	8501	8650	8766	-6.41
Kamrup	9501	9642	7983	9960	9985	1.02
Darrang	6365	6585	8037	6727	6089	-0.87
Sonitpur	5187	5451	6225	5809	5802	2.37
Lakhimpur	6533	4855	6114	6098	5732	-2.45
Dhemaji	2807	4193	3486	3673	3857	7.48
Morigaon	6760	6804	6874	6846	6892	0.39
Nagaon	12576	12630	12837	12935	13065	0.78
Golaghat	2469	3289	4726	4172	4178	13.84
Jorhat	6401	6627	6653	6427	6488	0.27
Sibsagar	5253	5222	5318	5455	5570	1.21
Dibrugarh	6939	7292	8177	7832	7870	2.68
Tinsukia	8146	8302	5379	7321	7775	-0.91
Karbi Anglong	3028	3392	3110	2808	2245	-5.17
N.C.Hills	521	714	1120	720	755	9.98
Karimganj	7447	7380	10076	9457	9470	5.43
Hailakandi	2296	5180	5455	5303	5485	27.78
Cachar	9347	9207	9601	9765	9790	0.95
State Total	151641	153020	155057	154607	155124	0.46

(Source: Department of Fisheries, Government of Assam)

According to the Department of Fisheries, Government of Assam, the State has attained self-sufficiency in carp seed production taking into account the seed production at fry stage. This has been made possible mainly by the commissioning of 61 eco-hatcheries in the State. But Assam is still deficient in the production of seed of live-fishes. Moreover, the availability of good quality fingerlings of size 125-150 mm is still a constraint in Assam. To meet this demand, about 20 trucks of fingerlings from West Bengal are brought to Assam annually in the month of May (The Sentinel, 2002^{#3}).

Table 8.4 gives the target and achievement of fish seed production in Assam for the period 1990-91 to 2001-02. As can be seen from the table, fish seed production increased considerably from 1188.60 million in 1990-91 to 2634.38 million in 1996-97. But production of fish seed declined to 1703.06

million in 1998-99. It, however, increased to 2114.14 million in 1999-2000 but again decreased to 1485.65 million in 2000-01.

Table 8.4
PRODUCTION OF FISH SEED IN ASSAM
 (in millions)

Year	Target	Achievement
1990-91	140	1188.6
1991-92	135	1215.14
1992-93	1500	1626.32
1993-94	2000	2170.81
1994-95	2000	2386.79
1995-96	2400	2547.54
1996-97	2500	2634.38
1997-98	2600	2245.57
1998-99	2600	1703.06
1999-2000	2600	2114.14
2000-01	2600	1485.65
2001-02	3000	N.A.

(Source: Department of Fisheries, Government of Assam)

Table 8.5 shows district-wise trend in fish seed (fry and fingerling) production.

Table 8.5
DISTRICT-WISE TREND IN PRODUCTION OF FISH-SEED IN ASSAM
 (in millions)

District	1993-94	1994-95	1995-96	1996-97	1997-98
Dhubri	6.71	15.85	30.43	17.36	4.68
Kokrajhar	0.08	3.99	3.43	2.51	N.A.
Bongaigaon	7.20	10.66	11.72	11.66	15.51
Goalpara	0.31	1.50	2.80	2.20	2.90
Barpeta	161.30	176.14	317.12	404.31	198.67
Nalbari	111.51	111.84	151.00	269.52	153.09
Kamrup	1.47	3.70	5.15	1.22	0.29
Darrang	17.46	27.44	7.80	14.13	6.93
Sonitpur	12.02	13.90	18.97	8.70	20.23
Lakhimpur	19.61	31.69	50.17	65.86	70.47
Dhemaji	1.24	5.98	8.78	1.95	0.97
Morigaon	12.78	14.55	30.67	5.62	6.08
Nagaon	1037.19	1810.67	1258.00	1300.97	1452.85
Golaghat	3.16	7.83	11.93	8.31	8.20
Jorhat	1.69	0.46	4.22	1.21	16.20
Sibsagar	7.49	7.88	15.20	16.72	18.35
Dibrugarh	2.67	5.65	11.22	15.32	17.71
Tinsukia	4.23	4.88	8.61	9.55	8.54
Karbi Anglong	0.53	0.84	1.20	1.85	1.77
N.C.Hills	0.09	N.A.	0.90	0.05	0.09
Karimganj	713.44	85.65	536.15	410.76	163.25
Hailakandi	26.31	28.40	34.14	36.24	67.67
Cachar	22.32	17.29	33.68	28.25	11.12
Total	2170.81	2386.79	2548.29	2634.27	2245.57

(Source: Department of Fisheries, Government of Assam)

Highest production of fish seed is found in Nagaon (1452.85 million). Except three other districts of Barpeta (198.67 million), Nalbari (153.09 million) and Karimganj (163.25 million), negligible production of fish seed takes place in the other districts.

8.4 MEASURES FOR INCREASING PRODUCTION

As of yet, no scientific study has been made to estimate the demand for fish in Assam. However, as mentioned earlier, a per capita fish production of 11 kg per year is considered as the nutritional requirement. So, annual consumption of fish in the State is around 268 thousand tonnes whereas internal production of fish is 160 thousand tonnes. This gap of 108 thousand tonnes between production and consumption was met by importing fish from Andhra Pradesh, Uttar Pradesh and Bihar till recent times. But due to the imposition of a eight per cent entry tax on fish from other States, these fish-exporting States have stopped sending fish to Assam. This has made it necessary for the State to go in for huge production of fish to avoid scarcity and rise in prices.

Assam's vast aquatic resources have the potential to produce not only the annual requirement of 268 thousand tonnes but a proper utilisation of its resources can produce as much as 404 thousand tonnes of fish (The Sentinel, 2002^{#4}). This can be made possible by -

- (1) increasing productivity through technological upgradation,
- (2) introducing new concepts of fish production.

Increasing fish production using these two avenues in different fishery systems is discussed hereunder:

8.4(a) RIVERINE FISHERIES / CAPTURE FISHERIES

Fish yield rates from rivers vary (from 0.64 to 1.60 tonnes per km) depending on the geo-climatic factors, terrain and richness of fish fauna etc. The Brahmaputra and the Barak rivers have a fish yield rate of one tonne per km. Thus, with a river length of 5500 km, fish yield potential of riverine fisheries in Assam stands at 5500 tonnes.

Riverine fisheries in Assam suffer from a number of defective methods of fishing, which include, among others catching fish of undesirable sizes (i.e., small) and destruction of brood stock, degradation of environment, etc. Some of the measures to increase fish production from rivers are (Asom Prakalpa, 2000^{#1}) -

1. Conservation of the riverine ecosystem,
2. Determination of optimum fishing effort level,
3. Protection of beels and other wetlands associated with rivers,
4. Facilitating water renewal in beels and other wetlands,
5. Protection of breeding grounds,
6. Preventing catching of brood stock,
7. Stopping of riverine fish seed collection,
8. Launching of river ranching programme,
9. Sensitizing the fishermen about the conservation measures.

8.4 (b) CULTURE BASED FISHERIES

Beels and reservoirs constitute the resources for developing culture-based fisheries in Assam.

Beels are important inland fishery resource of the State and large quantities of fish can be produced through culture based fisheries in these organic ecosystems. But most of the beels in Assam are in a derelict State at present resulting in poor fish production.

There are two approaches to increase fish production from beels. First is the creation of battery of (one hectare unit each) enclosures along the margin of a beel and these can be leased out to entrepreneurs for growing fish in captivity. Here productivity at par with pond culture system can be obtained. The second approach is to stock the main beel with the fingerlings of economically viable species.

An yield rate of 1000 kg per hectare can be obtained by practising culture-based fisheries in the beels of Assam. Thus, the 100,000 hectares of beels in Assam will yield a total output of about 100,000 tonnes from beels.

Assam also has a number of ecologically disrupted water bodies in the form of swamps. These are either perennial or seasonal water retaining bodies which are now in a derelict State. Marginal renovation of these bodies can generate additional areas for pisciculture. These water bodies are ideal for raising live-fishes such as *Clarias batrachus* (magur), *Heteropneustes fossilis* (singhi) and *Anabas tesudneus* (koi). There are 10,000 hectares of such low lying weed infested wetlands and by adopting appropriate technologies a yield rate

of 1000 kg per hectare can be attained which then will give a total output of 10,000 tonnes from this source.

In reservoir fisheries, fingerlings in desired size and number can be stocked. This requires infrastructural facilities like hatcheries and seed rearing ponds to produce adequate fish seed. Proper stocking and fishing effort management in reservoirs can give a yield rate of 100 kg per hectare. Thus, in 1500 hectares of reservoir fisheries, a total of 150 tonnes of fish can be produced in the existing reservoirs of the State.

8.4(c) CULTURE FISHERIES

India has seen a rapid growth in freshwater aquaculture during the last few years in some States. But Assam with its vast aquatic resources has lagged behind. Development of culture fisheries will give a boost to fish production in the State. Due to acidic nature of the soil of Assam, a yield rate of five to six tonnes per hectare (instead of the national average of ten tonnes per hectare) is possible from freshwater ponds. In the 25,000 hectares of ponds, a yield rate of four tonnes per hectare will also yield a total output of 100,000 tonnes of fish in the State.

8.4(d) INTEGRATED CULTURE SYSTEMS

Integrating fish culture with other agricultural and animal husbandry practices is a cost-effective method that also recycles wastes. The common integrated systems that can be put

into practice in Assam are paddy-cum-fish culture, pig-cum-fish culture, duck-cum-fish culture, and poultry-cum-fish culture.

- a) Paddy-cum-fish culture is a traditional practice followed in many parts of India. By modifying the paddy plots, fish culture can be integrated with paddy cultivation in many low lying areas, especially in lower Assam. A crop of paddy and fish can be alternately made (as in sequential culture) or a water-resistant variety of paddy and fish can be grown together (as in synchronized culture) where the fish takes shelter in specially prepared pits when water recedes. About 20,000 hectares of paddy fields in the State can use this system to produce additional 24,000 tonnes of fish.
- b) Piggens are rich in nitrogen and are also excellent pond fertilisers and fish feed. Pig-cum-fish culture can bring down the input cost of aquaculture. About seven tonnes of fish and 4,500 kg of pork can be produced from a one-hectare farm annually. Even if 2000 hectares are developed as a first phase, additional 14,000 tonnes of fish can be produced in the State.
- c) Similarly, poultry and duck farming systems can be linked to aquaculture. Under poultry-cum-fish culture, five tonnes of fish, 1250 kg of chicken meat and 70,000 eggs can be produced from a one-hectare farm annually.
- d) By duck-cum-fish farming, four tonnes of fish, 750 kg of duck meat and 6,000 eggs can be produced from a one-hectare farm annually. And if 2000 hectares each can be developed for poultry-cum-fish culture and duck-cum-fish culture, additional 18,000 tonnes of fish (10,000 tonnes and 8,000 tonnes respectively) can be produced.

It can be summed up that the above four integrated systems have a potential to increase fish production by 46,000 tonnes.

Thus in addition to the 160 thousand tonnes of fish presently produced, Assam has a potential to produce an additional amount of about 261 thousand tonnes of fish annually which gives an annual possible production of 421 thousand tonnes, as is evident from Table 8.6.

Table 8.6
**PRODUCTION POTENTIAL (ADDITIONAL)
 OF DIFFERENT FISHERY SYSTEMS IN ASSAM**

Resource	Resource size	Production potential (tonnes)
1. Capture Fisheries		
a) Riverine Fisheries	5,500 Km	5,500
2. Culture Fisheries		
a) Ponds and Tanks	25,000 Ha	100,000
b) Integrated Culture Systems	26,000 Ha	46,000
3. Culture Based Fisheries		
a) Beel Fisheries	100,000 Ha	100,000
b) Reservoir Fisheries	1,500 Ha	150
c) Swamps and Low Lying Areas	10,000 Ha	10,000
State Total	5,500 Km 146,000 Ha	261,650

Source : Asom Prakalpa, 2000^{#1}

8.5 CONSTRAINTS OF FISHERY DEVELOPMENT IN ASSAM AND SUGGESTIONS TO OVERCOME THEM

Increasing fish production following the above mentioned methods has a number of problems.

First, there is the problem of non-availability of quality fish seed in adequate numbers.

Secondly, acidic soil of the State makes breeding and rearing of fish difficult.

Third, adequate facilities are not available for growing fish spawn into fingerling stage to stock the beels and reservoirs.

Fourth, marketing facilities are neither organized nor developed.

Fifth, substantial investment is required to develop culture fisheries. According to current estimates of the Department of Fisheries, Government of Assam, the cost of developing one hectare of beel fishery is Rs. 60,000. If one wants to double the production in the existing beel fisheries, an additional amount of Rs. 15,000 has to be invested per hectare.

As projected earlier, Assam can produce 421 thousand tonnes of fish annually if all financial and technological provisions are made available. If this materializes, the State in addition of being in a position to stop import will be in a position to export freshwater fish. Present demand for fish is 268 thousand tonnes. It is projected that the population of Assam in 2011 would be 30,468,000 (*Source: Registrar General of India*). Assuming a consumption of 11 kg per year per person (at present it is nearly six kg per year per person) due to increase in per capita income, fish requirement in the State works out to 335 thousand tonnes. Thus, after local consumption of this 335 thousand tonnes in Assam, the surplus, i.e. $(421-335 = 86)$ thousand tonnes, could be exported. However, to do this, development of storage and transport infrastructure to export fish to other States is a must. But exports at this stage do not look promising because of Assam's transportation disadvantage coupled with high cost of fish production due to the problems of acidic soils.

Another measure, which can be taken to increase fish production, is to lease out beel fisheries for a long period of about seven years to give time to the lessees to develop these beels. For adequate commercial exploitation of the beel fisheries, as additional development of one hectare requires about Rs. 15,000, the investor does not get the return on their investment if these fisheries are leased out for a period of one to three years only (as is currently being done).

Strengthening the co-operative movement in Assam is also likely to increase fish production in the State. The purpose of setting up the Assam Apex Co-operative Fish Marketing and Processing Federation Limited (FISHFED) was to increase fish production through development of co-operative fisheries and also through its own production. But lack of support from the government, its non-professional attitude and some ineffectual projects have resulted in FISHFED accumulating a loss of Rs 120 lakh (in 2001) since its inception.

The biggest dry fish market of Asia is situated at Jagiroad in the Morigaon district of Assam. About 400 truckload of dry fish is sold annually in this market with an annual business of Rs 400 crore. But there has been a drop of 75 per cent in sales because of the imposition of an eight per cent sales tax by the State government in 1999.

The Ninth Plan allotted Rs 94.25 crore for fishery development in Assam. Moreover, Rs 28.37 crore has been provided under the World Bank aided ARIASP for a period of eight years from 1995-96. The main objectives of this programme are -

1. Establishment of an eco-hatchery at Assam Agriculture University to produce genetically improved quality fish seed,

2. Setting up of Mobile Health Clinic to provide fish health cares to farmers,
3. Increasing fish production, and
4. Strengthening existing facilities for research at Assam Agriculture University (AAU), Jorhat and its College of Fisheries, situated at Raha, in Nagaon district.

As can be seen from Table 8.7, pisciculture project targets fixed under ARIASP have been achieved in most of the cases. In fact, in certain items, achievements have been more than what was expected.

Table 8.7

TARGET AND ACHIEVEMENT UNDER 'ARIASP'

Item	Unit	1995-96		1996-97		1997-98	
		T	A	T	A	T	A
Eco-Hatchery	Number	1	-	1	-	1	-
Farmers' Pond Development	Hectare	25	-	25	55.63	57	57.65
Community Tank Development	Hectare	20	-	40	90.53	40	92.02
Development Of Beel Fishery	Hectare	625	-	625	-	625	783
Mini Fish Seed Plant	Number	1	-	1	-	1	1
'Magur' (Catfish) Breeding Center	Number	2	-	3	-	5	4
New Training Center	Number	3	-	3	1	5	5
Strengthening Of Existing Training Center	Number	2	-	2	-	-	-
Training Of Staff	Number	40	-	40	34	40	38
Demonstration Of Projects	Number	50	-	50	44	50	84
Wet laboratories	Number	2	-	2	-	2	1
Training of fish farmers	Number	200	-	200	200	200	200
Research projects	Number	25	25	25	25	25	25

Legend > T : Target A : Achievement

Source: Department of Fisheries, Government of Assam

8.6 DEVELOPMENT PROGRAMMES OF DEPARTMENT OF FISHERIES, GOVERNMENT OF ASSAM

The steps taken by the Government of Assam for development of fisheries under the Ninth Plan are -

- (1) The State government's share in the funding of Aquaculture Development under Fish Farmers' Development Agency (FFDA) has been reduced to 25 per cent from 50 per cent till 1999-2000. But desired progress could not be made as the State Government was not able to release its share of 25

per cent (and thus could not avail of the Central share also) and till the fourth year of the Ninth Plan, only 200 hectares of fisheries could be developed as against the target of 5750 hectares.

- (2) Assam has 10,000 hectares of derelict water bodies which can be developed for pisciculture. A target of 357.25 hectares was set for development during the Ninth Plan of which only 127.5 hectares could be achieved till the end of the Fourth year.
- (3) Steps have been taken to revitalize fishery sector and help it to achieve maximum yield by artificial stocking of fingerlings.
- (4) Steps have also been taken to introduce prawn farming in the State.
- (5) A National Welfare Fund for fishermen has been set up for construction of low-cost houses and a community hall and installation of a tubewell for poor fishermen in selected villages. Only 20 houses could be constructed till the fourth year of the Ninth Plan against the target of 354 houses.
- (6) Assam has one lakh hectares of beel and open water fisheries. Steps have been taken to develop 6000 hectares of this during the Ninth Plan but it is anticipated that only 4676 hectares will be developed during this Plan.
- (7) Another step taken to increase fish production in Assam is development of standard fish seed. Although the State has achieved near self-sufficiency in fish seed production, the quality of seeds is sub-standard.
- (8) The Central Sector Scheme of fisheries extension and training could not be introduced till the fourth year of the Ninth Plan as the State was not able to provide its share of 20 per cent funds.

(9) The Government of Assam, in 1994, took the decision of handing over all low lying areas (three hectares and above) in the State which are not suitable for agriculture from Revenue Department to Department of Fisheries. These lands were to be leased to FFDA trained entrepreneurs for development of aquaculture.

Based on the Government Schemes and incentives, the targeted activities and the achievements of the Department of Fishery, Government of Assam is depicted in Table 8.8.

Table 8.8
TARGET AND ACHIEVEMENT OF DEPARTMENT OF FISHERIES, ASSAM,
FOR THE YEAR 1997-98

Scheme	Unit	Target	Achievement
Seed production	Million	2598	2245.57
Fish production	'000 Tonnes	157	155
FFDA	No. of beneficiaries	1150	575
Reclamation of derelict water bodies	Hectare	162.28	112.28
Training of farmers	Number	1850	1325
National welfare fund for fisherman	Number of houses	56	28

Source: Department of Fisheries, Government of Assam

However, contrary to expectations, this table reveals that the Department has not been able to reach its target in a single scheme. An analysis of this is definitely pertinent; but the same is beyond the scope of this present work.

References:

- #1 "Assam Beyond 2000",
An action plan document prepared by a group of economists and thinkers, under the banner of 'Assam Prakalpa', with projections based on published official information and seminar/workshop outcomes.
- #2 "Assam Youths Rear Fish, Fights Joblessness"
Feature article in *The Sentinel*, dated 17th September, 2002.
- #3 "Tapping 'Sleeping Giant', Improved Methods Can Boost Assam Fish Yield"
Feature article in *The Sentinel*, dated 19th September, 2002.
- #4 "There Will Be No Shortage Of Fish In The State - Munda"
News report of *The Sentinel*, dated 03rd September, 2002, quoting the Minister of State for Fisheries, Assam.

(The Sentinel is a premier English newspaper of north-east India)

CHAPTER NINE

*SUMMARY OF FINDINGS
AND
POLICY IMPLICATIONS*

CHAPTER NINE

SUMMARY OF FINDINGS AND POLICY IMPLICATIONS

9.1 SUMMARY

Land comprising soil, water and associated flora and fauna is the most precious resource providing sustenance and survival of human beings. It is the basic prerequisite for all productive activities. The essential requirements of food, shelter, clothing and energy are met by utilizing the land resources. But since the overall supply of land is inelastic, the rapidly increasing human and livestock population has been putting pressure on land resources for food, fibre, firewood and other uses, including industrial uses in many parts of the world. This has resulted in large-scale degradation of land. Land degradation not only affects agricultural productivity and the industrial sector depending on agriculture, the entire environment gets disturbed, upsetting the water regime - causing floods, silting of rivers and ports. Therefore it has been argued that land should be used in a judicious and environmentally friendly manner to meet the competing demands of growing human and livestock population. What is needed is an integrated approach to the scientific management, conservation and development of land resources of the state. With the increasing biotic pressure and the various competing claims for agricultural and non-agricultural uses, a perspective plan is required for ensuring an optimal land use.

Keeping in mind the backdrop described above, the present study attempts to outline the optimal use of this basic factor of

production - land. This is done after critically examining the present land-use pattern of Assam except the hills districts of Karbi Anglong and North Cachar Hills. It also aims at estimating the difference between demand for and supply of major agricultural crops in Assam in the year 2011 by projecting the demand and supply. Suggestions have been put forward as to how this gap can be bridged.

The other major objectives of the study are -

- (1) To analyse the major changes in Assam's economy as reflected in changes in land use pattern over a period of time. That is, the study intends to look at shifts in area under different land use categories as an attempt to accommodate the increase in population to an inelastic aggregate land area by analysing the data relating to the nine - fold classification of land use categories from 1961 onwards.
- (2) To examine the agricultural land use in Assam's plains areas by analysing the trends in area under major crops during the period 1950-51 to 1999-2000 at the state as well at the regional level. This, it was believed, would help in identifying crops which have gained popularity amongst farmers, and the crops which are losing their popularity. It was further believed that the trends in production and average yield of important crops would facilitate suggesting appropriate steps of increasing production and average yield and substitution of low value crops by high value crops.

The study aims at testing the following hypothesis, in a predominantly agricultural economy like Assam, population pressure is likely to be reflected in an increase in the net area sown at the expense of cultivable waste and even area under forests. In case of agricultural land use, population

pressure is likely to result in a more intensive use of land resources leading to increased cropping intensity and substitution of longer duration lower yield rate crops by shorter duration higher yield rate crops.

The methodology adopted in the study is described below briefly:

Starting from 1961, the study is carried upto 1997-98. Trends in land use are examined by fitting log linear regression on area under each land use category. The function used to calculate the growth rate is

$$Y_t = Ae^{rt}$$

Or,

$$\text{Log } Y_t = \text{Log } A + rt$$

where

Y is the area under a specific land use category;

A is the constant;

t is the time; and

r is the compound annual growth rate.

The rate of growth in area, production and average yield of major crops in Assam (1950-51 to 1999-2000) is computed using the same function

$$Y_t = Ae^{rt}$$

where

Y is the area/production/average yield of the particular crop;

A is the constant;

t is the time; and

r is the compound annual growth rate.

To arrive at the projected supply in the year 2011, output for each crop has been estimated separately by substituting the required value of t, assuming that the past growth rate would continue.

The methodology followed for demand projection includes the following steps-

- (a) Computation of per capita availability of commodities in the base year, 1999-2000 (separately for rural and urban areas) based on NSS data (55th Round). Per capita consumption of different commodities is converted into annual consumption.
- (b) Using a logarithmic functional form to estimate the income elasticity of demand ($\log Q_i = \log a + b \log E_i$, where Q_i represents quantity consumed of the commodity by i th household and E_i is the total consumption expenditure of the household; $\log a$ and b are the parameters) for different commodities based on cross-section household expenditure data separately for rural and urban areas. The elasticities thus obtained are used for demand projections with the assumptions that the consumer expenditure is insensitive to price changes and the income elasticities do not change over time or with price.
- (c) Demand is projected (per capita demand) for rural and urban areas by using the function

$$D = AY^B$$

where

D is projected demand;
A is the constant;
Y is the projected income; and
B is income elasticity of demand.

Total per capita projected demand has been obtained by adding projected rural demand and projected urban demand.

- (d) Aggregate demand of the State is arrived by multiplying aggregate demand by the projected population of Assam for 2011.

The study is based on secondary data. Land use statistics have been taken from various issues of the '*Statistical Handbook of Assam*' published annually by the Directorate of Economics and

Statistics, Assam. The area covered by 21 plains districts has been regrouped into seven regions taking into account geographical proximity and agro-climatic factors. Area covered by the two hills districts has not been included as the mode of cultivation prevalent there is different from that of the plains areas. Moreover, there is no firm estimate of area actually cultivated in a particular area under shifting cultivation. Statistics relating to area and production of different crops in Assam and Assam's Net State Domestic Product have also been taken from various issues of 'The Statistical Handbook of Assam'. Population data have been taken both from 'The Statistical Handbook of Assam' and from 'The Report of the Technical Group on Population Projections, Government of India'. Livestock and Pisciculture statistics have been taken from Directorate of Animal Husbandry and Veterinary, Government of Assam, and Directorate of Fisheries, Government of Assam, respectively.

The collected information was tabulated and analyzed using the SPSS 8.0 package. Statistical accuracy of the regression coefficients was tested with the help of significance of 'T' values. Goodness of fit was examined with the help of adjusted R^2 .

The concept of optimal land use has two dimensions - economic and environmental. Considerations of economic efficiency implies that land use is governed by the objective of maximisation of net returns to the society as a whole; while environmental considerations put emphasis on maintaining the ecological balance and sustainability. Therefore, an optimal land use plan involves maximising the present output, at the same time maintaining/increasing future productivity.

An analysis of the data on the nine-fold classification of land use in Assam reveals that the proportion of area as a percentage of reporting area has declined in case of forests, barren and uncultivable land, cultivable waste, permanent pastures and other grazing lands, current fallows and other fallows whereas it has increased in land put to non agricultural use and net area sown (NAS). Land areas under miscellaneous tree crops and grooves have remained almost constant throughout the study period.

Forests in Assam (plains) now covers only 24.48 per cent of reporting area which is below the norms of 33 per cent recommended by the National Forest Policy in 1952. Further decline in forest area and its degradation should be checked immediately. Decline in area under Permanent Pastures and other Grazing Land also has resulted in cattle and other livestock breaking into cultivated areas and nearby forests damaging standing crops and depleting forest areas. An increase in area under Land put to non-agricultural use over the years is mostly to accommodate the increase in human population. Urbanisation and industrialisation are reasons for the increase in area under this land use category.

Coming to agricultural land use in the plains of Assam, increase in area under Net Area Sown (NAS) is a positive sign, as output has to increase to feed the growing population. It has been found that area under Summer Rice and Wheat has increased considerably with Kamrup, Darrang and Nagaon having high growth rates in Summer Rice and Nagaon and Lakhimpur in case of Wheat. Area under Rape and Mustard has also increased, more particularly in Lakhimpur. Area under Jute, Sweet Potato, Tobacco and Gram has declined whereas there has been considerable increase in area under crops like Arecanut, Coconut and Potato, taking the six regions as a whole.

Along with the increase in area, production of crops has also increased in Assam. Production of Summer Rice and Wheat has increased considerably whereas that of Maize and Other Cereals and Small Millets had only a slight increase. This is actually a healthy sign as Wheat and Rice are higher value cereal crops. Rape and Mustard had considerable increase in production in the state with Lakhimpur having the highest growth rate. Banana production increased substantially during the study period with Nagaon, Cachar and Kamrup having high growth rates of production. Production of Arecanut, Orange, Coconut, Chillies, Papaya, Potato and Pineapple increased substantially, particularly in recent period in all the regions. Their continuous increase in production is a healthy sign as each one of these is a high value crop. They can provide the base for setting up of a number of agro based/processing industries. Productions of Jute, Gram and Tobacco have fallen along with the decrease in area under these crops.

In the case of average yield also, Summer Rice and Wheat recorded the highest increase. None of the oilseeds had any significant increase in average yield. Tapioca, Onion, Orange, Chillies, Potato and Pineapple had only a marginal increase in average yield during the entire period, while average yield of Gram, Maize, Papaya, Arecanut and Tobacco declined and that of Turmeric, Coconut, Banana and Sweet Potato remaining almost constant during the same period.

It is obvious from the above, that the increase in output in most of the crops is mainly the result of an increase in area. The implication of this is that there is scope for increasing production by improving the yield level even if additional area cannot be brought under cultivation. Thus, in spite of NAS covering 35 per cent of reporting area in 1997-98, Assam does not produce enough to feed its own population. When the

consumption requirements of major agricultural commodities (rice, wheat, maize, tur, gram and other rabi pulses) of the people of Assam (these constitutes demand) is compared with the output produced (which is the supply) in the State, it is found that there is always a gap between demand and supply, with demand outstripping supply in case of all the above mentioned agricultural produce of Assam. This trend is likely to continue in the near future also (when projected demand for 2011 is compared to projected supply); Assam being deficient in the production of these commodities, except wheat. This means that agriculture in Assam should be modernized and steps should be taken to increase productivity, as scope for bringing more areas under cultivation is limited. There is tremendous scope for increasing output to bring about an improvement in the yield level through adoption of the package of improved agricultural practices, which include, amongst other, assured irrigation, HYV seeds, chemical and bio-fertilizers, pesticides, extension services, etc. Current Fallows, Other Fallows, and Cultivable Wastelands are lands which are potentially cultivable though not being put to cultivation for one year or more in succession. If these under-utilized lands are put under region-specific crops, foodgrain production will increase considerably. Proper utilization of these lands may also release some land for forest.

9.2 POLICY IMPLICATIONS

Precious land resources have been neglected for long. The damage caused cannot be fully undone but steps should be taken so that further deterioration does not take place. Proper care of land resources is not only needed to meet the requirements of the growing population but also to maintain the fragile ecological balance. It is only through scientific management of

natural resources that economic development can be made sustainable. It is a formidable challenge before the policy makers which must be met with determination.

The implementation of land use policy becomes easier through decentralized planning. Unless steps are taken to meet the basic needs of food, fodder and fuel-wood of the local people, no amount of legislative measures or government regulations can stop degradation of land under forests. The concept of Joint Forest Management (JFM) needs to be made popular. Local level land use plans have to be prepared through full participation of the village community, including the elected panchayats, as the local people have intimate knowledge of the soil conditions and their availability for different uses. The government can help by educating the people about the need for restoring and preserving the ecological balance by conducting awareness programmes.

Thus to ensure optimal use of land use in Assam and to have sustainable development, diversion of land from Forests, and Permanent Pastures and Other Grazing Lands should stop. Productivity of agricultural land needs to be increased considerably, possibly by some land diversion from Current Fallows, Other Fallows and Cultivable Wastelands to Forests and for cultivation. Additionally, steps need to be taken for educating the people to take care and make proper use of land, and preserve the ecological balance. Moreover attention as well as incentives should be given for cultivation of horticulture crops. They are generally high value cash crops capable of creating higher employment in the rural sector. Also, as Assam's climate is capable of raising a large variety of flowers, the commercial viability of floriculture in Assam should be explored urgently.

Another aspect that calls for careful attention is the large number of water bodies of Assam, which has not been properly utilized. If adequate care and systematic study as well as implementation of suitable policies is undertaken in developing pisciculture in these water bodies, Assam will be capable of not only producing its own requirement of fish but can actually produce a surplus of freshwater fish for export to other States to earn precious revenues.

The importance of livestock resources also cannot be ignored in an agrarian economy like Assam and special attention should be given for its development. In addition to providing milk, meat and eggs, livestock development programmes are likely to create employment opportunities through adoption of dairy, poultry and piggery schemes. However, the existing livestock population in Assam has low productivity, mostly because it is underfed and undernourished. The existing availability of fodder is not sufficient to maintain the present level of livestock population. If proper infrastructure were developed for livestock resources, Assam would be able to meet its own requirement of livestock products, and come to be in a position to produce a surplus, thereby increasing the export potential.

Last but not the least, for ensuring optimal land use, it is imperative to have a proper integration of various levels of land use planning (local, sub-divisional, district, State) with the national land use planning. There needs to be a mechanism where information (ideas) from the lower stages moves to the higher levels, i.e. to the Policy Makers. In formulating the optimal national land use policies, the inputs thus received from the grassroots level should be taken into consideration. Then some broader issues like preservation of ecology (including preventing land degradation in the forms of top soil erosion, deforestation, increasing land salinity, etc),

national food self-sufficiency, and other issues guiding the macro (national) land use policy must dictate by and large the lower levels of land use. Even here, some adjustments with the lower level land use patterns can be made. For example, while it may not be possible to increase the area under Forest, which would clash with the interest of local level land users, it is quite possible to achieve the desired objective by increasing crown density rather than the area under Forests. Thus it is only with such a two-way (i.e. upward and downward, or feedback and instructions) flow of information, ideas and actions, and with the active participation of the civil society, it is possible to evolve an optimal land use policy.

9.3 LIMITATIONS OF THE STUDY & SCOPE FOR FURTHER STUDIES

The area taken up for this present study is too vast to cover all aspects in a single work. There is a plethora of factors that one may take up for dissemination, and proceed towards certain objective(s). For this present work, time and space are the only two dimensions that has been considered. This selective choice coupled with other factors has invariably imposed certain limitations on the study. The most conspicuous ones are mentioned hereunder :

- i) This study does not include the two hills districts, viz. Karbi Anglong and North Cachar Hills of present Assam despite the fact that these two districts constitute about one-fifth of the State's geographical area. The reason for non-inclusion is the non-availability of land-use data for these two districts either by nine-fold classification or area coverage by different crops. The mode of cultivation prevalent in these two districts, i.e. slash and burn, is of shifting type, and not

comparable with the settled cultivation of the plains area of Assam. This therefore is a pointer towards possibility of further study of the land-use pattern in the hill districts.

ii) In making various types of projections, the methodology of which is spelt out in appropriate places, all relevant factors might not have been included. The assumption of *ceteris paribus* is made at such places. For example, in making the supply projections, the effects of rainfall, use of insecticides, pesticides, fertilizer, etc has not been considered. Similarly, the role of possible change in taste and preference over time has not been taken into account. Thus there is a scope for further refinement in making the projections.

iii) The functions used throughout this work have not considered a tail-factor, or an error-correction factor, or a damper-factor. Taking the above point further, modifications can be incorporated in the functions to incorporate effects of such variables mentioned in point ii) above. For example, a error-correction factor, 'E', can be introduced in the demand function, to get

$$D = AY^B + E$$

Where 'E' would absorb the fluctuations due to one or more such variables. This would result in more realistic and error free projections. This means that there is scope for further work that can be carried out in describing the constituents as well as defining this 'E' (and/or others), as well as test its sensitivity to the constituent variables.

iv) In studying the gap between demand and supply of agricultural products of Assam, the supply statistics

could be collected cropwise for all the crops raised in the State. However for making a satisfactory estimate of the demand for each of the agricultural products, an almost insurmountable difficulty was faced. The demand estimates were to be derived from NSS consumption data. The NSS consumption data are not available for all agricultural products individually. For example, the vegetable data are inclusive of all vegetables as a single group. Therefore the gap between demand and supply has been worked out only for those agricultural products, the demand data of which are available. Similar is the case for horticultural products, where demand data of NSS is grouped 'fruits' as a whole.

- v) The variations in the pattern and trends of land use based on macro data of nine-fold classification may also be supplemented by region specific micro studies in order to study the reasons behind. This micro-level study is beyond the scope of this present study, as that is a full study by itself. A study of the agricultural land use of different regions of the State will provide a better insight of the variations in the efficiency of land use.

- vi) On the crop front, only the agricultural crops have been taken for analysis in this study, which therefore restrained the inclusion of tea, generally considered of plantation type. It may be noted that the land area under tea is more or less fixed, so far as the large estates are concerned. However, encouraged by new policies of the Government, setting up of smaller tea gardens is being taken up in a large quantum, especially in the regions of Lakhimpur, Darrang and Sibsagar. This is a possible area of study as to land area under which classification is being shifted to this usage, and with what effect.

APPENDICES

Appendix A

**AREA UNDER DIFFERENT LAND USES
AS PER
NINE-FOLD CLASSIFICATIONS**

Table no.	Title (Classification)
A.1.	Area under forests
A.2.	Barren & Uncultivable Land
A.3.	Land put to Non-Agricultural Uses
A.4.	Cultivable Wasteland
A.5.	Permanent Pastures and other Grazing Lands
A.6.	Land Under Misc. Tree Crops & Groves
A.7.	Current Fallows
A.8.	Other Fallows
A.9.	Net Area Sown
A.10.	Land Use - State Total

Note : Data not available between 1981-82 and 1992-93.

*Source : Statistical Handbook of Assam, published annually by Govt. Of Assam,
based on data collected by the Directorate of Land Revenue.*

Table A.1.

AREA UNDER FORESTS*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	245	248	287	158	111	236	460
1962 - 63	245	248	284	158	111	236	453
1963 - 64	244	248	284	159	114	236	455
1964 - 65	244	248	284	159	114	236	455
1965 - 66	244	250	285	159	114	236	456
1966 - 67	244	250	285	159	114	236	456
1967 - 68	244	250	285	159	114	236	456
1968 - 69	244	250	285	159	114	236	456
1969 - 70	244	250	285	159	114	236	456
1970 - 71	268	243	249	193	113	231	382
1971 - 72	268	343	249	195	111	231	382
1972 - 73	268	343	248	195	110	231	382
1973 - 74	270	343	247	196	108	231	382
1974 - 75	259	340	229	177	102	229	357
1975 - 76	262	341	217	176	100	222	341
1976 - 77	268	333	212	174	100	215	325
1977 - 78	267	336	214	176	100	221	334
1978 - 79	267	336	214	176	100	221	334
1979 - 80	267	336	214	176	100	221	334
1980 - 81	266	336	213	176	100	221	334
1981 - 82	267	336	213	176	100	221	334
1992 - 93	254	313	222	195	100	215	304
1993 - 94	254	307	230	197	110	216	300
1994 - 95	254	307	230	197	110	216	300
1995 - 96	254	307	230	197	110	216	300
1996 - 97	262	297	221	183	108	214	260
1997 - 98	262	297	221	183	108	214	260

Table A.2.

BARREN & UNCULTIVABLE LAND*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	79	260	77	74	38	42	117
1962 - 63	79	260	77	74	38	42	117
1963 - 64	79	260	77	70	38	42	117
1964 - 65	79	250	77	70	38	42	117
1965 - 66	79	249	77	69	38	42	117
1966 - 67	79	249	77	69	38	42	117
1967 - 68	79	249	77	69	38	42	117
1968 - 69	79	249	77	69	38	42	117
1969 - 70	79	249	77	69	38	42	117
1970 - 71	75	151	77	69	38	43	117
1971 - 72	72	132	77	69	38	43	117
1972 - 73	70	126	77	69	38	43	117
1973 - 74	68	119	77	69	37	43	117
1974 - 75	67	115	61	61	36	43	122
1975 - 76	67	111	70	57	36	41	128
1976 - 77	65	109	69	57	34	40	127
1977 - 78	65	110	69	57	36	41	127
1978 - 79	65	110	69	57	36	41	127
1979 - 80	65	110	69	57	36	41	127
1980 - 81	65	111	67	57	36	40	127
1981 - 82	65	111	67	57	36	40	127
1992 - 93	69	99	44	59	34	40	131
1993 - 94	69	105	32	55	25	40	137
1994 - 95	68	105	32	55	26	40	137
1995 - 96	68	105	32	55	26	40	137
1996 - 97	60	102	42	58	28	43	140
1997 - 98	60	102	42	58	28	43	140

Table A.3.

LAND PUT TO NON-AGRICULTURAL USES*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	56	116	61	157	53	104	195
1962 - 63	56	116	61	157	53	104	195
1963 - 64	60	117	62	161	53	104	197
1964 - 65	60	118	63	162	54	106	202
1965 - 66	60	118	63	164	54	106	202
1966 - 67	60	118	64	164	54	106	202
1967 - 68	60	118	64	164	54	106	202
1968 - 69	60	118	64	164	54	106	202
1969 - 70	60	118	64	164	54	106	202
1970 - 71	50	121	69	164	55	113	279
1971 - 72	51	121	72	164	52	113	281
1972 - 73	45	122	72	165	50	109	279
1973 - 74	45	123	73	165	42	107	276
1974 - 75	54	112	63	185	44	121	264
1975 - 76	54	112	69	186	46	125	264
1976 - 77	55	116	73	192	49	130	266
1977 - 78	57	115	73	189	48	129	270
1978 - 79	58	116	74	190	48	130	272
1979 - 80	59	117	76	192	49	131	274
1980 - 81	60	119	79	192	50	134	277
1981 - 82	61	119	79	193	50	135	278
1992 - 93	73	134	102	181	52	151	320
1993 - 94	72	134	108	184	52	150	320
1994 - 95	72	135	109	190	52	151	321
1995 - 96	72	135	109	190	52	151	321
1996 - 97	73	136	109	194	52	151	330
1997 - 98	73	136	109	194	52	151	330

Table A.4.

CULTIVABLE WASTELAND*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	5	21	18	35	17	42	59
1962 - 63	5	21	18	35	17	42	59
1963 - 64	11	19	18	32	16	42	59
1964 - 65	11	17	18	32	16	41	51
1965 - 66	11	17	17	32	16	41	51
1966 - 67	11	17	17	32	16	41	50
1967 - 68	11	16	17	32	16	41	50
1968 - 69	11	16	17	32	16	41	50
1969 - 70	11	16	17	32	16	41	50
1970 - 71	11	16	17	22	25	37	51
1971 - 72	11	16	17	20	25	32	46
1972 - 73	9	16	17	20	25	28	44
1973 - 74	9	16	16	19	23	27	43
1974 - 75	11	17	16	16	26	24	43
1975 - 76	10	17	15	16	19	22	46
1976 - 77	9	17	13	15	15	20	40
1977 - 78	10	16	15	15	18	20	44
1978 - 79	9	15	14	15	17	20	44
1979 - 80	8	14	13	13	16	18	42
1980 - 81	8	10	12	11	12	16	38
1981 - 82	8	9	12	11	11	16	37
1992 - 93	6	12	9	9	7	13	33
1993 - 94	6	13	9	11	6	16	32
1994 - 95	5	13	8	8	6	16	32
1995 - 96	5	13	9	8	6	16	32
1996 - 97	5	13	8	8	6	16	32
1997 - 98	4	13	8	8	5	16	32

Table A.5.

PERMANENT PASTURES AND OTHER GRAZING LANDS*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	7	35	37	44	31	34	52
1962 - 63	7	35	37	44	31	34	52
1963 - 64	7	35	36	44	31	33	51
1964 - 65	7	35	36	44	31	32	51
1965 - 66	7	34	35	44	31	32	51
1966 - 67	7	34	35	44	31	32	51
1967 - 68	7	34	36	43	31	32	51
1968 - 69	7	34	34	44	31	32	51
1969 - 70	7	34	35	44	31	32	51
1970 - 71	7	34	78	34	30	32	46
1971 - 72	6	31	62	32	28	32	44
1972 - 73	6	29	52	28	25	32	42
1973 - 74	5	29	52	26	25	32	39
1974 - 75	7	26	65	23	23	22	32
1975 - 76	7	22	62	22	21	20	32
1976 - 77	7	22	61	22	21	20	32
1977 - 78	6	22	62	22	21	20	32
1978 - 79	6	22	61	22	21	20	32
1979 - 80	6	22	61	22	21	20	32
1980 - 81	6	22	61	22	21	20	32
1981 - 82	6	22	61	22	21	20	32
1992 - 93	7	18	49	20	21	19	29
1993 - 94	6	17	46	20	20	20	30
1994 - 95	6	16	46	20	21	20	30
1995 - 96	6	16	46	20	21	20	30
1996 - 97	6	27	45	20	21	20	30
1997 - 98	6	27	45	20	21	20	30

Table A.6.

LAND UNDER MISC. TREE CROPS & GROVES

(Thousand Hectares)

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	33	24	30	33	23	55	29
1962 - 63	33	24	30	33	23	55	59
1963 - 64	33	22	30	33	23	55	59
1964 - 65	33	24	29	33	22	53	55
1965 - 66	33	23	28	33	22	53	55
1966 - 67	34	13	29	32	23	53	53
1967 - 68	32	12	29	31	22	52	51
1968 - 69	32	12	28	31	22	52	51
1969 - 70	32	12	28	30	22	51	50
1970 - 71	32	13	28	30	23	58	51
1971 - 72	33	13	28	31	23	56	51
1972 - 73	34	13	28	33	22	53	51
1973 - 74	33	16	29	33	22	51	51
1974 - 75	35	21	45	32	22	55	58
1975 - 76	35	19	44	32	24	53	60
1976 - 77	33	16	43	30	22	46	59
1977 - 78	33	18	43	31	22	53	57
1978 - 79	33	18	43	31	22	53	56
1979 - 80	33	18	43	31	22	53	56
1980 - 81	30	18	42	30	22	52	56
1981 - 82	30	17	42	30	21	52	54
1992 - 93	32	14	32	27	19	44	52
1993 - 94	33	15	31	23	18	45	49
1994 - 95	34	15	31	19	18	44	49
1995 - 96	34	15	31	21	18	44	49
1996 - 97	34	17	31	24	18	44	49
1997 - 98	34	17	31	24	18	44	49

Table A.7.

CURRENT FALLOWS*(Thousand Hectares)*

Year		Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 -	62	25	14	24	27	15	25	23
1962 -	63	25	14	18	30	13	21	23
1963 -	64	25	13	22	31	15	20	23
1964 -	65	25	17	21	31	15	20	28
1965 -	66	25	17	20	31	15	20	26
1966 -	67	30	4	21	29	16	19	21
1967 -	68	29	4	21	27	15	19	19
1968 -	69	28	4	20	27	15	19	16
1969 -	70	28	4	19	26	14	17	16
1970 -	71	23	5	19	24	13	21	17
1971 -	72	23	5	17	20	13	21	15
1972 -	73	24	5	17	16	12	23	19
1973 -	74	21	5	19	15	11	23	16
1974 -	75	21	15	14	10	8	23	19
1975 -	76	18	13	15	12	7	26	21
1976 -	77	16	11	23	10	6	22	21
1977 -	78	17	12	14	11	5	23	19
1978 -	79	17	12	13	10	5	23	18
1979 -	80	23	12	13	10	5	23	18
1980 -	81	23	9	13	11	4	18	13
1981 -	82	23	8	13	11	3	17	13
1992 -	93	13	13	11	9	2	13	11
1993 -	94	16	14	7	7	1	16	14
1994 -	95	13	19	11	9	4	20	13
1995 -	96	11	37	24	6	8	15	21
1996 -	97	14	23	15	9	13	20	20
1997 -	98	15	18	13	11	8	20	23

Table A.8.

OTHER FALLOWS*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	32	24	28	28	12	40	36
1962 - 63	32	24	28	28	12	40	36
1963 - 64	33	19	28	32	13	39	35
1964 - 65	33	19	27	32	13	38	35
1965 - 66	33	19	27	31	13	38	34
1966 - 67	33	14	27	30	14	38	33
1967 - 68	33	13	27	29	13	38	30
1968 - 69	32	12	26	28	13	36	25
1969 - 70	32	10	25	27	13	35	24
1970 - 71	30	10	25	20	15	38	26
1971 - 72	30	11	24	19	14	31	23
1972 - 73	31	11	24	19	15	30	24
1973 - 74	30	10	23	19	12	33	25
1974 - 75	30	12	18	24	14	28	22
1975 - 76	28	8	18	18	9	25	24
1976 - 77	25	7	19	17	8	23	23
1977 - 78	23	7	17	17	8	21	20
1978 - 79	23	7	16	17	7	20	20
1979 - 80	19	6	14	15	7	18	19
1980 - 81	19	4	12	14	7	15	15
1981 - 82	19	3	12	14	5	15	15
1992 - 93	16	12	8	10	3	10	11
1993 - 94	17	12	8	8	2	13	10
1994 - 95	17	12	8	7	2	14	8
1995 - 96	17	12	8	8	2	12	10
1996 - 97	16	13	8	7	3	14	8
1997 - 98	14	13	8	7	3	14	8

Table A.9.

NET AREA SOWN*(Thousand Hectares)*

Year	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1961 - 62	209	288	427	306	260	307	256
1962 - 63	207	302	433	303	262	311	255
1963 - 64	200	299	429	300	258	317	256
1964 - 65	200	303	430	300	258	317	662
1965 - 66	199	303	432	300	258	317	266
1966 - 67	192	331	429	303	256	317	274
1967 - 68	196	335	430	307	257	318	282
1968 - 69	198	335	432	303	258	320	290
1969 - 70	199	337	434	310	250	324	292
1970 - 71	198	338	434	315	256	326	298
1971 - 72	301	358	450	322	266	341	308
1972 - 73	208	366	459	327	273	351	310
1973 - 74	213	370	460	330	289	353	318
1974 - 75	211	372	483	344	296	357	348
1975 - 76	213	388	486	353	308	364	353
1976 - 77	217	399	482	355	314	384	374
1977 - 78	216	394	491	354	312	373	364
1978 - 79	217	394	491	355	312	373	365
1979 - 80	220	396	493	356	313	376	366
1980 - 81	215	401	496	358	319	383	376
1981 - 82	215	405	497	358	321	384	379
1992 - 93	223	412	507	370	331	392	385
1993 - 94	218	409	514	376	336	384	385
1994 - 95	222	403	510	375	332	379	386
1995 - 96	218	384	497	376	327	380	377
1996 - 97	223	398	506	378	322	377	379
1997 - 98	224	402	509	376	326	378	376

Table A.9.

LAND USE - STATE TOTAL

(in thousand hectares, with the percentage w.r.t. State Total given just below each in italics)

Year	Land Use Classifications									
	State Total	Forests	Land put To Non-Agril Use	Barren and Uncultivable Land	Permanent Pastures and Other Grazing Land	Land Under Misc. Tree Crops and Groves	Cultivable Waste Land	Current Fallows	Other Fallows	Net Area Sown
1961-62	6250	1745 <i>27.92</i>	742 <i>11.87</i>	687 <i>10.99</i>	240 <i>3.84</i>	257 <i>4.11</i>	197 <i>3.15</i>	153 <i>2.45</i>	170 <i>2.72</i>	2053 <i>32.85</i>
1962-63	6250	1735 <i>27.76</i>	742 <i>11.87</i>	687 <i>10.99</i>	240 <i>3.84</i>	257 <i>4.11</i>	197 <i>3.15</i>	131 <i>2.10</i>	170 <i>2.72</i>	2071 <i>33.14</i>
1963-64	6250	1740 <i>27.84</i>	754 <i>12.06</i>	681 <i>10.90</i>	237 <i>3.79</i>	255 <i>4.08</i>	197 <i>3.15</i>	149 <i>2.38</i>	199 <i>3.18</i>	2059 <i>32.94</i>
1964-65	6265	1740 <i>27.77</i>	765 <i>12.21</i>	673 <i>10.74</i>	236 <i>3.77</i>	249 <i>3.97</i>	186 <i>2.97</i>	157 <i>2.51</i>	185 <i>2.95</i>	2470 <i>39.43</i>
1965-66	6273	1744 <i>27.80</i>	767 <i>12.23</i>	671 <i>10.70</i>	234 <i>3.73</i>	247 <i>3.94</i>	185 <i>2.95</i>	195 <i>3.11</i>	154 <i>2.45</i>	2075 <i>33.08</i>
1966-67	6229	1744 <i>28.00</i>	768 <i>12.33</i>	671 <i>10.77</i>	234 <i>3.76</i>	237 <i>3.80</i>	184 <i>2.95</i>	140 <i>2.25</i>	189 <i>3.03</i>	2102 <i>33.75</i>
1967-68	6317	1744 <i>27.61</i>	768 <i>12.16</i>	671 <i>10.62</i>	234 <i>3.70</i>	229 <i>3.63</i>	183 <i>2.90</i>	134 <i>2.12</i>	183 <i>2.90</i>	2125 <i>33.64</i>
1968-69	6317	1744 <i>27.61</i>	768 <i>12.16</i>	671 <i>10.62</i>	233 <i>3.69</i>	228 <i>3.61</i>	183 <i>2.90</i>	129 <i>2.04</i>	172 <i>2.72</i>	2136 <i>33.81</i>
1969-70	6318	1744 <i>27.60</i>	768 <i>12.16</i>	671 <i>10.62</i>	234 <i>3.70</i>	225 <i>3.56</i>	183 <i>2.90</i>	124 <i>1.96</i>	166 <i>2.63</i>	2146 <i>33.97</i>
1970-71	6269	1679 <i>26.78</i>	851 <i>13.57</i>	570 <i>9.09</i>	261 <i>4.16</i>	235 <i>3.75</i>	179 <i>2.86</i>	122 <i>1.95</i>	164 <i>2.62</i>	2165 <i>34.54</i>
1971-72	6273	1779 <i>28.36</i>	854 <i>13.61</i>	548 <i>8.74</i>	235 <i>3.75</i>	235 <i>3.75</i>	167 <i>2.66</i>	114 <i>1.82</i>	152 <i>2.42</i>	2246 <i>35.80</i>
1972-73	6329	1777 <i>28.08</i>	842 <i>13.30</i>	540 <i>8.53</i>	214 <i>3.38</i>	234 <i>3.70</i>	159 <i>2.51</i>	116 <i>1.83</i>	154 <i>2.43</i>	2294 <i>36.25</i>
1973-74	6317	1777 <i>28.13</i>	831 <i>13.15</i>	530 <i>8.39</i>	208 <i>3.29</i>	235 <i>3.72</i>	153 <i>2.42</i>	152 <i>2.41</i>	110 <i>1.74</i>	2333 <i>36.93</i>
1974-75	6318	1693 <i>26.80</i>	843 <i>13.34</i>	505 <i>7.99</i>	198 <i>3.13</i>	268 <i>4.24</i>	153 <i>2.42</i>	110 <i>1.74</i>	148 <i>2.34</i>	2411 <i>38.16</i>
1975-76	6318	1659 <i>26.26</i>	856 <i>13.55</i>	510 <i>8.07</i>	186 <i>2.94</i>	267 <i>4.23</i>	145 <i>2.30</i>	112 <i>1.77</i>	130 <i>2.06</i>	2465 <i>39.02</i>
1976-77	6318	1627 <i>25.75</i>	881 <i>13.94</i>	501 <i>7.93</i>	185 <i>2.93</i>	249 <i>3.94</i>	129 <i>2.04</i>	109 <i>1.73</i>	132 <i>2.09</i>	2525 <i>39.97</i>
1977-78	6317	1648 <i>26.09</i>	881 <i>13.95</i>	505 <i>7.99</i>	185 <i>2.93</i>	257 <i>4.07</i>	138 <i>2.18</i>	101 <i>1.60</i>	113 <i>1.79</i>	2504 <i>39.64</i>
1978-79	6317	1648 <i>26.09</i>	888 <i>14.06</i>	505 <i>7.99</i>	184 <i>2.91</i>	256 <i>4.05</i>	134 <i>2.12</i>	98 <i>1.55</i>	110 <i>1.74</i>	2507 <i>39.69</i>
1979-80	6338	1648 <i>26.00</i>	898 <i>14.17</i>	505 <i>7.97</i>	184 <i>2.90</i>	256 <i>4.04</i>	124 <i>1.96</i>	104 <i>1.64</i>	98 <i>1.55</i>	2520 <i>39.76</i>
1980-81	6318	1646 <i>26.05</i>	911 <i>14.42</i>	503 <i>7.96</i>	184 <i>2.91</i>	250 <i>3.96</i>	107 <i>1.69</i>	91 <i>1.44</i>	86 <i>1.36</i>	2548 <i>40.33</i>
1981-82	6318	1647 <i>26.07</i>	915 <i>14.48</i>	503 <i>7.96</i>	184 <i>2.91</i>	246 <i>3.89</i>	104 <i>1.65</i>	88 <i>1.39</i>	83 <i>1.31</i>	2559 <i>40.50</i>
1992-93	6312	1603 <i>25.40</i>	1013 <i>16.05</i>	476 <i>7.54</i>	163 <i>2.58</i>	220 <i>3.49</i>	89 <i>1.41</i>	72 <i>1.14</i>	70 <i>1.11</i>	2620 <i>41.51</i>
1993-94	6312	1614 <i>25.57</i>	1020 <i>16.16</i>	463 <i>7.34</i>	159 <i>2.52</i>	214 <i>3.39</i>	93 <i>1.47</i>	75 <i>1.19</i>	70 <i>1.11</i>	2622 <i>41.54</i>
1994-95	6312	1614 <i>25.57</i>	1030 <i>16.32</i>	463 <i>7.34</i>	159 <i>2.52</i>	210 <i>3.33</i>	88 <i>1.39</i>	89 <i>1.41</i>	68 <i>1.08</i>	2607 <i>41.30</i>
1995-96	6312	1614 <i>25.57</i>	1030 <i>16.32</i>	463 <i>7.34</i>	159 <i>2.52</i>	212 <i>3.36</i>	89 <i>1.41</i>	122 <i>1.93</i>	69 <i>1.09</i>	2559 <i>40.54</i>
1996-97	6312	1545 <i>24.48</i>	1045 <i>16.56</i>	473 <i>7.49</i>	169 <i>2.68</i>	244 <i>3.87</i>	87 <i>1.38</i>	114 <i>1.81</i>	69 <i>1.09</i>	2583 <i>40.92</i>
1997-98	6312	1545 <i>24.48</i>	1045 <i>16.56</i>	472 <i>7.48</i>	169 <i>2.68</i>	244 <i>3.87</i>	86 <i>1.36</i>	108 <i>1.71</i>	67 <i>1.06</i>	2591 <i>41.05</i>

Appendix B

**PRODUCTION DATA OF DIFFERENT CROPS
WITHIN AREA UNDER STUDY**

Table no.	Title
B.1.	Arecanut
B.2.	Autumn Rice
B.3.	Banana
B.4.	Castor
B.5.	Chilies
B.6.	Coconut
B.7.	Gram
B.8.	Jute
B.9.	Lingseed
B.10.	Maize
B.11.	Mesta
B.12.	Onion
B.13.	Orange
B.14.	Other Cereal & Small Milllets
B.15.	Other Rabi Pulses
B.16.	Papaya
B.17.	Pineapple
B.18.	Potato
B.19.	Rape & Mustard
B.20.	Sesamum
B.21.	Summer Rice
B.22.	Sweet Potato
B.23.	Tapioca
B.24.	Tobacco
B.25.	Tur
B.26.	Turmeric
B.27.	Wheat
B.28.	Winter Rice
B.29.	State Total Area (All Crops)
B.30.	State Total Production (All Crops)
B.31.	State Total Average Yield (All Crops)

Source : Statistical Handbook of Assam, published annually by Govt. Of Assam.

Table B.1.

ARECANUT

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976 - 77	4.00	5.12	5.57	6.17	2.94	5.85	4.52	5.35	7.98	4.11	6.79	2.27	7.00	5.24	1.3475	1.1271	0.7361	1.1005	0.7721	1.1966	1.1593
1977 - 78	3.81	6.15	6.31	6.40	4.76	6.18	5.28	2.35	6.09	6.17	5.14	5.39	8.77	6.83	0.6273	0.9744	0.5620	0.8011	1.1324	1.4191	1.2936
1978 - 79	4.13	6.93	7.11	6.71	4.06	6.45	5.40	3.46	7.89	5.11	3.72	1.86	6.45	4.95	0.8378	1.1385	1.2341	0.5544	0.4581	1.0000	0.9167
1979 - 80	4.46	7.07	7.65	7.22	4.41	7.30	5.70	3.44	5.84	8.77	3.98	2.60	7.57	6.74	0.7713	0.8260	1.2771	0.5512	0.5896	1.0370	1.1825
1980 - 81	4.65	7.14	8.32	8.23	4.46	7.36	5.90	5.45	11.13	11.55	5.45	2.62	5.48	6.30	1.1720	1.5545	1.3894	0.6622	0.5874	0.7446	1.0678
1981 - 82	4.96	4.55	9.62	8.00	4.50	9.66	6.65	6.01	5.55	9.82	7.00	5.03	7.68	5.93	1.2117	1.1212	1.0300	0.8751	1.1178	0.7950	0.8917
1982 - 83	5.07	5.12	11.07	5.55	5.06	9.44	6.79	5.23	8.40	11.07	5.53	3.52	10.61	8.32	1.0316	1.6216	1.1607	0.9964	0.6957	1.1239	1.2253
1983 - 84	5.19	4.33	11.70	9.80	4.63	7.14	6.43	3.17	4.53	14.54	8.58	3.83	5.45	6.95	0.6108	1.0462	1.2427	0.8755	0.8272	0.7633	1.0809
1984 - 85	5.27	3.42	11.93	10.65	4.72	6.88	6.49	4.70	4.77	22.39	11.95	4.58	6.81	7.51	0.8918	1.2487	1.3768	1.1221	0.9703	0.9898	1.1572
1985 - 86	5.48	4.37	11.52	7.25	4.84	8.76	6.99	4.60	6.36	15.17	9.05	5.03	7.20	10.92	0.8394	1.3060	1.3032	1.2433	1.0393	0.8219	1.5622
1986 - 87	5.65	6.42	14.60	8.14	4.85	9.80	7.18	5.63	7.90	13.13	8.20	7.28	8.10	7.14	0.9655	1.2305	0.8096	1.0074	1.5010	0.8265	0.9944
1987 - 88	5.81	7.15	14.20	8.04	4.77	7.27	7.72	9.48	8.98	14.43	6.70	9.12	7.27	6.25	1.6317	0.9762	1.0162	0.8333	1.9119	1.0000	0.8096
1988 - 89	5.92	6.78	14.66	7.94	5.06	10.41	8.16	10.81	7.78	22.55	7.52	9.15	7.62	12.62	1.6160	1.1475	1.2509	0.9471	1.8082	0.7220	1.5466
1989 - 90	6.13	6.57	15.63	7.71	5.08	11.11	9.50	13.71	6.38	15.75	5.95	7.35	8.29	6.48	2.2255	1.1454	1.2138	0.7755	1.4669	0.7462	0.8926
1990 - 91	6.64	7.72	15.66	8.06	5.10	11.11	10.32	7.73	7.38	15.11	4.84	1.96	6.52	6.35	1.1642	0.9560	0.9739	0.6005	0.3643	0.5869	0.6153
1991 - 92	6.54	6.75	16.59	7.49	6.72	12.01	8.32	9.33	8.53	14.75	4.70	3.71	7.43	6.56	1.4266	0.9749	0.8891	0.6275	0.5521	0.6187	0.7885
1992 - 93	6.71	6.12	16.59	6.57	7.58	13.66	8.73	6.51	8.26	13.13	5.84	5.42	8.95	6.27	0.9702	0.9157	0.8029	0.8553	0.7150	0.6552	0.7182
1993 - 94	6.77	6.17	16.52	7.76	7.14	13.91	8.81	5.38	8.72	12.25	5.16	4.20	12.74	8.37	0.7947	0.6307	0.7415	0.6647	0.5882	0.9159	0.9501
1994 - 95	6.86	6.53	16.62	8.81	7.30	13.75	8.82	5.27	8.15	12.57	4.93	4.49	13.81	6.54	0.6557	0.9157	0.7804	0.5555	0.6151	1.0044	0.7415
1995 - 96	6.98	6.33	16.89	8.56	7.34	13.15	8.85	2.56	6.52	14.45	5.96	4.76	11.17	5.92	0.3668	0.7220	0.3573	0.6963	0.6485	0.8494	0.6689
1996 - 97	6.73	6.15	16.50	8.57	7.33	13.32	8.94	4.21	6.43	18.32	5.93	6.68	12.30	8.23	0.4845	0.6997	2.3588	0.6919	0.9113	0.9234	0.9206
1997 - 98	6.90	6.11	16.00	8.60	7.50	13.44	9.00	4.42	6.52	18.12	5.02	6.55	9.54	8.20	0.8259	0.7236	0.9575	0.5817	0.8733	0.7098	0.9111
1998 - 99	6.02	6.11	16.46	8.74	7.34	13.52	8.56	7.45	6.66	12.73	4.67	5.01	7.90	8.20	0.8259	0.9413	0.7734	0.5343	0.6826	0.5843	0.9579
1999 - 2000	6.20	6.54	16.29	8.99	7.67	11.30	8.78	4.55	8.79	10.45	6.55	7.13	6.35	7.03	0.4846	1.0262	0.6440	0.7255	0.9296	0.5619	0.8007

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.2.
AUTUMN RICE

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	34.57	44.70	123.94	48.93	11.56	17.04	19.63	33.36	29.26	72.24	33.11	20.50	12.67	9.16	0.965	0.655	0.583	0.677	0.511	0.744	0.467
1952 - 53	33.44	46.64	146.11	47.96	12.97	14.23	14.96	24.80	34.64	80.56	40.91	30.09	12.81	11.37	0.742	0.743	0.551	0.393	0.313	0.900	0.760
1953 - 54	32.59	58.87	131.12	49.11	14.06	15.42	19.35	27.15	47.68	92.79	47.21	26.68	12.62	16.35	0.833	0.813	0.754	0.973	0.723	0.818	0.845
1954 - 55	36.75	57.67	122.89	48.31	14.65	16.14	16.94	32.46	43.17	82.20	55.11	11.83	13.35	14.13	0.883	0.749	0.675	1.144	0.322	0.827	0.534
1955 - 56	38.60	63.44	128.12	48.71	15.57	15.73	17.01	41.83	56.76	109.10	57.65	28.95	17.31	15.97	1.084	0.895	0.852	1.184	0.314	1.100	0.939
1956 - 57	39.72	66.61	133.21	50.94	11.40	15.46	15.93	44.36	58.00	104.08	53.12	26.10	16.09	14.57	1.117	0.871	0.781	1.043	0.311	1.041	0.915
1957 - 58	39.92	83.26	131.47	52.36	12.85	15.89	15.61	44.13	73.60	108.83	48.10	27.12	14.78	14.45	1.106	0.884	0.827	0.919	0.316	0.930	0.926
1958 - 59	35.15	91.58	131.47	59.68	16.40	18.20	16.18	35.94	58.95	85.80	45.19	17.60	16.58	19.37	1.023	0.644	0.650	0.761	0.424	0.911	1.197
1959 - 60	39.76	94.29	132.32	53.99	16.05	18.54	16.56	25.53	48.46	44.22	34.70	24.14	10.37	11.35	0.642	0.514	0.333	0.643	0.670	0.559	0.685
1960 - 61	33.82	80.09	141.11	53.95	16.05	18.43	15.87	34.40	56.24	84.56	40.50	25.32	14.47	11.00	1.017	0.702	0.600	0.751	0.722	0.785	0.693
1961 - 62	40.09	97.53	144.11	56.25	12.15	10.26	16.30	38.64	68.12	93.01	39.45	26.11	15.22	13.22	0.969	0.699	0.646	0.702	0.620	1.483	0.811
1962 - 63	41.55	120.78	145.49	56.51	10.14	20.67	15.73	31.56	60.54	83.11	40.74	13.89	4.90	11.17	0.760	0.501	0.570	0.721	0.444	0.237	0.710
1963 - 64	42.50	113.71	144.44	51.36	10.78	18.69	16.39	38.97	83.50	105.27	38.65	19.00	14.63	13.43	0.914	0.734	0.729	0.756	0.526	0.783	0.819
1964 - 65	44.04	121.07	145.11	51.96	12.65	18.89	20.41	44.95	70.28	100.24	41.57	17.11	14.28	16.54	1.018	0.681	0.689	0.839	0.424	0.756	0.810
1965 - 66	40.21	121.55	157.12	54.41	10.88	15.13	22.45	44.91	109.18	105.77	53.51	16.65	9.90	16.52	1.117	0.698	0.670	0.584	0.421	0.654	0.716
1966 - 67	36.70	121.67	157.11	53.01	15.72	18.12	26.59	23.40	67.15	78.30	34.55	17.72	6.74	23.26	0.638	0.552	0.496	0.652	0.426	0.372	0.975
1967 - 68	37.91	121.49	163.11	58.14	15.65	20.17	29.45	40.60	88.46	119.76	51.55	19.75	14.75	22.86	1.071	0.728	0.678	0.894	0.524	0.731	0.776
1968 - 69	37.98	131.19	174.11	61.04	14.85	20.24	35.25	22.82	93.42	113.68	52.47	14.85	12.08	36.03	0.601	0.712	0.653	0.860	0.777	0.597	1.022
1969 - 70	37.95	128.63	172.11	61.55	14.49	20.85	35.96	39.05	84.78	111.19	47.73	23.11	14.91	33.64	1.029	0.659	0.644	0.776	0.811	0.715	0.936
1970 - 71	38.72	131.26	173.11	62.25	17.92	21.68	33.42	37.11	96.48	101.76	45.77	24.52	16.55	29.72	0.958	0.735	0.588	0.734	0.811	0.763	0.839
1971 - 72	35.04	135.00	183.11	68.36	17.00	19.70	31.05	52.10	71.87	83.00	40.11	23.03	15.20	27.40	1.487	0.532	0.401	0.588	0.421	0.924	0.682
1972 - 73	49.00	141.00	184.11	70.59	15.70	26.60	26.67	72.50	98.75	101.34	62.35	23.67	21.35	17.89	1.480	0.700	0.615	0.884	0.511	0.803	0.671
1973 - 74	49.40	140.00	178.11	68.80	17.50	30.60	26.55	74.16	70.55	114.30	55.61	22.15	24.15	27.20	1.501	0.504	0.672	0.811	0.521	0.789	1.325

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	46.39	131.81	123.33	85.25	56.50	24.20	27.50	54.59	72.05	107.70	75.13	31.87	17.03	26.87	1.220	0.547	0.586	0.880	0.554	0.704	0.877
1975 - 76	50.50	145.20	133.15	88.73	63.40	29.01	34.39	63.37	93.56	105.43	67.33	54.02	26.97	32.22	1.255	0.645	0.560	1.766	0.551	0.930	0.937
1976 - 77	51.15	148.77	133.30	98.00	53.66	29.32	35.76	45.64	88.81	104.92	50.41	35.57	20.81	30.33	0.795	0.597	0.554	0.575	0.553	0.710	0.848
1977 - 78	50.40	141.27	126.50	88.10	51.65	26.50	33.77	60.85	85.48	123.13	54.13	27.88	22.45	28.87	1.207	0.605	0.660	1.614	0.541	0.847	0.855
1978 - 79	51.10	143.70	127.20	85.10	52.20	27.58	35.05	64.49	71.36	123.67	57.88	32.93	23.71	29.71	1.260	0.497	0.659	0.649	0.541	0.860	0.848
1979 - 80	47.31	138.74	175.15	80.72	52.55	22.83	29.05	45.95	58.32	91.03	42.34	25.13	40.97	18.76	0.591	0.420	0.519	1.525	0.478	1.790	0.847
1980 - 81	47.58	146.87	174.33	74.10	54.10	24.91	32.15	77.27	98.27	131.19	54.33	35.18	25.72	26.65	1.634	0.669	0.741	0.740	0.551	1.033	0.829
1981 - 82	43.00	149.00	178.00	71.60	55.00	26.70	41.60	59.53	83.41	74.62	37.44	44.19	26.31	35.19	1.387	0.560	0.419	0.526	0.551	0.985	0.846
1982 - 83	46.88	153.01	180.00	76.49	75.00	28.25	50.09	70.95	93.71	124.10	51.47	34.94	29.80	48.61	1.513	0.612	0.688	0.676	0.553	1.055	0.871
1983 - 84	39.51	149.00	170.72	89.41	72.38	28.82	51.14	43.27	102.22	118.37	64.31	45.86	23.14	43.56	1.095	0.686	0.693	0.725	0.534	1.150	0.852
1984 - 85	30.24	143.41	155.23	89.71	66.09	35.03	62.26	35.76	85.48	112.22	66.13	34.83	19.18	54.67	1.315	0.595	0.677	0.737	0.553	1.119	0.875
1985 - 86	37.60	145.05	163.13	90.22	78.27	32.29	59.14	44.86	90.37	128.00	60.91	33.57	11.86	53.47	1.193	0.623	0.698	0.675	1.041	1.049	0.834
1986 - 87	17.71	129.83	128.11	81.27	75.60	28.74	44.30	23.30	65.96	55.46	47.11	39.77	28.28	42.25	1.316	0.509	0.433	0.579	0.551	0.984	0.854
1987 - 88	33.38	140.07	154.26	92.42	76.34	26.17	57.25	49.52	14.99	70.17	57.87	31.22	29.02	50.89	1.484	0.535	0.455	0.624	0.553	1.109	0.839
1988 - 89	30.00	132.53	153.79	93.66	79.63	31.67	59.07	42.93	78.74	90.98	66.13	49.21	15.07	46.81	1.428	0.594	0.592	0.706	0.553	1.107	0.792
1989 - 90	31.13	143.10	162.73	94.45	78.61	36.60	63.34	25.39	89.37	108.29	71.13	44.08	16.40	55.95	0.816	0.625	0.661	0.756	0.551	0.995	0.883
1990 - 91	40.50	146.33	144.33	78.00	80.16	45.00	55.63	58.51	112.48	98.10	78.13	33.06	44.64	45.12	1.431	0.769	0.677	0.976	0.554	0.992	0.811
1991 - 92	31.45	148.87	158.49	96.75	83.30	41.94	60.17	55.80	62.63	102.24	67.13	38.22	32.13	59.14	1.774	0.451	0.644	1.595	0.553	1.195	0.830
1992 - 93	30.60	155.74	159.33	102.03	83.45	31.40	54.92	52.06	114.55	134.22	60.13	37.07	17.61	57.11	1.701	0.736	0.842	1.590	1.051	1.198	1.040
1993 - 94	29.10	155.06	158.71	106.62	83.78	28.70	53.28	28.38	118.64	133.21	106.47	38.73	11.13	70.97	0.975	0.762	0.713	1.985	1.051	1.120	1.110
1994 - 95	26.70	153.15	166.42	114.45	86.67	24.81	56.14	44.31	127.39	136.29	107.13	31.88	26.46	58.40	1.648	0.832	0.819	1.844	1.051	1.147	1.110
1995 - 96	22.80	153.12	167.26	99.94	85.11	21.12	56.69	37.87	97.83	98.41	88.44	26.25	16.12	74.66	1.648	0.839	0.588	1.887	0.554	1.858	1.117
1996 - 97	25.09	147.65	173.41	98.51	84.35	20.05	53.33	43.24	97.18	128.90	77.13	31.26	19.62	51.84	1.680	0.655	0.743	1.786	0.551	1.979	1.170
1997 - 98	22.11	145.15	177.33	100.21	84.57	12.31	49.31	38.70	108.85	159.53	91.13	33.33	15.28	60.37	1.750	0.750	0.900	1.913	1.051	1.241	1.114
1998 - 99	20.90	144.53	171.36	100.46	80.69	12.84	46.25	29.20	117.89	135.49	93.13	37.56	16.12	39.52	1.397	0.816	0.672	0.928	1.051	1.255	0.854
1999 - 2000	19.40	137.32	155.41	75.72	43.97	22.14	48.42	28.35	100.96	133.64	90.13	30.23	11.85	51.90	1.487	0.735	0.859	1.841	0.551	0.987	1.171

Table B.3.

BANANA

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976 - 77	1.29	1.84	2.45	2.98	1.24	3.99	2.88	16.32	24.52	30.98	36.54	17.36	54.60	37.71	12.651	13.326	12.442	12.396	14.000	13.684	13.094
1977 - 78	1.29	2.24	4.95	2.60	1.52	3.76	2.82	16.15	29.46	61.84	33.20	21.28	51.50	36.91	12.519	13.152	12.468	12.769	14.000	13.697	13.009
1978 - 79	1.31	2.33	4.55	2.55	1.47	3.87	2.87	16.48	30.47	61.62	32.71	20.35	53.74	37.14	12.580	13.077	12.449	12.828	13.844	13.886	12.941
1979 - 80	1.29	2.54	5.21	2.89	1.34	4.26	3.05	16.00	33.34	69.81	37.05	18.58	59.18	39.56	12.403	13.126	13.399	12.820	13.866	13.692	12.971
1980 - 81	1.42	3.77	5.23	3.08	1.38	4.50	3.26	17.90	35.45	65.37	39.45	19.20	62.56	42.32	12.606	9.403	12.381	12.608	13.913	13.902	12.882
1981 - 82	1.45	2.79	6.43	3.08	1.60	5.09	3.58	18.01	38.28	81.13	40.95	22.36	69.06	46.52	12.421	13.720	12.677	13.279	13.575	13.568	12.994
1982 - 83	1.50	2.94	5.42	3.16	1.96	5.35	3.85	18.49	39.82	68.54	41.75	40.77	73.68	50.28	12.327	13.544	12.646	13.225	13.774	13.772	13.069
1983 - 84	1.58	3.20	5.66	2.96	2.24	5.21	3.94	19.52	44.79	71.08	34.72	38.13	71.63	51.11	12.354	13.997	12.558	11.730	13.426	13.749	12.972
1984 - 85	2.05	4.88	6.07	3.94	3.42	5.58	3.65	25.35	63.59	76.34	48.71	47.40	76.86	47.45	12.366	13.031	12.577	12.363	13.860	13.774	13.009
1985 - 86	2.05	4.77	6.22	3.40	2.90	4.66	3.83	25.22	63.47	78.13	35.05	40.22	63.93	49.81	12.351	13.306	12.561	10.309	13.865	13.719	13.005
1986 - 87	2.18	4.50	6.43	3.67	2.81	4.49	4.80	26.89	60.05	80.53	42.14	37.56	61.40	62.34	12.335	13.344	12.524	11.482	13.367	13.675	12.989
1987 - 88	2.33	4.40	8.25	4.05	2.79	4.06	5.00	28.75	58.73	102.90	45.05	38.75	55.46	60.52	12.339	13.348	12.428	11.333	13.655	13.660	13.005
1988 - 89	2.45	3.90	9.26	3.71	2.58	4.77	5.42	20.26	51.57	113.39	43.53	38.12	65.64	70.52	12.351	13.223	12.406	11.747	14.775	13.761	13.120
1989 - 90	2.65	3.54	9.33	3.57	3.13	5.13	5.17	23.05	46.30	114.92	40.84	46.49	69.32	83.13	12.472	13.079	12.397	11.473	14.855	13.513	15.489
1990 - 91	2.62	4.11	9.32	3.60	3.16	5.66	5.06	12.23	54.79	115.01	41.17	46.74	78.98	77.07	12.402	13.331	12.393	11.436	14.791	13.954	15.211
1991 - 92	3.03	4.64	9.71	3.83	3.34	7.04	5.91	17.56	47.41	135.39	49.40	49.56	97.73	77.07	12.396	10.215	13.915	12.898	14.828	13.882	13.041
1992 - 93	3.20	4.55	9.77	3.79	3.60	8.46	5.02	39.69	54.64	135.90	47.43	52.73	117.44	65.35	12.403	12.009	13.910	12.515	14.647	13.582	13.008
1993 - 94	3.12	4.56	9.83	4.52	3.32	9.12	4.90	38.65	67.35	140.25	58.57	48.69	126.45	65.35	12.388	14.770	14.268	12.958	14.666	13.665	13.007
1994 - 95	3.17	4.37	9.84	4.52	4.14	10.06	4.64	39.33	65.47	140.82	59.03	50.67	139.77	62.48	12.407	14.982	14.311	13.060	14.655	13.594	13.466
1995 - 96	3.26	4.52	9.87	4.48	3.73	7.88	4.74	40.46	67.61	141.41	57.60	54.53	109.73	64.39	12.411	14.955	14.327	12.357	14.618	13.925	13.884
1996 - 97	3.27	4.72	10.03	4.37	4.07	7.92	4.86	40.57	70.72	143.36	56.16	59.54	110.10	65.94	12.407	14.383	14.336	12.551	14.638	13.902	13.566
1997 - 98	4.86	4.84	10.11	4.19	4.24	7.97	4.97	60.01	72.76	145.04	54.04	51.88	110.84	67.30	12.348	15.033	14.332	12.897	14.594	13.907	13.541
1998 - 99	5.72	5.05	10.47	4.39	4.22	6.28	4.37	60.71	75.90	149.69	56.43	51.52	86.95	60.81	12.514	15.030	14.297	12.554	14.578	13.546	13.905
1999 - 2000	4.36	5.11	9.71	4.48	4.84	6.61	4.40	53.87	76.73	142.57	57.55	70.91	91.29	60.29	12.356	15.016	14.372	12.553	14.651	13.811	13.722

Blank space indicates Data Not Available at source (hence Average Average Yield could not be calculated)

Table B.4.

CASTOR

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	N/A	N/A	0.62	0.09	0.15	0.10	0.07	N/A	N/A	0.22	0.03	0.05	0.04	0.02	N/A	N/A	0.355	0.333	0.333	0.400	0.286
1952 - 53	N/A	N/A	0.80	0.12	0.20	0.08	0.11	N/A	N/A	0.28	0.04	0.07	0.03	0.04	N/A	N/A	0.350	0.333	0.350	0.375	0.366
1953 - 54	N/A	0.04	0.84	0.16	0.23	0.10	0.10	N/A	0.01	0.30	0.06	0.08	0.04	0.04	N/A	0.250	0.357	0.375	0.348	0.400	0.400
1954 - 55	N/A	0.02	0.84	0.15	0.23	0.13	0.47	N/A	0.01	0.42	0.08	0.12	0.06	0.24	N/A	0.500	0.500	0.533	0.522	0.462	0.510
1955 - 56	N/A	0.02	0.83	0.19	0.23	0.17	0.38	N/A	0.01	0.24	0.06	0.07	0.05	0.13	N/A	0.500	0.289	0.316	0.304	0.294	0.342
1956 - 57	N/A	0.02	0.75	0.20	0.20	0.26	0.37	N/A	0.01	0.21	0.08	0.06	0.06	0.12	N/A	0.500	0.280	0.400	0.300	0.231	0.324
1957 - 58	N/A	0.02	0.77	0.23	0.15	0.14	0.37	N/A	0.01	0.26	0.09	0.06	0.04	0.12	N/A	0.500	0.338	0.391	0.400	0.266	0.324
1958 - 59	N/A	0.02	0.80	0.24	0.18	0.16	0.54	N/A	0.01	0.27	0.09	0.07	0.06	0.21	N/A	0.500	0.338	0.375	0.369	0.375	0.369
1959 - 60	N/A	0.02	0.84	0.21	0.18	0.16	0.53	N/A	0.01	0.28	0.08	0.06	0.06	0.21	N/A	0.500	0.333	0.381	0.333	0.375	0.398
1960 - 61	N/A	0.02	0.93	0.20	0.20	0.07	0.62	N/A	0.01	0.31	0.07	0.07	0.02	0.24	N/A	0.500	0.333	0.350	0.350	0.286	0.387
1961 - 62	N/A	0.03	0.88	0.19	0.16	0.07	0.65	N/A	0.01	0.30	0.07	0.05	0.02	0.25	N/A	0.333	0.341	0.368	0.313	0.286	0.368
1962 - 63	0.12	0.04	0.78	0.22	0.19	0.06	0.59	0.01	0.02	0.26	0.08	0.07	0.02	0.23	0.383	0.500	0.333	0.364	0.350	0.333	0.390
1963 - 64	0.10	0.04	0.73	0.25	0.18	0.06	0.57	0.04	0.02	0.29	0.10	0.07	0.02	0.22	0.400	0.500	0.397	0.400	0.368	0.333	0.386
1964 - 65	0.08	0.06	0.72	0.21	0.20	0.08	0.57	0.03	0.02	0.28	0.05	0.08	0.03	0.23	0.375	0.333	0.380	0.420	0.400	0.375	0.404
1965 - 66	0.05	0.06	0.74	0.21	0.18	0.05	0.60	0.02	0.02	0.29	0.05	0.08	0.02	0.24	0.400	0.333	0.392	0.420	0.421	0.400	0.400
1966 - 67	0.02	0.06	0.73	0.23	0.13	0.08	0.53	0.01	0.02	0.29	0.14	0.05	0.03	0.21	0.500	0.333	0.397	0.609	0.385	0.375	0.398
1967 - 68	0.01	0.05	0.73	0.28	0.14	0.08	0.53	N/A	0.02	0.29	0.17	0.05	0.03	0.21	N/A	0.400	0.397	0.607	0.357	0.375	0.398
1968 - 69	0.01	0.07	0.66	0.32	0.13	0.10	0.53	N/A	0.03	0.26	0.19	0.05	0.04	0.25	N/A	0.420	0.394	0.594	0.385	0.400	0.387
1969 - 70	0.01	0.73	0.63	0.22	0.10	0.10	0.61	N/A	0.03	0.26	0.13	0.04	0.03	0.25	N/A	0.041	0.400	0.591	0.400	0.300	0.410
1970 - 71	N/A	0.43	0.53	0.19	0.10	0.09	0.61	N/A	0.01	0.23	0.12	0.05	0.03	0.25	N/A	0.023	0.434	0.632	0.417	0.333	0.410
1971 - 72	N/A	0.45	0.35	0.21	0.10	0.09	0.73	N/A	0.18	0.14	0.13	0.04	0.03	0.26	N/A	0.400	0.400	0.519	0.400	0.333	0.356
1972 - 73	N/A	0.20	0.37	0.30	0.10	0.10	0.44	N/A	0.08	0.15	0.17	0.04	0.04	0.18	N/A	0.400	0.405	0.557	0.400	0.400	0.400
1973 - 74	N/A	0.08	0.31	0.18	0.07	0.05	0.53	N/A	0.04	0.12	0.08	0.03	0.02	0.26	N/A	0.500	0.387	0.444	0.429	0.400	0.410

Table continued on next page

Blank space indicates Data Not Available at source hence average Average Yield could not be calculated!

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	N/A	0.10	0.62	0.18	0.18	0.07	0.62	N/A	0.04	0.23	0.08	1.03	0.03	0.25	N/A	0.400	0.371	0.444	0.375	0.429	0.403
1975 - 76	0.05	0.13	0.40	0.22	0.14	0.08	0.68	0.02	0.05	0.15	0.09	1.06	0.03	0.29	0.400	0.385	0.375	0.409	0.429	0.375	0.427
1976 - 77	0.06	0.13	0.29	0.15	0.13	0.08	0.71	0.02	0.06	0.11	0.09	1.06	0.03	0.30	0.333	0.462	0.379	0.400	0.462	0.375	0.423
1977 - 78	0.05	0.20	0.30	0.17	0.15	0.08	0.64	0.02	0.09	0.12	0.07	1.06	0.03	0.27	0.400	0.450	0.400	0.412	0.400	0.375	0.422
1978 - 79	0.05	0.21	0.30	0.15	0.19	0.11	0.64	0.02	0.10	0.12	0.08	1.08	0.04	0.27	0.400	0.476	0.400	0.400	0.421	0.364	0.422
1979 - 80	0.04	0.15	0.39	0.15	0.19	0.14	0.64	0.02	0.07	0.15	0.08	1.08	0.05	0.27	0.500	0.467	0.385	0.400	0.421	0.357	0.422
1980 - 81	0.03	0.16	0.41	0.20	0.18	0.14	0.64	0.01	0.08	0.16	0.08	1.07	0.05	0.27	0.333	0.500	0.390	0.400	0.389	0.357	0.422
1981 - 82	0.03	0.15	0.40	0.13	0.19	0.12	0.66	0.01	0.08	0.16	0.05	1.08	0.04	0.28	0.333	0.533	0.400	0.385	0.421	0.333	0.424
1982 - 83	0.01	0.15	0.33	0.18	0.20	0.17	0.64	0.00	0.08	0.17	0.07	1.08	0.07	0.27	0.000	0.533	0.515	0.389	0.400	0.412	0.422
1983 - 84	0.01	0.19	0.32	0.24	0.14	0.15	0.78	0.00	0.09	0.15	0.10	1.06	0.05	0.33	0.000	0.474	0.469	0.417	0.429	0.333	0.423
1984 - 85	0.01	0.21	0.41	0.23	0.17	0.11	0.76	0.01	0.10	0.19	0.10	1.07	0.04	0.32	1.000	0.476	0.463	0.435	0.412	0.364	0.421
1985 - 86	0.01	0.22	0.36	0.34	0.14	0.14	0.69	N/A	0.10	0.17	0.14	1.06	0.05	0.30	0.000	0.455	0.472	0.412	0.429	0.357	0.435
1986 - 87	0.01	0.23	0.35	0.33	0.13	0.12	0.48	0.00	0.11	0.15	0.14	1.05	0.04	0.19	0.000	0.478	0.429	0.424	0.365	0.333	0.356
1987 - 88		0.18	0.34	0.30	0.13	0.11	0.53	N/A	0.09	0.17	0.13	1.05	0.04	0.23	N/A	0.500	0.500	0.433	0.365	0.364	0.434
1988 - 89	0.01	0.19	0.33	0.23	0.12	0.12	0.35	0.00	0.09	0.17	0.10	1.05	0.04	N/A	0.000	0.474	0.515	0.435	0.417	0.333	N/A
1989 - 90	0.01	0.16	0.27	0.24	0.13	0.19	0.35	0.00	0.08	0.13	0.10	1.05	0.07	0.15	0.000	0.500	0.482	0.417	0.385	0.368	0.429
1990 - 91	0.01	0.14	0.27	0.12	0.15	0.14	0.44	0.00	0.07	0.13	0.09	1.07	0.05	0.19	0.000	0.500	0.482	0.500	0.438	0.357	0.432
1991 - 92	0.01	0.17	0.25	0.17	0.16	0.14	0.32	0.00	0.08	0.12	0.10	1.07	0.05	0.14	0.000	0.471	0.480	0.388	0.438	0.357	0.436
1992 - 93	0.01	0.19	0.25	0.17	0.11	0.15	0.33	0.00	0.08	0.11	0.07	1.04	0.06	N/A	0.000	0.421	0.440	0.412	0.364	0.400	N/A
1993 - 94	0.01	0.19	0.22	0.16	0.11	0.12	0.36	0.00	0.08	0.08	0.08	1.04	0.05	N/A	0.000	0.421	0.368	0.375	0.364	0.417	N/A
1994 - 95	0.01	0.18	0.22	0.12	0.10	0.09	0.40	0.00	0.08	0.08	0.08	1.03	0.04	N/A	0.000	0.444	0.364	0.417	0.300	0.444	N/A
1995 - 96	0.01	0.19	0.23	0.12	0.09	0.07	0.42	0.00	0.08	0.08	0.08	1.02	0.03	N/A	0.000	0.421	0.348	0.417	0.222	0.429	N/A
1996 - 97	0.01	0.19	0.23	0.10	0.10	0.04	0.43	0.00	0.08	0.06	0.04	1.02	0.02	N/A	0.000	0.421	0.261	0.400	0.200	0.500	N/A
1997 - 98	0.01	0.20	0.23	0.11	0.06	0.06	N/A	0.00	0.09	0.08	0.05	1.02	0.02	N/A	0.000	0.450	0.348	0.455	0.333	0.333	N/A
1998 - 99	0.01	0.16	0.23	0.13	0.06	0.04	0.44	N/A	0.07	0.10	0.05	1.02	0.02	0.19	N/A	0.438	0.357	0.385	0.333	0.500	0.432
1999 - 2000	0.01	0.18	0.25	0.12	0.06	0.04	0.44	N/A	0.22	0.09	0.05	1.02	0.02	0.20	N/A	1.222	0.346	0.417	0.333	0.500	0.455

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.5.

CHILIES

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	N/A	0.01	0.41	0.02	1.03	0.13	N/A	N/A	0.01	0.30	0.01	0.43	0.05	N/A	N/A	1.000	0.732	0.500	0.142	0.750	N/A
1952 - 53	0.04	0.00	0.28	0.36	0.44	0.00	N/A	0.01	0.00	0.07	0.07	0.11	0.05	N/A	0.250	0.000	0.250	0.194	0.250	0.250	N/A
1953 - 54	0.14	0.21	0.29	0.49	0.48	0.03	0.03	0.03	0.05	0.07	0.12	0.12	0.06	0.00	0.214	0.238	0.241	0.245	0.250	0.240	0.333
1954 - 55	0.14	0.32	0.28	0.61	0.46	0.17	0.01	0.15	0.13	0.11	0.24	0.19	0.07	0.00	0.429	0.406	0.393	0.393	0.396	0.412	0.000
1955 - 56	0.08	0.34	1.21	0.58	0.52	0.21	0.07	0.07	0.31	0.82	0.52	0.56	0.18	0.04	0.875	0.912	0.678	0.897	0.903	0.900	0.571
1956 - 57	0.93	0.33	1.22	0.49	0.52	0.17	0.07	0.42	0.26	0.75	0.33	0.35	0.11	0.05	0.667	0.788	0.615	0.674	0.673	0.647	0.714
1957 - 58	0.92	0.32	1.39	0.53	0.63	0.21	0.08	0.42	0.24	0.86	0.41	0.35	0.13	0.05	0.674	0.750	0.619	0.774	0.556	0.619	0.750
1958 - 59	0.82	0.34	1.51	1.28	0.76	0.20	0.23	0.55	0.27	0.93	1.01	0.38	0.12	0.12	0.671	0.794	0.616	0.789	0.500	0.600	0.522
1959 - 60	0.81	0.36	1.57	1.30	0.71	0.20	0.25	0.46	0.26	0.88	0.94	0.32	0.11	0.12	0.568	0.722	0.561	0.723	0.451	0.550	0.450
1960 - 61	0.93	0.38	1.42	1.51	0.67	0.17	0.28	0.55	0.27	0.81	1.07	0.32	0.09	0.14	0.591	0.711	0.570	0.709	0.478	0.529	0.500
1961 - 62	1.01	0.38	1.53	1.52	0.66	0.17	0.35	0.50	0.27	0.86	1.10	0.33	0.20	0.16	0.594	0.711	0.562	0.724	0.500	1.177	0.514
1962 - 63	0.81	0.51	0.97	1.61	0.64	0.19	0.46	0.50	0.37	0.54	1.17	0.34	0.11	0.23	0.617	0.726	0.557	0.727	0.531	0.579	0.500
1963 - 64	0.85	0.61	0.99	1.60	0.44	0.23	0.58	0.52	0.44	0.61	1.08	0.27	0.13	0.33	0.612	0.721	0.616	0.675	0.614	0.565	0.549
1964 - 65	1.01	0.51	0.92	1.43	0.56	0.23	0.65	0.52	0.34	0.62	0.96	0.38	0.13	0.40	0.614	0.667	0.674	0.671	0.679	0.565	0.615
1965 - 66	1.16	1.12	1.03	1.43	0.90	0.31	0.69	0.72	0.73	0.67	0.92	0.59	0.17	0.43	0.621	0.652	0.651	0.643	0.656	0.567	0.523
1966 - 67	1.17	1.14	1.09	1.34	0.95	0.33	0.69	0.73	0.74	0.71	0.86	0.56	0.18	0.43	0.624	0.649	0.651	0.642	0.659	0.546	0.523
1967 - 68	1.26	1.22	1.09	1.24	0.59	0.34	0.71	0.76	0.80	0.71	0.79	0.39	0.19	0.44	0.619	0.656	0.651	0.637	0.661	0.559	0.520
1968 - 69	1.29	1.27	1.13	1.26	0.64	0.33	0.74	0.80	0.83	0.75	0.81	0.42	0.19	0.45	0.620	0.654	0.664	0.643	0.656	0.576	0.522
1969 - 70	1.61	1.08	1.75	1.43	0.37	0.41	0.74	0.88	0.69	1.15	0.91	0.24	0.23	0.46	0.547	0.639	0.657	0.636	0.649	0.561	0.522
1970 - 71	1.43	1.39	1.99	1.50	0.20	0.38	0.74	0.87	0.89	1.31	0.96	0.20	0.21	0.46	0.608	0.640	0.658	0.640	0.667	0.553	0.522
1971 - 72	1.60	2.00	2.39	1.62	0.23	0.34	0.81	0.98	1.30	1.57	1.04	0.55	0.19	0.50	0.613	0.650	0.657	0.642	0.663	0.559	0.517
1972 - 73	1.60	2.28	2.90	1.68	0.20	0.55	1.02	0.95	1.51	1.88	1.03	0.53	0.36	0.62	0.600	0.662	0.648	0.613	0.663	0.554	0.505
1973 - 74	1.90	2.13	2.60	1.70	0.45	0.75	1.39	1.10	1.35	1.68	0.99	0.30	0.41	0.23	0.579	0.634	0.646	0.582	0.667	0.547	0.537

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	1.80	2.27	3.35	3.30	0.73	0.44	1.57	1.07	1.38	2.10	1.96	0.48	0.23	0.93	0.594	0.608	0.627	0.594	0.658	0.523	0.592
1975 - 76	1.27	2.17	3.22	3.50	0.72	0.46	1.42	0.77	1.30	1.91	2.18	0.45	0.25	0.83	0.506	0.599	0.593	0.623	0.625	0.544	0.595
1976 - 77	1.19	2.45	2.39	2.39	0.73	0.45	1.47	0.71	1.56	1.44	1.40	0.49	0.24	0.85	0.597	0.637	0.603	0.586	0.620	0.533	0.598
1977 - 78	1.13	2.30	2.63	1.65	0.80	0.47	1.23	0.68	1.43	1.55	0.95	0.50	0.27	0.71	0.502	0.622	0.589	0.576	0.625	0.575	0.577
1978 - 79	1.18	2.15	2.70	1.65	0.83	0.52	1.26	0.71	1.33	1.61	0.90	0.52	0.29	0.74	0.602	0.619	0.596	0.546	0.627	0.558	0.587
1979 - 80	1.24	2.28	2.75	1.60	0.50	0.47	1.25	0.73	1.44	1.64	0.92	0.56	0.27	0.72	0.589	0.632	0.596	0.575	0.622	0.575	0.576
1980 - 81	1.10	2.04	2.86	1.66	0.92	0.40	1.36	0.64	1.29	1.60	0.96	0.56	0.28	0.78	0.582	0.632	0.559	0.578	0.609	0.700	0.574
1981 - 82	1.00	1.62	2.70	1.90	0.92	0.48	1.45	0.59	1.04	1.59	0.95	0.56	0.27	0.84	0.590	0.642	0.589	0.500	0.609	0.563	0.579
1982 - 83	1.04	1.63	2.65	1.62	0.52	0.49	1.00	0.60	1.04	1.56	0.92	0.56	0.27	0.56	0.577	0.636	0.589	0.568	0.609	0.551	0.588
1983 - 84	0.99	1.16	2.64	1.71	0.89	0.50	1.67	0.57	0.75	1.52	0.93	0.54	0.28	0.96	0.576	0.647	0.576	0.544	0.607	0.560	0.578
1984 - 85	1.01	1.86	2.92	1.71	1.24	0.57	1.62	0.59	1.19	1.77	0.88	0.74	0.33	0.93	0.584	0.640	0.606	0.515	0.597	0.579	0.574
1985 - 86	0.99	1.75	2.84	1.73	1.13	0.50	1.50	0.54	1.12	1.65	0.93	0.66	0.28	0.86	0.546	0.640	0.581	0.538	0.584	0.560	0.579
1986 - 87	1.04	1.95	2.78	1.77	1.21	0.55	1.51	0.59	1.21	1.62	0.98	0.72	0.32	0.86	0.567	0.621	0.583	0.554	0.595	0.582	0.579
1987 - 88	1.04	2.03	2.74	1.77	1.23	0.69	1.47	0.59	1.28	1.60	0.99	0.75	0.33	0.84	0.567	0.631	0.584	0.559	0.610	0.565	0.571
1988 - 89	1.07	2.88	3.34	1.77	1.13	0.72	1.17	0.60	1.99	2.01	0.98	0.77	0.43	0.69	0.553	0.691	0.602	0.554	0.626	0.569	0.559
1989 - 90	1.09	2.86	3.16	1.64	1.13	0.69	1.15	0.61	1.85	2.00	0.90	0.82	0.33	0.60	0.560	0.647	0.629	0.549	0.617	0.565	0.551
1990 - 91	1.12	3.14	3.31	1.63	1.41	0.60	1.16	0.63	1.98	2.04	0.92	0.87	0.33	0.67	0.553	0.631	0.616	0.564	0.617	0.550	0.578
1991 - 92	1.20	3.20	3.24	1.42	1.33	0.58	0.94	0.68	2.06	2.12	0.99	0.86	0.32	0.55	0.557	0.644	0.654	0.556	0.619	0.552	0.588
1992 - 93	1.15	3.37	3.53	1.32	1.37	0.59	0.87	0.64	2.29	2.47	0.83	0.85	0.33	0.53	0.557	0.680	0.700	0.536	0.620	0.644	0.609
1993 - 94	1.02	3.45	3.42	1.35	1.55	0.56	1.04	0.57	2.34	2.38	0.80	0.95	0.33	0.70	0.559	0.678	0.696	0.659	0.613	0.679	0.603
1994 - 95	0.95	3.53	3.35	1.24	1.74	0.57	1.15	0.53	2.44	2.33	0.83	1.06	0.33	0.71	0.558	0.691	0.696	0.669	0.609	0.684	0.617
1995 - 96	0.97	3.61	3.46	1.93	1.87	0.54	1.15	0.56	2.54	2.37	2.34	1.14	0.37	0.73	0.577	0.704	0.685	1.212	0.610	0.685	0.608
1996 - 97	1.06	3.80	3.47	1.84	1.50	0.58	1.25	0.62	2.70	2.41	1.25	1.18	0.41	0.81	0.585	0.711	0.695	0.679	0.621	0.707	0.643
1997 - 98	1.03	3.91	3.48	1.85	1.64	0.55	1.24	0.61	2.74	2.40	1.26	0.99	0.33	0.79	0.592	0.701	0.690	0.681	0.604	0.691	0.607
1998 - 99	1.05	3.78	3.46	2.07	1.81	0.56	1.32	0.62	2.66	2.40	1.29	1.17	0.33	0.84	0.590	0.704	0.690	0.623	0.613	0.696	0.609
1999 - 2000	1.05	3.86	3.29	2.04	1.81	0.56	1.23	0.62	2.72	2.27	1.28	1.12	0.43	0.79	0.590	0.705	0.690	0.627	0.619	0.714	0.642

Blank space indicates Data Not Available at source hence average Average Yield could not be calculated

Table B.6.

COCONUT

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976 - 77	0.17	0.30	1.88	1.94	1.05	1.37	0.16	0.29	1.60	10.71	2.83	7.42	1.61	0.54	1.706	5.333	5.697	3.369	6.807	4.351	5.400
1977 - 78	0.16	0.34	1.78	1.96	1.05	1.27	0.07	0.34	1.55	12.97	5.29	14.45	1.30	0.41	2.125	4.853	7.287	5.510	13.962	4.815	5.857
1978 - 79	0.16	0.34	1.89	1.93	1.05	1.27	0.05	0.41	1.72	15.44	4.60	8.15	1.39	0.39	2.563	5.059	8.169	4.466	7.769	5.145	4.875
1979 - 80	0.15	0.34	1.97	1.94	1.22	0.42	0.10	0.27	1.70	16.70	6.33	8.11	1.58	0.50	1.800	5.000	8.477	6.087	6.738	3.762	5.000
1980 - 81	0.18	0.35	2.07	1.25	1.41	1.49	0.11	0.33	0.58	27.10	8.45	9.25	2.86	0.24	1.831	1.657	13.092	6.760	6.560	5.817	2.182
1981 - 82	0.17	0.35	2.23	1.20	1.78	0.57	0.13	0.43	2.22	18.78	10.17	11.55	2.78	0.49	2.529	5.343	8.422	8.475	6.657	4.877	3.769
1982 - 83	0.17	0.39	2.37	1.12	1.78	0.47	0.14	0.30	1.59	17.26	7.81	13.45	2.77	0.32	1.765	4.077	7.283	6.973	7.528	5.894	2.286
1983 - 84	0.18	0.58	2.43	1.35	2.12	0.49	0.15	1.27	15.50	9.28	17.21	3.46	0.28	0.833	2.190	6.379	6.874	8.118	7.061	1.867	
1984 - 85	0.22	0.51	2.56	1.23	2.12	0.45	0.19	0.15	3.60	16.74	10.26	18.40	1.48	0.21	0.682	7.059	6.539	8.342	8.639	3.255	1.105
1985 - 86	0.25	0.66	2.78	1.08	2.12	0.52	0.20	0.26	2.39	17.51	5.71	24.56	2.25	0.38	1.040	3.621	6.299	5.287	10.586	4.327	1.900
1986 - 87	0.28	0.72	3.61	1.45	2.12	0.47	0.17	0.30	2.38	18.24	17.33	26.55	2.18	0.39	1.071	3.306	5.053	11.952	11.578	4.615	2.294
1987 - 88	0.31	0.80	3.55	1.22	2.16	0.59	0.19	0.29	4.31	18.89	11.43	38.55	4.45	0.96	0.936	5.398	5.321	9.369	17.852	7.542	5.053
1988 - 89	0.34	0.81	3.76	1.12	2.16	0.61	0.24	0.31	3.41	23.57	10.93	22.73	2.95	1.54	0.912	4.210	6.269	9.759	10.523	4.835	6.417
1989 - 90	0.37	0.94	3.99	1.14	2.16	0.56	0.24	0.77	5.82	27.49	10.04	28.55	3.23	0.90	2.081	6.192	6.890	8.807	13.037	5.765	3.750
1990 - 91	0.58	1.02	4.11	1.17	2.25	0.58	0.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1991 - 92	0.66	1.57	5.01	1.21	3.58	0.89	0.37	1.15	9.24	26.57	11.35	35.57	6.37	2.88	1.742	5.885	5.303	9.380	10.020	7.157	7.784
1992 - 93	0.70	1.66	5.05	1.15	4.97	1.07	0.47	1.12	5.35	29.71	14.16	45.73	5.02	1.58	1.600	3.223	5.883	10.489	9.201	4.652	3.362
1993 - 94	0.70	1.68	5.05	1.92	5.90	1.09	0.58	1.76	6.91	13.06	12.26	72.55	5.54	3.35	2.514	4.113	2.586	6.385	12.297	5.081	5.776
1994 - 95	0.71	1.75	5.13	1.95	6.05	1.19	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1995 - 96	0.75	1.91	5.05	2.02	6.10	1.36	0.60	1.71	6.89	28.60	12.25	76.37	8.44	1.79	2.280	3.607	5.663	6.064	12.520	6.205	6.317
1996 - 97	1.92	1.91	4.97	2.04	6.22	1.45	0.52	4.46	7.50	26.74	12.33	54.13	7.56	1.45	2.322	3.927	5.380	6.044	8.629	5.228	6.635
1997 - 98	1.91	1.95	4.55	2.09	6.50	1.85	0.51	5.36	8.29	29.96	13.58	55.55	8.97	2.97	2.806	4.251	6.585	6.498	8.551	4.845	5.824
1998 - 99	1.97	2.06	5.00	2.12	6.35	1.73	0.51	8.18	11.46	38.81	16.87	59.15	11.44	2.05	4.152	5.563	7.762	7.958	9.271	6.613	4.020
1999 - 2000	2.04	2.11	5.10	2.22	6.34	1.73	0.51	6.31	9.91	34.85	16.78	66.79	12.36	2.09	3.093	4.697	6.833	7.559	10.535	7.145	3.943

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.7.

GRAM

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	N/A	0.16	1.45	0.14	2.41	N/A	N/A	N/A	0.12	0.67	0.07	2.57	N/A	N/A	N/A	0.750	0.462	0.500	0.651	N/A	N/A
1952 - 53	N/A	0.18	1.55	0.13	2.15	N/A	N/A	N/A	0.13	0.71	0.06	2.65	N/A	N/A	N/A	0.722	0.458	0.462	0.739	N/A	N/A
1953 - 54	N/A	0.27	1.09	0.10	1.35	0.02	N/A	N/A	0.15	0.59	0.06	2.65	0.01	N/A	N/A	0.556	0.541	0.600	0.630	0.500	N/A
1954 - 55	N/A	0.26	0.43	0.15	1.11	N/A	N/A	N/A	0.15	0.24	0.09	2.62	N/A	N/A	N/A	0.577	0.558	0.600	0.559	N/A	N/A
1955 - 56	N/A	0.26	0.41	0.11	1.74	N/A	N/A	N/A	0.13	0.10	0.05	2.78	N/A	N/A	N/A	0.500	0.244	0.455	0.448	N/A	N/A
1956 - 57	N/A	0.28	0.44	0.11	0.45	N/A	N/A	N/A	0.16	0.20	0.06	2.23	N/A	N/A	N/A	0.571	0.455	0.545	0.511	N/A	N/A
1957 - 58	N/A	0.28	0.47	0.10	0.22	N/A	N/A	N/A	0.15	0.26	0.06	2.39	N/A	N/A	N/A	0.536	0.553	0.600	0.565	N/A	N/A
1958 - 59	N/A	0.28	0.47	0.15	0.45	0.05	N/A	N/A	0.21	0.26	0.08	2.24	0.03	N/A	N/A	0.750	0.553	0.533	0.533	0.600	N/A
1959 - 60	N/A	0.28	0.45	0.18	0.45	0.04	N/A	N/A	0.16	0.23	0.10	2.23	0.02	N/A	N/A	0.571	0.511	0.556	0.511	0.500	N/A
1960 - 61	N/A	0.30	0.45	0.17	0.45	0.07	N/A	N/A	0.18	0.23	0.09	2.22	0.04	N/A	N/A	0.600	0.511	0.529	0.489	0.571	N/A
1961 - 62	N/A	0.29	0.71	0.21	0.22	0.06	N/A	N/A	0.18	0.36	0.13	2.14	0.03	N/A	N/A	0.621	0.507	0.619	0.500	0.500	N/A
1962 - 63	N/A	0.41	0.64	0.28	0.35	0.06	N/A	N/A	0.25	0.32	0.17	2.28	0.03	N/A	N/A	0.610	0.500	0.607	0.509	0.500	N/A
1963 - 64	N/A	0.46	0.68	0.27	0.24	0.06	0.02	N/A	0.30	0.44	0.16	2.15	0.04	0.01	N/A	0.652	0.647	0.593	0.625	0.557	0.500
1964 - 65	N/A	0.45	0.65	0.27	0.22	0.07	N/A	N/A	0.29	0.40	0.15	2.13	0.04	N/A	N/A	0.644	0.615	0.556	0.591	0.571	N/A
1965 - 66	0.10	0.77	0.67	0.27	0.22	0.02	N/A	0.05	0.35	0.41	0.11	2.13	N/A	N/A	0.500	0.455	0.612	0.407	0.591	0.500	N/A
1966 - 67	0.11	0.71	0.65	0.23	0.22	0.02	N/A	0.06	0.32	0.41	0.09	2.13	0.01	N/A	0.545	0.451	0.631	0.391	0.591	0.500	N/A
1967 - 68	0.07	0.77	0.71	0.23	0.24	0.02	N/A	0.04	0.34	0.44	0.10	2.14	0.01	N/A	0.571	0.442	0.620	0.435	0.583	0.500	N/A
1968 - 69	0.07	0.74	0.65	0.22	0.19	0.04	N/A	0.03	0.33	0.40	0.10	2.11	0.03	N/A	0.429	0.446	0.615	0.455	0.579	0.750	N/A
1969 - 70	0.05	0.74	0.79	0.24	0.18	0.02	N/A	0.03	0.33	0.47	0.10	2.11	0.01	N/A	0.500	0.446	0.595	0.417	0.611	0.500	N/A
1970 - 71	0.10	0.27	0.78	0.18	0.19	N/A	N/A	0.05	0.13	0.49	0.07	2.11	N/A	N/A	0.500	0.481	0.628	0.389	0.579	N/A	N/A
1971 - 72	0.10	2.47	0.80	0.28	0.19	0.02	0.03	0.05	1.15	0.49	0.12	2.09	0.01	0.01	0.500	0.466	0.613	0.429	0.615	0.500	0.333
1972 - 73	0.25	2.47	1.00	0.31	0.41	0.03	0.03	0.12	1.21	0.46	0.14	2.23	0.02	0.01	0.480	0.490	0.460	0.452	0.575	0.557	0.333
1973 - 74	0.25	1.47	1.84	0.59	0.25	0.03	0.03	0.12	0.74	0.88	0.29	2.13	0.14	0.01	0.480	0.503	N/A	0.492	0.464	4.557	0.333

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Hajo	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.27	1.60	1.26	0.51	1.12	0.65	0.02	0.13	0.80	0.24	0.10	0.16	0.01	N/A	0.481	0.500	0.190	0.196	0.696	1.333	N/A
1975 - 76	0.27	0.92	0.88	0.56	1.16	0.64	0.03	0.20	0.49	0.30	0.11	0.02	0.01	N/A	0.741	0.533	0.341	0.196	0.077	1.250	N/A
1976 - 77	0.11	0.46	0.92	0.47	1.11	0.64	0.05	0.06	0.23	0.24	0.09	0.02	0.01	N/A	0.545	0.500	0.261	0.191	0.095	0.750	N/A
1977 - 78	0.08	0.45	1.06	0.46	1.13	0.63	0.08	0.04	0.21	0.24	0.09	0.03	0.01	N/A	0.500	0.467	0.222	0.196	0.130	1.571	N/A
1978 - 79	0.10	0.46	1.16	0.50	1.16	0.65	0.09	0.05	0.22	0.26	0.10	0.04	0.01	N/A	0.500	0.476	0.224	0.200	0.160	1.444	N/A
1979 - 80	0.09	0.52	1.30	0.60	1.13	0.66	0.11	0.04	0.26	0.31	0.14	0.04	0.01	N/A	0.444	0.500	0.238	0.233	0.121	1.556	N/A
1980 - 81	0.09	0.81	1.27	0.68	1.44	0.10	0.11	0.04	0.44	0.35	0.18	0.04	0.01	N/A	0.444	0.541	0.276	0.265	0.091	1.500	N/A
1981 - 82	0.05	0.40	1.00	0.70	1.46	0.10	0.17	0.02	0.22	0.36	0.20	0.04	0.01	N/A	0.400	0.550	0.360	0.286	0.089	1.700	N/A
1982 - 83	0.05	0.75	1.06	0.45	1.11	0.19	0.18	0.02	0.41	0.51	0.23	0.22	0.01	0.07	0.400	0.547	0.481	0.511	0.440	0.389	0.389
1983 - 84	0.09	0.43	1.15	0.67	1.12	0.14	0.27	0.04	0.21	0.54	0.39	0.32	0.01	0.12	0.444	0.488	0.470	0.582	0.416	0.357	0.444
1984 - 85	0.35	0.62	1.22	0.78	1.14	0.07	0.07	0.16	0.33	0.58	0.41	0.32	0.01	0.03	0.457	0.532	0.475	0.526	0.432	0.429	0.429
1985 - 86	0.10	0.60	2.40	0.85	1.12	0.04	0.12	0.04	0.32	1.16	0.45	0.26	0.01	0.05	0.400	0.533	0.483	0.529	0.426	0.250	0.417
1986 - 87	0.10	0.74	1.02	0.69	1.12	0.04	0.10	0.04	0.38	0.44	0.35	0.12	0.01	0.04	0.400	0.514	0.431	0.507	0.414	0.250	0.400
1987 - 88	0.11	0.66	1.03	0.68	1.11	0.05	0.12	0.05	0.33	0.46	0.34	0.13	0.01	0.05	0.455	0.500	0.447	0.500	0.433	1.400	0.417
1988 - 89	0.05	0.74	0.81	0.76	1.14	0.03	0.11	0.02	0.37	0.45	0.39	0.16	0.01	0.05	0.400	0.500	0.556	0.513	0.471	0.333	0.455
1989 - 90	0.05	0.56	0.75	0.71	1.41	0.03	0.08	0.02	0.28	0.34	0.37	0.17	0.01	0.04	0.400	0.500	0.453	0.521	0.425	0.333	0.500
1990 - 91	0.03	0.68	0.80	0.60	1.43	0.05	0.05	0.01	0.35	0.39	0.30	0.18	0.01	0.02	0.333	0.515	0.488	0.500	0.419	0.400	0.400
1991 - 92	0.03	0.64	0.78	0.60	1.43	0.06	0.05	0.01	0.33	0.35	0.39	0.19	0.01	0.02	0.333	0.516	0.449	0.650	0.442	0.500	0.400
1992 - 93	0.05	0.69	0.72	0.52	1.41	0.07	0.06	0.01	0.39	0.29	0.33	0.16	0.01	0.03	0.200	0.565	0.403	0.635	0.390	1.429	0.500
1993 - 94	0.05	0.68	0.65	0.47	1.12	0.06	0.06	0.02	0.37	0.24	0.25	0.12	0.01	0.03	0.400	0.544	0.369	0.532	0.375	1.500	0.500
1994 - 95	0.05	0.66	0.61	0.46	1.17	0.06	0.06	0.02	0.37	0.22	0.27	0.13	0.01	0.03	0.400	0.561	0.361	0.587	0.351	1.500	0.500
1995 - 96	0.05	0.64	0.63	0.61	1.12	0.04	0.04	0.03	0.37	0.23	0.43	0.11	0.01	0.02	0.500	0.578	0.365	0.705	0.344	0.500	0.500
1996 - 97	0.06	0.63	0.61	0.61	1.12	0.04	0.04	0.03	0.36	0.22	0.43	0.13	0.01	0.02	0.500	0.571	0.361	0.705	0.419	1.500	0.500
1997 - 98	0.06	0.64	0.59	0.58	1.12	0.04	0.18	0.03	0.37	0.21	0.41	0.12	0.01	0.14	0.500	0.578	0.356	0.707	0.375	1.500	0.778
1998 - 99	0.06	0.62	0.60	0.58	1.16	0.04	0.20	0.03	0.36	0.22	0.41	0.11	0.01	0.09	0.500	0.581	0.367	0.707	0.314	0.500	0.455
1999 - 2000	0.05	0.64	0.56	0.48	1.12	0.04	0.19	0.03	0.38	0.20	0.35	0.08	0.01	0.09	0.600	0.594	0.357	0.729	0.320	0.500	0.474

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.8.

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Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.27	35.00	24.14	24.67	47.11	0.70	1.47	1.60	190.20	117.89	127.46	292.19	4.25	8.89	5.926	5.434	4.884	8.689	6.217	6.343	6.048
1952 - 53	0.24	32.24	25.01	15.52	45.11	0.88	1.60	1.69	182.67	172.86	103.39	392.96	6.94	14.37	7.042	5.666	6.912	6.662	8.593	7.888	8.381
1953 - 54	0.33	30.75	22.26	15.50	37.91	0.98	1.98	2.64	275.96	129.17	126.94	310.52	7.75	15.72	8.000	8.974	5.803	8.190	8.176	7.929	7.939
1954 - 55	0.25	27.32	21.45	15.53	40.11	0.62	1.40	1.66	191.87	118.12	74.33	326.88	4.15	9.38	6.640	7.023	5.037	4.497	8.125	6.356	6.700
1955 - 56	0.28	34.40	26.27	15.51	46.91	1.00	1.41	2.28	219.98	167.17	125.13	519.24	8.14	11.55	8.143	6.395	6.364	7.579	10.680	8.140	8.192
1956 - 57	0.36	28.47	25.99	15.58	40.11	1.04	1.42	2.72	211.67	149.03	112.01	361.17	7.75	10.74	7.556	7.435	5.734	6.756	8.991	7.490	7.563
1957 - 58	0.41	36.42	28.27	15.66	39.43	0.90	1.42	3.23	300.50	213.19	119.12	326.06	7.11	11.30	7.878	8.251	7.541	7.150	8.307	7.921	7.958
1958 - 59	0.45	26.42	29.15	15.76	42.44	1.01	2.08	3.52	279.41	198.04	113.43	384.52	7.67	16.13	7.822	10.576	6.794	6.768	9.060	7.952	7.755
1959 - 60	0.45	37.23	29.36	17.27	42.72	0.93	2.00	3.72	295.82	143.34	122.89	403.50	7.74	16.64	8.267	7.946	4.882	7.116	9.445	8.223	8.320
1960 - 61	0.50	31.65	29.60	16.69	44.15	0.64	2.05	3.42	181.49	178.21	136.64	337.57	4.33	13.89	6.840	5.734	6.021	8.187	7.646	6.750	6.778
1961 - 62	0.54	37.64	29.99	17.12	45.93	0.62	2.34	4.19	266.46	197.01	135.78	417.95	4.63	18.29	7.759	7.079	6.569	7.931	9.160	7.790	7.816
1962 - 63	0.59	33.87	30.53	16.81	42.43	0.69	2.66	3.06	165.78	151.16	81.63	244.03	3.55	13.79	5.186	4.895	4.951	4.856	5.747	5.203	5.184
1963 - 64	0.65	34.38	31.23	16.85	42.43	0.65	2.24	4.95	282.16	252.99	119.93	304.31	4.95	17.06	7.615	8.207	8.101	7.203	7.130	7.662	7.616
1964 - 65	0.54	34.92	33.71	15.34	42.15	0.65	2.25	3.64	266.37	198.71	115.39	278.85	4.48	15.10	6.741	7.628	5.895	7.522	6.523	6.769	6.711
1965 - 66	0.63	31.77	31.86	14.17	44.37	1.57	2.21	4.05	244.77	175.76	104.92	263.77	10.03	14.14	6.429	7.704	5.517	7.404	5.945	6.389	6.398
1966 - 67	0.68	34.07	32.21	15.60	40.84	1.71	2.36	4.96	285.42	202.00	163.44	237.62	12.43	17.18	7.294	8.378	6.271	9.846	5.905	7.257	7.260
1967 - 68	0.68	34.52	32.99	17.29	44.43	1.77	3.45	4.86	269.46	198.13	181.03	294.25	12.73	24.78	7.147	7.806	5.006	10.470	6.623	7.161	7.182
1968 - 69	0.76	23.81	25.82	15.81	32.83	1.92	3.42	5.46	212.71	158.52	129.12	210.40	13.75	24.62	7.184	8.934	6.139	8.167	6.450	7.182	7.195
1969 - 70	0.80	30.20	29.31	15.95	37.12	2.09	3.53	7.06	300.35	282.06	147.25	253.00	18.45	31.14	8.825	9.945	9.623	9.732	6.816	8.347	8.322
1970 - 71	0.82	34.46	28.79	20.01	36.55	2.19	3.50	5.97	298.29	176.88	122.31	272.11	15.85	25.38	7.281	8.656	6.144	6.112	7.417	7.251	7.251
1971 - 72	0.85	38.40	30.39	16.34	40.26	2.40	3.85	6.82	281.17	218.99	161.58	333.66	19.18	30.74	8.024	7.322	7.206	9.989	8.300	7.963	7.984
1972 - 73	0.85	35.33	27.35	15.30	38.44	1.80	2.88	6.39	268.48	171.09	116.45	320.55	13.45	21.65	7.518	7.599	6.256	7.611	8.339	7.473	7.517
1973 - 74	0.73	44.05	35.00	20.44	39.83	2.29	2.06	5.56	296.70	288.17	168.29	287.03	17.45	15.70	7.616	0.674	8.233	8.233	7.250	7.625	7.621

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Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.73	31.00	23.87	16.85	32.20	2.54	2.22	5.00	158.90	200.27	127.46	219.67	17.40	24.25	6.849	5.126	8.190	7.551	6.822	6.850	6.851
1975 - 76	0.67	23.17	23.71	16.75	22.70	2.60	2.22	5.13	145.26	225.16	119.22	167.90	20.04	21.69	7.657	6.269	9.496	7.105	7.397	7.708	7.632
1976 - 77	0.73	24.00	27.00	19.10	27.40	2.14	2.23	4.88	195.43	189.90	106.99	154.53	14.28	14.91	6.685	5.143	7.633	5.602	5.640	6.673	6.686
1977 - 78	0.76	28.27	20.56	14.35	29.00	2.00	2.21	4.16	171.56	124.47	105.78	142.39	16.42	12.66	5.474	6.069	6.054	0.403	4.910	5.473	5.481
1978 - 79	0.81	28.59	22.92	15.30	27.11	2.97	2.45	6.34	207.05	220.67	109.20	192.56	24.03	15.79	7.827	7.242	9.628	7.137	7.104	7.827	7.829
1979 - 80	0.56	29.16	23.81	19.02	27.91	2.16	2.24	4.31	218.89	202.28	131.70	213.61	16.62	17.24	7.696	7.507	8.496	6.924	7.654	7.694	7.696
1980 - 81	0.66	28.40	24.30	18.67	26.41	2.39	2.36	5.36	231.08	207.38	145.19	203.26	21.01	15.18	8.121	8.137	8.534	7.777	7.696	8.112	8.127
1981 - 82	0.67	31.00	24.71	18.00	25.00	2.57	2.45	5.78	263.54	219.44	152.57	216.49	22.20	21.17	8.627	8.501	8.881	8.476	8.660	8.638	8.641
1982 - 83	0.60	37.56	26.08	16.75	28.72	2.26	2.22	4.94	320.26	197.25	136.53	215.25	23.43	15.58	8.233	8.527	7.563	8.146	7.495	8.192	8.208
1983 - 84	0.51	36.16	23.35	14.75	19.52	2.46	2.06	4.28	344.99	197.25	93.83	156.05	20.83	17.44	8.392	9.541	8.448	6.357	7.994	8.466	8.466
1984 - 85	0.47	35.20	22.82	15.76	27.72	2.30	2.28	3.60	214.46	162.95	158.48	231.52	20.71	17.34	7.660	6.093	7.141	10.056	8.352	9.004	7.605
1985 - 86	0.42	49.27	24.93	18.15	29.36	2.50	2.41	3.82	396.32	221.52	153.38	327.44	17.17	21.94	9.095	8.044	8.686	8.451	11.153	6.868	9.104
1986 - 87	0.40	36.45	18.44	14.42	20.45	1.83	2.32	3.93	341.31	192.46	153.69	194.98	18.10	22.80	9.825	5.364	10.437	10.658	9.535	9.891	9.828
1987 - 88	0.39	35.04	18.32	16.25	22.10	1.47	2.03	3.47	307.05	183.25	131.06	205.77	14.98	12.29	8.897	3.763	10.003	8.065	9.311	10.191	9.010
1988 - 89	0.31	38.44	18.27	13.40	19.34	1.88	1.35	2.19	312.80	129.70	95.90	79.79	24.60	10.09	7.065	8.137	7.099	7.157	4.126	13.085	7.259
1989 - 90	0.20	34.74	22.54	14.10	16.83	1.97	1.12	2.52	262.74	190.68	146.26	145.84	16.60	11.28	12.600	7.563	8.460	10.373	8.666	8.426	9.559
1990 - 91	0.31	41.62	18.50	11.51	18.39	1.70	1.14	2.76	379.18	180.55	80.28	185.48	5.62	12.56	8.903	3.067	9.760	6.975	10.086	3.306	11.018
1991 - 92	0.30	42.62	18.24	13.05	23.05	1.06	1.02	2.54	391.30	114.39	107.02	206.51	11.12	9.24	8.457	3.181	6.271	8.182	8.959	10.491	9.059
1992 - 93	0.27	34.10	18.21	15.32	19.90	1.35	1.12	3.04	349.94	200.33	148.79	286.80	15.10	10.58	11.259	13.262	11.001	9.717	14.412	11.185	9.446
1993 - 94	0.24	30.58	16.17	8.51	16.57	1.07	0.24	2.13	264.27	115.33	71.28	188.52	8.40	5.34	8.875	6.642	7.132	8.376	11.377	7.851	11.119
1994 - 95	0.25	33.60	16.45	14.73	22.17	0.92	0.58	2.49	329.85	181.00	140.83	232.75	10.11	5.34	9.960	3.817	11.003	9.561	10.498	10.985	9.207
1995 - 96	0.21	33.52	16.50	12.90	21.74	0.91	0.60	1.95	269.75	146.39	113.37	275.67	9.44	5.02	9.286	3.047	8.272	8.788	12.680	10.374	10.033
1996 - 97	0.17	35.93	16.83	14.52	22.01	1.38	0.93	1.48	256.55	142.16	122.28	236.34	12.65	19.38	8.706	7.140	8.447	8.422	10.738	9.167	11.699
1997 - 98	0.20	37.88	16.46	13.58	22.19	1.11	0.37	1.86	333.00	122.81	121.20	272.84	11.41	10.22	9.300	3.791	7.461	8.925	12.296	10.275	12.437
1998 - 99	0.15	30.61	15.11	11.51	17.27	1.06	0.62	1.33	238.33	121.40	112.99	175.76	11.64	5.40	8.867	7.786	8.034	9.817	10.177	10.981	7.805
1999 - 2000	0.16	29.09	14.59	10.55	15.08	1.06	0.29	1.39	241.08	96.58	110.30	166.51	10.79	6.44	8.688	8.287	6.620	10.455	11.042	10.179	7.236

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.9.

LINSEED

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)						Average Yield (Tonnes per Hectare)							
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.12	0.20	0.73	0.04	0.46	0.02	N/A	0.05	0.08	0.26	0.01	0.19	0.01	N/A	0.417	0.400	0.356	0.250	0.396	0.500	N/A
1952 - 53	0.12	N/A	0.25	0.03	0.41	N/A	N/A	0.05	N/A	0.08	0.01	0.14	N/A	N/A	0.417	N/A	0.320	0.333	0.342	N/A	N/A
1953 - 54	0.10	0.13	0.27	0.02	0.46	N/A	N/A	0.07	0.05	0.08	0.01	0.15	N/A	N/A	0.700	0.385	0.296	0.500	0.326	N/A	N/A
1954 - 55	0.17	0.13	0.41	0.02	0.40	N/A	N/A	0.05	0.04	0.12	0.01	0.11	N/A	N/A	0.294	0.308	0.293	0.500	0.275	N/A	N/A
1955 - 56	0.14	0.09	0.34	0.02	0.10	N/A	0.00	0.06	0.04	0.15	0.01	0.04	N/A	0.00	0.429	0.444	0.441	0.500	0.400	N/A	N/A
1956 - 57	0.15	0.14	0.27	0.03	0.07	0.09	0.00	0.07	0.06	0.12	0.01	0.03	0.03	0.00	0.467	0.429	0.444	0.333	0.429	0.333	N/A
1957 - 58	0.14	0.12	1.52	0.03	0.04	0.03	0.03	0.06	0.04	0.60	0.01	0.02	0.03	0.01	0.429	0.333	0.395	0.333	0.500	0.333	0.333
1958 - 59	0.14	0.13	0.27	0.02	0.22	0.03	0.04	0.06	0.05	0.11	0.01	0.03	0.01	0.02	0.429	0.385	0.407	0.500	0.364	0.333	0.500
1959 - 60	0.13	0.13	0.32	0.02	0.20	0.03	0.05	0.05	0.05	0.11	0.01	0.07	0.01	0.02	0.335	0.385	0.344	0.500	0.350	0.333	0.400
1960 - 61	0.12	0.13	0.32	0.02	0.20	0.02	0.05	0.05	0.05	0.12	0.01	0.07	0.01	0.02	0.417	0.385	0.375	0.500	0.350	0.500	0.400
1961 - 62	0.13	0.13	0.38	0.02	0.22	0.03	0.05	0.05	0.06	0.14	0.01	0.07	0.01	0.02	0.335	0.462	0.368	0.500	0.318	0.333	0.400
1962 - 63	0.10	0.09	0.40	0.02	0.23	0.03	0.04	0.04	0.04	0.14	0.01	0.09	0.01	0.02	0.400	0.444	0.350	0.500	0.391	0.333	0.500
1963 - 64	0.13	0.08	0.36	0.02	0.24	0.03	0.04	0.05	0.04	0.16	0.01	0.11	0.01	0.02	0.335	0.500	0.444	0.500	0.458	0.333	0.500
1964 - 65	0.14	0.10	0.35	0.02	0.23	0.02	0.05	0.06	0.04	0.14	0.01	0.10	0.01	0.02	0.429	0.400	0.400	0.500	0.435	0.500	0.400
1965 - 66	0.10	0.11	0.31	0.02	0.20	0.05	0.04	0.06	0.05	0.12	0.01	0.09	0.02	0.02	0.600	0.455	0.387	0.500	0.450	0.400	0.500
1966 - 67	0.15	0.12	0.39	0.03	0.18	0.04	0.06	0.07	0.05	0.15	0.02	0.03	0.02	0.02	0.457	0.417	0.385	0.667	0.444	0.500	0.333
1967 - 68	0.17	0.22	0.37	0.02	0.18	0.04	0.05	0.08	0.10	0.15	0.01	0.08	0.01	0.02	0.471	0.455	0.405	0.500	0.444	0.250	0.400
1968 - 69	0.18	0.23	0.36	0.02	0.16	0.04	0.05	0.08	0.10	0.14	0.01	0.07	0.02	0.02	0.444	0.435	0.389	0.500	0.438	0.500	0.400
1969 - 70	0.18	0.22	0.27	0.04	0.10	0.02	0.04	0.08	0.10	0.11	0.02	0.05	0.01	0.02	0.444	0.455	0.407	0.500	0.500	0.500	0.500
1970 - 71	0.18	0.21	0.12	0.04	0.10	0.00	0.04	0.08	0.09	0.05	0.02	0.05	0.00	0.02	0.444	0.429	0.417	0.500	0.500	N/A	0.500
1971 - 72	0.18	0.20	0.26	0.12	0.10	0.00	0.03	0.08	0.09	0.11	0.06	0.05	0.00	0.01	0.444	0.450	0.423	0.500	0.500	N/A	0.333
1972 - 73	0.13	0.20	0.31	0.06	0.03	0.01	0.03	0.08	0.09	0.13	0.03	0.01	0.00	0.01	0.615	0.450	0.419	0.500	0.333	0.000	0.333
1973 - 74	0.20	0.15	1.83	0.11	0.03	0.04	0.03	0.09	0.07	0.77	0.05	0.04	0.02	0.01	0.450	0.467	0.421	0.455	0.444	0.500	0.333

Table continued on next page

Blank space indicates Data Not Available at source (Hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.18	0.11	1.52	0.35	0.33	0.05	0.02	0.09	0.04	0.64	0.29	0.58	0.02	0.01	0.500	0.364	0.421	0.387	0.474	0.400	0.500
1975 - 76	0.17	0.38	3.60	0.44	0.28	0.00	0.02	0.08	0.16	1.49	0.20	0.12		0.01	0.471	0.421	0.414	0.455	0.462		0.500
1976 - 77	0.17	0.27	3.35	0.37	0.34		0.02	0.08	0.11	1.39	0.30	0.15		0.01	0.471	0.407	0.415	0.526	0.441		0.500
1977 - 78	0.24	0.30	3.24	0.38	0.20		0.02	0.11	0.12	1.33	0.16	0.09		0.01	0.458	0.400	0.411	0.571	0.450		0.500
1978 - 79	0.26	0.35	3.55	0.38	0.21	0.00	0.02	0.12	0.15	1.47	0.16	0.10		0.01	0.462	0.429	0.414	0.571	0.455		0.333
1979 - 80	0.25	0.33	4.07	0.33	0.21	0.01	0.02	0.11	0.14	1.68	0.19	0.10		0.02	0.440	0.424	0.413	0.576	0.435		0.500
1980 - 81	0.24	0.42	4.27	0.42	0.24	0.02	0.02	0.11	0.18	1.75	0.25	0.10	0.01	0.03	0.458	0.429	0.410	0.595	0.417	0.500	0.500
1981 - 82	0.25	0.49	4.02	0.42	0.28	0.02	0.02	0.11	0.21	1.65	0.25	0.12	0.01	0.03	0.440	0.429	0.410	0.595	0.429	0.500	0.500
1982 - 83	0.24	0.49	4.12	0.52	0.28	0.00	0.02	0.10	0.21	1.69	0.54	0.11		0.02	0.417	0.429	0.410	0.587	0.423		0.500
1983 - 84	0.23	0.56	4.43	1.53	0.45	0.00	0.02	0.10	0.23	1.82	0.87	0.19		0.01	0.435	0.411	0.411	0.569	0.422		0.500
1984 - 85	0.24	1.22	5.44	1.55	1.14	0.03	0.02	0.11	0.61	2.25	0.88	0.50	0.01	0.02	0.458	0.500	0.414	0.568	0.439	0.333	0.400
1985 - 86	0.13	1.15	5.23	1.67	0.66	0.00	0.02	0.06	0.53	2.14	0.95	0.29		0.00	0.462	0.461	0.409	0.569	0.439		0.000
1986 - 87	0.29	1.35	4.82	1.60	0.50	0.01	0.02	0.12	0.60	1.98	0.73	0.22	0.00	0.00	0.414	0.444	0.411	0.456	0.440	0.000	
1987 - 88	0.09	1.43	5.32	1.22	0.59	0.01	0.02	0.04	0.65	0.22	0.57	0.26	0.00	0.01	0.444	0.455	0.041	0.467	0.441	0.000	0.250
1988 - 89	0.11	1.34	4.74	1.06	0.58	0.01	0.02	0.04	0.60	2.50	0.40	0.25	0.00	0.01	0.364	0.448	0.527	0.377	0.431	0.000	0.250
1989 - 90	0.08	1.11	4.72	1.11	0.60	0.00	0.02	0.04	0.49	1.89	0.51	0.26		0.03	0.500	0.441	0.400	0.460	0.433		0.500
1990 - 91	0.11	1.65	4.71	0.77	0.61	0.00	0.02	0.05	0.73	1.92	0.33	0.16		0.03	0.455	0.442	0.408	0.429	0.434		0.500
1991 - 92	0.13	1.65	4.76	0.87	0.75	0.00	0.02	0.06	0.73	2.21	0.37	0.34		0.02	0.462	0.442	0.464	0.425	0.436		0.400
1992 - 93	0.14	1.95	4.34	0.60	0.95	0.00	0.02	0.14	0.88	2.13	0.30	0.42		0.02	1.000	0.451	0.491	0.500	0.424		0.333
1993 - 94	0.26	2.31	4.75	0.58	1.07	0.00	0.02	0.26	1.08	2.45	0.26	0.49		0.02	1.000	0.458	0.516	0.464	0.458		0.286
1994 - 95	0.41	2.21	4.90	0.83	1.05	0.00	0.02	0.41	1.07	2.63	0.42	0.49		0.02	1.000	0.484	0.537	0.472	0.462		0.400
1995 - 96	0.23	2.24	4.97	0.83	1.23	0.01	0.02	0.23	1.36	2.67	0.37	0.57		0.02	1.000	0.607	0.537	0.446	0.463	0.000	0.400
1996 - 97	0.20	2.54	5.11	0.84	1.28	0.01	0.02	0.23	1.30	2.88	0.37	0.58	0.00	0.02	1.150	0.512	0.564	0.441	0.460	0.000	0.400
1997 - 98	0.31	2.72	4.89	0.90	1.13	0.02	0.02	0.31	1.43	2.62	0.41	0.52	0.01	0.02	1.000	0.526	0.536	0.456	0.460	0.500	0.400
1998 - 99	0.10	2.60	4.94	1.19	1.23	0.02	0.02	0.03	1.06	2.64	0.51	0.57	0.01	0.02	0.300	0.408	0.534	0.429	0.463	0.500	0.400
1999 - 2000	0.12	2.58	5.25	1.35	0.85	0.02	0.02	0.01	1.38	2.89	0.54	0.41	0.01	0.02	0.063	0.535	0.550	0.432	0.461	0.500	0.400

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.10.

MAIZE

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.05	0.17	0.04	0.41	0.15	0.04	0.72	0.02	0.16	0.04	0.27	0.09	0.02	0.53	0.400	0.941	1.000	0.659	0.600	0.500	0.735
1952 - 53	0.04	0.18	0.18	0.81	0.09	0.09	0.83	0.01	0.17	0.17	0.52	0.05	0.06	0.61	0.250	0.944	0.944	0.642	0.625	0.667	0.735
1953 - 54	0.04	0.45	0.16	0.87	0.11	0.11	1.07	0.04	0.25	0.15	0.39	0.06	0.06	0.72	1.000	0.556	0.938	0.448	0.545	0.545	0.673
1954 - 55	0.40	0.08	0.08	0.97	0.10	0.11	0.97	0.03	0.04	0.03	0.49	0.04	0.04	0.65	0.075	0.500	0.375	0.505	0.400	0.364	0.670
1955 - 56		0.12	1.05	1.01	0.08	0.19	1.55	0.07	0.41	0.40	0.03	0.07	0.07			3.417	0.381	0.030	0.875	0.363	
1956 - 57		0.11	1.08	1.00	0.07	0.11	1.53	0.05	0.42	0.45	0.04	0.04	0.06			3.818	0.417	0.040	0.571	0.545	
1957 - 58		0.11	2.52	1.05	0.97	0.10	1.49	0.06	0.13	0.44	0.04	0.04	0.07			1.182	0.175	0.038	0.571	0.700	
1958 - 59	0.08	0.11	1.76	1.49	0.13	0.10	1.58	0.08	0.06	0.79	0.58	0.07	0.03	0.75	1.000	0.545	0.449	0.389	0.538	0.300	0.446
1959 - 60	0.06	0.11	0.55	1.29	0.15	0.07	1.49	0.06	0.06	0.23	0.65	0.08	0.03	0.89	1.000	0.545	0.418	0.504	0.533	0.429	0.527
1960 - 61	0.06	0.11	0.82	1.31	0.15	0.07	1.38	0.06	0.06	0.40	0.66	0.07	0.03	1.00	1.000	0.545	0.488	0.504	0.467	0.429	0.532
1961 - 62	0.06	0.11	0.75	1.27	0.16	0.06	1.90	0.03	0.06	0.38	0.64	0.08	0.03	1.02	0.500	0.545	0.507	0.504	0.500	0.500	0.537
1962 - 63	0.07	1.19	0.73	1.32	0.15	0.09	1.99	0.04	0.60	0.37	0.67	0.09	0.04	1.07	0.571	0.504	0.507	0.508	0.500	0.444	0.536
1963 - 64	0.07	1.17	0.65	1.29	0.16	0.07	1.50	0.03	0.59	0.32	0.66	0.08	0.03	0.76	0.429	0.504	0.492	0.512	0.500	0.429	0.507
1964 - 65	0.07	1.33	0.43	1.22	0.18	0.07	1.52	0.03	0.67	0.21	0.61	0.07	0.13	0.77	0.429	0.504	0.488	0.500	0.467	1.557	0.507
1965 - 66	0.09	0.48	0.94	1.42	0.19	0.14	2.22	0.05	0.24	0.47	0.89	0.10	0.07	1.41	0.556	0.500	0.500	0.627	0.526	0.500	0.500
1966 - 67	0.10	0.62	0.99	1.40	0.20	0.14	2.83	0.05	0.31	0.61	0.88	0.10	0.07	1.41	0.500	0.500	0.616	0.629	0.500	0.500	0.498
1967 - 68	0.11	0.91	0.96	1.42	0.12	0.15	3.10	0.06	0.45	0.60	0.90	0.06	0.06	1.55	0.545	0.495	0.625	0.634	0.500	0.533	0.500
1968 - 69	0.09	1.08	1.36	1.36	0.16	0.19	3.19	0.05	0.54	0.83	0.86	0.08	0.07	1.60	0.556	0.500	0.610	0.632	0.500	0.368	0.502
1969 - 70	0.13	1.01	1.43	1.57	0.10	0.30	3.43	0.07	0.51	0.86	0.98	0.05	0.15	1.72	0.538	0.505	0.601	0.624	0.500	0.500	0.501
1970 - 71	0.17	1.28	1.78	1.62	0.23	0.32	3.35	0.09	0.64	1.07	1.01	0.11	0.15	1.78	0.529	0.500	0.601	0.623	0.478	0.500	0.531
1971 - 72	0.10	2.02	1.60	1.64	0.17	0.53	2.35	0.09	1.01	0.98	1.02	0.09	0.27	1.18	0.900	0.500	0.613	0.622	0.529	0.500	0.502
1972 - 73	0.15	2.02	1.30	1.65	0.48	0.42	1.88	0.08	1.00	0.81	1.03	0.24	0.21	0.95	0.533	0.495	0.623	0.624	0.500	0.500	0.505
1973 - 74	0.15	2.31	1.60	1.13	0.54	0.45	4.00	0.08	1.15	0.96	0.70	0.27	0.23	2.02	0.533	0.498	0.600	0.619	0.500	0.511	0.505

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.16	3.23	1.37	1.52	0.71	0.39	3.54	0.06	1.63	0.85	0.90	0.37	0.20	1.80	0.500	0.505	0.628	0.592	0.521	0.513	0.505
1975 - 76	0.20	1.77	1.54	1.45	0.56	0.35	5.41	0.10		0.96	0.88	0.48	0.18	2.64	0.500	0.000	0.623	0.607	0.500	0.500	0.468
1976 - 77	0.15	1.73	1.03	1.55	0.93	0.37	6.15	0.07	0.72	0.64	0.93	0.46	0.11	2.31	0.467	0.416	0.621	0.600	0.554	0.297	0.375
1977 - 78	0.20	1.68	1.20	1.32	0.99	0.34	5.23	0.10	0.85	0.74	0.78	0.51	0.16	2.68	0.500	0.506	0.617	0.591	0.515	0.529	0.512
1978 - 79	0.17	1.62	1.18	1.25	0.94	0.37	5.31	0.09	0.82	0.73	0.73	0.48	0.22	2.74	0.529	0.506	0.619	0.584	0.511	0.054	0.515
1979 - 80	0.16	1.11	1.09	1.18	0.86	0.41	5.36	0.08	0.57	0.67	0.69	0.45	0.21	2.78	0.500	0.514	0.615	0.585	0.523	0.512	0.519
1980 - 81	0.15	1.27	1.17	1.27	0.83	0.41	5.06	0.08	0.65	0.73	0.75	0.42	0.11	2.63	0.533	0.512	0.624	0.591	0.506	0.756	0.520
1981 - 82	0.13	1.27	1.02	1.20	0.80	0.31	5.69	0.06	0.66	0.64	0.66	0.41	0.16	2.98	0.462	0.520	0.627	0.567	0.513	0.516	0.524
1982 - 83	0.10	1.19	1.15	1.31	1.17	0.32	6.02	0.04	0.62	0.72	0.75	0.60	0.17	3.14	0.400	0.521	0.626	0.573	0.513	0.531	0.522
1983 - 84	0.11	1.17	1.13	2.14	0.95	0.24	3.59	0.05	0.64	0.71	1.25	0.43	0.13	1.89	0.455	0.547	0.628	0.584	0.453	0.542	0.536
1984 - 85	0.16	0.79	1.05	2.45	1.14	0.26	3.61	0.07	0.42	0.66	1.44	0.57	0.14	1.90	0.438	0.532	0.629	0.588	0.500	0.538	0.525
1985 - 86	0.17	0.76	0.98	2.40	1.12	0.24	4.10	0.08	0.41	0.62	1.42	0.56	0.13	2.17	0.471	0.539	0.633	0.592	0.500	0.542	0.529
1986 - 87	0.11	1.25	1.00	1.36	0.71	0.43	4.11	0.05	0.66	0.63	0.80	0.35	0.23	2.21	0.455	0.528	0.630	0.588	0.493	0.535	0.538
1987 - 88	0.13	1.67	0.95	1.64	0.87	0.32	3.26	0.06	0.88	0.60	0.96	0.42	0.17	1.76	0.462	0.527	0.632	0.585	0.483	0.531	0.540
1988 - 89	0.11	1.39	0.90	1.28	0.90	0.55	2.84	0.06	0.76	0.57	0.72	0.44	0.28	1.54	0.545	0.547	0.633	0.563	0.489	0.527	0.542
1989 - 90	0.13	1.44	0.73	1.36	0.65	0.42	2.78	0.07	0.79	0.46	0.80	0.32	0.22	1.52	0.538	0.549	0.630	0.588	0.492	0.524	0.547
1990 - 91	0.10	1.66	0.54	1.43	0.76	0.66	3.00	0.05	0.90	0.33	0.84	0.38	0.35	1.63	0.500	0.542	0.611	0.587	0.500	0.530	0.543
1991 - 92	0.11	1.57	0.55	1.24	0.84	0.46	2.31	0.05	0.89	0.34	0.73	0.24	0.25	1.27	0.455	0.567	0.618	0.589	0.286	0.543	0.550
1992 - 93	0.11	1.36	0.53	1.45	0.59	0.48	2.43	0.05	0.76	0.33	0.88	0.35	0.27	1.47	0.455	0.559	0.623	0.607	0.593	0.563	0.605
1993 - 94	0.10	1.40	0.55	1.03	0.63	0.50	2.62	0.05	0.77	0.35	0.63	0.41	0.27	1.55	0.500	0.550	0.636	0.612	0.651	0.540	0.532
1994 - 95	0.09	1.44	0.53	1.33	0.66	0.46	2.60	0.04	0.81	0.34	0.80	0.41	0.25	1.55	0.444	0.563	0.642	0.602	0.621	0.543	0.535
1995 - 96	0.08	1.53	0.70	1.42	0.55	0.40	2.34	0.04	0.86	0.48	0.88	0.34	0.22	1.54	0.500	0.562	0.686	0.620	0.618	0.550	0.535
1996 - 97	0.07	1.62	0.77	1.55	0.56	0.34	2.39	0.11	0.91	0.52	0.96	0.35	0.19	1.57	1.571	0.562	0.675	0.619	0.625	0.559	0.557
1997 - 98	0.08	1.64	0.80	1.57	0.56	0.35	2.33	0.04	0.92	0.54	0.94	0.35	0.20	1.54	0.500	0.561	0.675	0.599	0.625	0.571	0.561
1998 - 99	0.08	1.81	0.90	1.77	0.55	0.34	2.38	0.04	1.01	0.63	1.08	0.35	0.19	0.97	0.500	0.558	0.700	0.610	0.636	0.559	0.408
1999 - 2000	0.08	1.87	0.75	1.86	0.58	0.35	2.23	0.04	1.04	0.52	1.13	0.36	0.25	1.48	0.500	0.556	0.693	0.608	0.621	0.571	0.664

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.11.

MESTA

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)							
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	
1951 - 52					0.20																	
1952 - 53		0.33	0.28	0.28	0.33		0.02		1.63	2.12	1.76	2.02		0.10		4.935	7.571	6.286	6.121			5.000
1953 - 54		0.32	0.26	0.30	0.20		0.02		1.61	1.91	2.16	1.26		0.10		5.031	7.346	7.200	6.300			5.000
1954 - 55		0.36	0.03	0.17	0.32		0.01		1.47	0.12	0.70	1.31		0.02		4.083	4.000	4.118	4.094			2.000
1955 - 56		0.36	0.13	0.89	0.48				1.70	0.59	4.46	2.45				4.722	4.539	5.011	5.000			
1956 - 57		0.34	0.12	0.79	0.38				1.68	0.60	3.94	1.94				4.941	5.000	4.987	4.974			
1957 - 58		0.65	0.33	0.83	0.41				3.02	1.54	4.12	2.42				4.646	4.667	4.964	5.902			
1958 - 59		0.97	0.55	0.71	1.57		0.03		4.23	2.41	3.52	3.80		0.12		4.361	4.382	4.958	4.975			4.000
1959 - 60		1.01	0.43	0.72	2.40		0.02		4.73	2.02	3.36	11.19		0.09		4.683	4.698	4.667	4.663			4.500
1960 - 61		1.21	0.48	0.81	2.48		0.02		3.00	2.38	3.87	3.01		0.06		2.479	4.958	4.778	3.633			3.000
1961 - 62		1.21	0.59	2.94	3.15		0.01		4.54	2.91	14.07	11.48		0.03		3.752	4.932	4.786	3.644			3.000
1962 - 63		1.62	0.78	2.96	3.27	0.02	0.02		5.14	3.28	14.19	10.13	0.05	0.07		3.173	4.205	4.794	3.096	3.000		3.500
1963 - 64		2.02	0.83	2.67	3.42	0.02	0.02		6.40	3.47	12.79	10.57	0.05	0.07		3.168	4.181	4.790	3.091	3.000		3.500
1964 - 65		3.90	1.16	2.31	2.62	0.04	0.02		13.11	4.76	9.36	8.50	0.12	0.06		3.362	4.103	4.052	3.244	3.000		3.000
1965 - 66		3.63	1.59	2.33	3.35	0.01	0.02		12.30	6.63	9.45	12.74	0.04	0.06		3.388	4.170	4.056	3.275	4.000		3.000
1966 - 67		3.61	1.37	1.82	2.63	0.01	0.02		13.03	5.64	7.37	9.06	0.04	0.05		3.609	4.117	4.050	3.445	4.000		2.500
1967 - 68		2.86	1.23	1.64	2.25	0.02	0.02		9.88	5.09	6.66	7.48	0.05	0.07		3.455	4.138	4.061	3.324	3.000		3.500
1968 - 69		2.91	1.14	1.30	1.67	0.02	0.03		10.49	4.70	5.13	5.55	0.05	0.09		3.605	4.123	3.946	3.323	2.500		3.000
1969 - 70		2.45	1.16	2.02	1.46		0.02		8.86	4.79	8.08	4.87		0.06		3.616	4.129	4.000	3.336			3.000
1970 - 71		1.68	1.29	2.44	1.18		0.02		6.08	5.39	9.69	3.93		0.07		3.619	4.178	3.971	3.331			3.500
1971 - 72		4.05	3.45	2.50	2.70		0.02		14.74	14.18	9.93	9.08		0.06		3.640	4.110	3.972	3.363			3.000
1972 - 73		3.52	1.45	2.84	2.53		0.02		12.91	5.96	11.04	3.57		0.08		3.668	4.110	3.887	3.387			4.000
1973 - 74		3.32	2.30	2.79	2.09	0.01			1.19	9.20	10.85	7.20	0.02			0.358	4.000	3.889	3.445	2.000		

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75		4.90	3.84	2.15	2.40	0.05	0.02		17.87	15.82	8.33	6.00	0.18	0.06		3.647	4.120	3.874	3.333	3.600	3.600
1975 - 76		3.51	2.86	2.51	1.74	0.05	0.06		15.10	12.59	9.76	5.80	0.18	0.20		4.302	4.402	3.888	3.333	3.600	3.600
1976 - 77		3.72	3.41	1.53	1.96	0.01	0.07		16.91	14.25	10.57	6.57	0.25	0.22		4.546	4.179	5.776	3.352	3.600	3.643
1977 - 78		3.06	3.48	2.50	1.52	0.02	0.05		12.88	15.22	9.47	5.07	0.17	0.18		4.209	4.374	3.788	3.333	3.600	3.600
1978 - 79		3.68	3.99	2.53	1.54	0.03	0.05		15.97	17.59	9.64	5.15	0.11	0.17		4.340	4.409	3.889	3.344	3.667	3.400
1979 - 80		4.61	3.25	2.36	2.37	0.02	0.08		19.59	14.27	9.18	7.90	0.27	0.28		4.250	4.391	3.890	3.332	3.600	3.600
1980 - 81		4.68	4.00	2.07	2.22	0.02	0.17		20.39	16.87	7.97	7.48	0.27	0.58		4.357	4.218	3.850	3.369	3.600	3.412
1981 - 82		5.75	3.20	1.95	1.35	0.02	0.13		24.59	14.18	7.71	4.61	0.27	0.46		4.277	4.411	3.954	3.415	3.600	3.639
1982 - 83		5.41	2.64	1.76	2.38	0.02	0.13		23.11	11.78	6.65	8.37	0.28	0.46		4.272	4.462	3.892	3.517	4.000	3.639
1983 - 84		3.52	2.55	2.37	1.89	0.01	0.13		23.55	11.22	9.31	6.52	0.34	0.46		6.690	4.400	3.928	3.444	4.000	3.539
1984 - 85		5.37	2.39	2.57	2.07	0.01	0.12		27.09	9.98	10.52	7.12	0.23	0.44		5.045	4.176	4.093	3.440	3.000	3.667
1985 - 86		5.20	2.92	1.86	2.11	0.01	0.12		24.42	12.94	7.84	7.46	0.23	0.48		4.696	4.432	4.170	3.536	3.000	4.000
1986 - 87		4.52	2.02	1.58	1.46	0.00	0.17		22.16	8.90	6.48	5.15	0.22	0.63		4.903	4.406	4.101	3.527		3.706
1987 - 88		5.07	1.43	1.49	1.10	0.02	0.19		26.40	6.38	6.22	3.93	0.26	0.73		5.207	4.462	4.175	3.573	3.000	3.642
1988 - 89		4.39	1.44	1.19	0.98	0.02	0.12	0.03	22.31	6.24	4.97	3.52	0.11	0.46		5.082	4.333	4.177	3.592	3.600	3.633
1989 - 90		2.16	1.09	1.04	0.93	0.01	0.07	0.03	20.97	5.14	4.34	3.37	0.23	0.27		9.708	4.716	4.173	3.624	3.000	3.857
1990 - 91		4.56	0.78	0.99	0.95	0.01	0.07		23.09	3.61	4.11	3.46	0.22	0.27		5.064	4.628	4.152	3.604	2.000	3.257
1991 - 92		4.53	0.86	0.89	0.95	0.01	0.04		22.22	3.93	3.75	3.46	0.25	0.15		4.905	4.570	4.214	3.604	3.000	3.750
1992 - 93		3.61	0.83	0.95	1.00	0.01	0.05	0.02	17.87	3.82	3.92	3.62	0.24	0.19		4.950	4.602	4.126	3.620	4.000	3.600
1993 - 94		3.46	0.55	0.93	0.71	0.02	0.04		17.42	2.54	1.01	2.76	0.27	0.18		5.035	4.618	1.086	3.887	3.600	4.500
1994 - 95		3.22	0.52	0.88	0.64	0.02	0.04	0.01	16.33	2.34	3.90	2.45	0.28	0.17		5.071	4.500	4.432	3.828	4.000	4.250
1995 - 96		3.50	0.61	0.79	0.51	0.01	0.04	0.01	17.90	2.04	3.58	1.75	0.26	0.15		5.114	4.656	4.532	3.431	3.000	3.750
1996 - 97		3.41	0.56	0.95	0.44	0.03	0.03	0.01	17.38	2.57	4.87	1.52	0.11	0.11		5.097	4.589	5.126	3.455	3.667	3.667
1997 - 98		2.60	0.58	1.08	0.55	0.02	0.03	0.01	18.33	2.69	5.40	1.99	0.19	0.13		5.092	4.638	5.094	3.618	3.000	4.333
1998 - 99		3.05	0.55	1.01	0.46	0.02	0.04	0.02	15.73	2.50	5.22	1.58	0.27	0.14		5.157	4.545	5.168	3.435	3.600	3.600
1999 - 2000	0.01	3.05	0.65	0.94	0.41	0.02	0.03	0.04	15.69	2.89	4.90	1.45	0.27	0.12	4.000	5.144	4.446	5.213	3.537	3.600	4.000

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated).

Table B.12.

ONION

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1980 - 81	0.26	0.34	1.19	2.10	0.72	0.14	0.55	0.24	0.52	1.71	3.78	1.62	0.23	1.11	0.923	1.529	1.437	1.786	2.555	1.438	2.018
1981 - 82	0.29	0.35	1.20	1.50	0.73	0.24	0.61	0.66	0.67	2.37	3.31	1.67	0.49	1.40	2.276	1.914	1.975	2.200	2.225	2.130	2.295
1982 - 83	0.18	0.77	0.79	0.62	0.66	0.24	0.49	0.37	1.45	1.69	1.44	1.94	0.91	1.36	2.056	1.593	2.139	2.323	2.255	3.370	2.776
1983 - 84	0.19	0.68	0.83	0.75	0.84	0.32	0.67	0.28	1.26	1.69	1.64	1.77	2.58	1.61	1.474	1.553	2.036	2.187	2.117	3.600	2.403
1984 - 85	0.19	0.85	1.24	0.76	0.84	0.25	0.70	0.30	1.71	2.78	1.73	1.85	2.56	1.76	1.579	2.012	2.242	2.276	2.225	2.240	2.514
1985 - 86	0.22	0.63	1.44	0.84	0.22	0.25	0.83	0.32	1.23	3.23	2.32	0.55	2.92	2.17	1.455	1.552	2.243	2.833	2.500	2.069	2.615
1986 - 87	0.19	0.95	1.44	0.84	0.87	0.31	0.86	0.31	1.89	1.82	2.12	1.93	2.72	2.16	1.632	1.990	1.264	2.595	2.215	9.067	2.535
1987 - 88	0.16	1.10	1.39	0.83	0.85	0.31	0.49	0.25	2.27	1.81	2.12	1.87	2.79	1.28	1.563	2.064	1.302	2.554	2.200	9.000	2.612
1988 - 89	0.17	1.15	2.01	0.75	0.88	0.24	0.52	0.38	2.97	2.14	2.08	1.87	0.45	1.14	2.235	2.593	1.065	2.733	2.125	2.250	2.192
1989 - 90	0.15	1.13	1.65	0.94	0.92	0.24	0.48	0.32	2.50	2.07	2.42	1.87	0.57	1.15	2.133	2.212	1.119	2.638	2.033	2.192	2.396
1990 - 91	0.17	1.33	1.84	0.71	0.97	0.32	0.53	0.38	2.99	1.99	1.93	2.04	0.72		2.235	2.248	1.082	2.718	2.100	2.250	
1991 - 92	0.16	1.55	1.81	0.71	0.94	0.43	0.43	0.37	3.40	2.37	1.95	1.50	1.06	0.99	2.313	2.194	1.309	2.761	1.555	2.465	2.302
1992 - 93	0.17	1.50	1.82	0.73	0.96	0.40	0.39	0.38	3.51	2.71	2.17	1.63	1.02	0.91	2.235	2.340	1.442	2.782	1.655	2.550	2.333
1993 - 94	0.17	1.55	2.11	0.78	1.47	0.44	0.39	0.38	3.71	3.30	2.10	3.23	1.15	0.92	2.235	2.354	1.564	2.692	2.197	2.614	2.359
1994 - 95	0.13	1.39	2.12	0.73	1.58	0.41	0.35	0.31	4.09	3.53	2.02	3.68	1.07	0.85	2.385	2.942	1.665	2.781	2.325	2.610	2.429
1995 - 96	0.15	1.77	1.85	0.81	1.50	0.38	0.36	0.42	4.27	3.17	2.37	3.73	1.00	0.89	2.800	2.412	1.714	2.926	2.311	2.532	2.472
1996 - 97	0.16	1.82	1.90	0.82	1.51	0.35	0.37	0.43	4.42	3.26	2.32	3.76	1.05	0.93	2.688	2.429	1.716	2.878	2.325	2.692	2.514
1997 - 98	0.18	2.06	2.07	0.91	1.58	0.35	0.44	0.50	5.00	3.62	2.59	3.71	1.03	1.06	2.778	2.427	1.749	2.846	2.345	2.641	2.455
1998 - 99	0.17	1.88	2.19	0.97	1.73	0.52	0.47	0.48	4.51	3.51	2.62	4.06	1.32	1.18	2.824	2.399	1.603	2.938	2.347	2.538	2.511
1999 - 2000	0.20	2.01	1.70	0.96	1.42	0.43	0.42	0.55	4.17	3.06	2.63	3.19	1.14	1.05	2.750	2.075	1.800	2.948	2.245	2.651	2.500

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.13.

ORANGE

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1988 - 89	0.06	0.19	0.21	0.45	0.01	0.30	1.39	0.58	1.80	2.04	4.63	0.11	2.96	14.02	9.667	9.474	9.714	10.244	11.000	9.557	12.014
1989 - 90	0.06	0.21	0.29	0.37	0.03	0.24	1.39	0.56	2.11	2.83	3.75	0.33	2.90	14.14	9.333	10.048	9.759	10.139	11.011	11.623	12.014
1990 - 91	0.06	0.23	0.27	0.46	0.03	0.31	1.47	0.59	2.28	2.63	4.77	0.33	3.08	14.98	9.833	9.913	9.741	10.370	11.000	9.924	10.197
1991 - 92	0.06	0.27	0.27	0.26	0.03	0.36	1.62	0.56	2.67	2.63	2.67	0.35	3.65	16.47	9.333	9.389	9.741	10.269	11.667	10.339	10.197
1992 - 93	0.07	0.42	0.26	0.33	0.32	0.37	1.66	0.67	4.10	2.51	3.39	3.31	3.73	16.93	9.571	9.762	9.654	10.271	10.344	10.081	10.197
1993 - 94	0.08	0.48	0.27	0.39	0.18	0.38	1.81	0.61	4.14	3.24	3.99	1.78	3.75	18.84	7.625	8.625	12.000	10.231	9.897	9.947	10.429
1994 - 95	0.08	0.48	0.29	0.45	0.17	0.30	1.87	0.57	4.20	3.05	4.25	1.70	2.98	22.55	7.125	8.750	10.517	9.444	10.000	9.992	10.197
1995 - 96	0.07	0.50	0.26	0.45	0.17	0.29	1.89	0.55	4.42	2.99	4.62	1.69	2.77	28.01	7.857	8.840	10.679	10.267	9.941	9.992	10.197
1996 - 97	0.06	0.50	0.29	0.45	0.19	0.25	1.93	0.48	4.48	3.06	4.65	1.95	2.54	29.03	8.000	8.950	10.552	10.422	10.303	10.197	11.740
1997 - 98	0.06	0.49	0.29	0.40	0.19	0.22	1.92	0.50	3.90	3.18	4.24	1.89	2.26	29.51	8.333	7.959	10.966	10.600	9.947	10.273	15.106
1998 - 99	0.05	0.50	0.30	0.40	0.19	0.24	1.77	0.44	4.76	3.28	4.19	1.92	2.57	28.26	8.800	9.520	10.933	10.475	10.105	10.708	15.966
1999 - 2000	0.06	0.50	0.29	0.40	0.19	0.23	1.44	0.46	4.68	2.70	3.74	1.90	2.32	21.76	7.667	9.380	9.310	9.350	10.000	10.087	15.125

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.14.

OTHER CEREAL & SMALL MILLETS

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)							
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	
1951 - 52			2.02	0.16						1.01	0.08											
1952 - 53		2.02	2.02	0.16			0.57		1.02	1.02	0.08			0.28		0.505	0.505	0.500				0.491
1953 - 54		1.09	1.39	0.06	0.15		0.41		0.59	0.59	0.04	0.08		0.23		0.541	0.541	0.500	0.533			0.561
1954 - 55		0.41	0.47	0.07	0.14		0.45		0.23	0.27	0.04	0.04		0.13		0.561	0.575	0.571	0.285			0.239
1955 - 56		1.56	1.61	0.31	0.12		0.69		0.87	0.90	0.17	0.04		0.19		0.558	0.559	0.548	0.333			0.275
1956 - 57		1.28	2.23	0.26					0.74	1.30	0.17					0.578	0.583	0.586				
1957 - 58		1.24		0.34	0.02				0.72		0.20					0.581		0.588				
1958 - 59		1.30	1.17	0.32	0.24	0.02	0.49		0.51	0.54	0.13	0.10		0.19		0.392	0.394	0.406	0.417	0.388		
1959 - 60		1.30	1.14	0.32	0.22	0.02	0.49		0.73	0.60	0.13	0.10	0.01	0.22		0.562	0.448	0.469	0.455	0.500		0.449
1960 - 61		1.33	1.21	0.53	0.02	0.03	0.49		0.75	0.57	0.24		0.01	0.22		0.564	0.471	0.453		0.333		0.449
1961 - 62		1.30	1.15	0.35	0.01	0.03	0.70		0.70	0.54	0.17		0.01	0.33		0.539	0.470	0.486		0.333		0.471
1962 - 63		2.27	1.23	0.33		0.06	1.30		1.22	0.58	0.15		0.03	0.62		0.537	0.472	0.485		0.500		0.477
1963 - 64	0.01	2.02	1.01	0.20	0.01		1.30		1.02	0.51	0.09			0.65		0.505	0.505	0.450				0.530
1964 - 65	0.01	2.10	1.03	0.25	0.01		1.30		1.18	0.50	0.13			0.65		0.562	0.485	0.520				0.530
1965 - 66	0.02	2.11	1.19	0.28	0.04		1.33		0.95	0.70	0.17	0.02		0.67		0.450	0.504	0.607	0.500			0.534
1966 - 67	0.01	2.35	1.35	0.22	0.04		1.26		1.17	0.68	0.09	0.02		0.63		0.498	0.504	0.409	0.500			0.530
1967 - 68	0.03	2.20	1.25	0.24	0.05	0.02	1.22	0.01	1.19	0.62	0.09	0.02	0.01	0.61	0.333	0.500	0.496	0.375	0.400	0.500		0.530
1968 - 69	0.03	2.24	0.83	0.27	0.17	0.03	1.22	0.02	1.12	0.42	0.11	0.08	0.01	0.61	0.667	0.500	0.506	0.407	0.477	0.333		0.500
1969 - 70	0.03	2.38	0.94	0.28	0.22	0.02	1.05	0.02	1.19	0.46	0.12	0.10	0.01	0.53	0.667	0.500	0.489	0.414	0.455	0.500		0.505
1970 - 71	0.05	2.02	0.94	0.24	0.12	0.05	0.82	0.03	1.02	0.47	0.10	0.06	0.02	0.43	0.600	0.505	0.500	0.417	0.500	0.400		0.524
1971 - 72	0.07	2.82	9.10	1.35	0.80	0.02	0.56	0.04	1.41	4.07	0.55	0.36		0.29	0.571	0.500	0.490	0.407	0.455			0.518
1972 - 73	0.06	3.10	5.71	1.33	0.67	0.11	0.55	0.03	1.55	2.86	0.55	0.30	0.05	0.29	0.500	0.500	0.501	0.444	0.444	0.455		0.527
1973 - 74	0.09	6.02	5.80	5.20	0.21	0.63	0.53	0.04	3.01	2.96	2.31	0.09	0.32	0.28	0.444	0.500	0.510	0.444	0.423	0.508		0.528

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.06	7.19	7.54	6.92	0.89	0.27	1.21	0.03	3.28	4.11	2.98	0.40	0.18	0.61	0.500	0.456	0.545	0.428	0.445	0.511	0.504
1975 - 76	0.04	7.28	7.66	5.86	0.41	0.07	1.20	0.02	3.29	1.72	2.23	0.19	0.03	0.68	0.500	0.452	0.537	0.410	0.463	0.429	0.557
1976 - 77	0.05	4.12	7.16	2.55	0.71	0.07	2.73	0.03	1.73	3.89	1.04	0.32	0.03	1.42	0.500	0.420	0.543	0.408	0.451	0.429	0.520
1977 - 78	0.05	4.39	5.53	3.07	0.93	0.20	2.15	0.03	1.83	1.59	1.44	0.42	0.09	1.10	0.600	0.417	0.526	0.403	0.451	0.450	0.512
1978 - 79	0.06	4.62	7.47	3.89	1.00	0.23	2.20	0.03	1.94	2.09	1.38	0.45	0.10	1.13	0.500	0.420	0.534	0.407	0.451	0.455	0.511
1979 - 80	0.06	4.56	5.42	3.55	0.93	0.07	1.90	0.03	1.02	4.50	1.43	0.42	0.03	0.96	0.500	0.224	0.534	0.400	0.451	0.429	0.505
1980 - 81	0.07	4.07	5.20	3.25	0.89	0.09	1.93	0.04	2.03	4.69	1.30	0.40	0.04	0.98	0.571	0.499	0.533	0.400	0.445	0.444	0.508
1981 - 82	0.08	5.41	5.53	3.10	0.95	0.09	2.00	0.03	2.66	3.65	1.25	0.43	0.04	1.01	0.375	0.508	0.534	0.403	0.451	0.444	0.505
1982 - 83	0.07	2.67	3.48	0.45	0.54	0.03	0.61	0.03	1.36	1.84	0.23	0.24	0.01	0.32	0.429	0.509	0.529	0.417	0.444	0.333	0.525
1983 - 84	0.06	3.86	2.50	0.73	0.58	0.03	0.47	0.04	2.06	1.91	0.12	0.26	0.02	0.25	0.500	0.534	0.546	0.416	0.445	0.667	0.532
1984 - 85	0.02	6.54	2.40	0.73	0.15	0.05	0.65	0.01	3.51	1.34	0.11	0.51	0.02	0.34	0.500	0.537	0.558	0.392	0.444	0.400	0.523
1985 - 86	0.02	5.67	1.55	0.07	0.93		0.57	0.01	3.02	0.96	0.35	0.42	0.20		0.500	0.533	0.582	0.402	0.451		0.541
1986 - 87	0.02	5.39	1.43	1.02	1.11	0.51	0.34	0.01	2.87	0.77	0.43	0.45	0.23	0.19	0.500	0.533	0.539	0.430	0.432	0.451	0.559
1987 - 88	0.02	6.41	1.75	0.63	0.60		0.50	0.01	3.46	1.00	0.25	0.27		0.26	0.500	0.540	0.571	0.413	0.451		0.520
1988 - 89	0.01	5.60	2.55	0.65	0.66	0.07	0.54		3.00	1.26	0.29	0.29	0.05	0.27	0.536	0.476	0.420	0.439	0.714	0.500	
1989 - 90	0.02	5.40	2.67	0.55	0.63	0.09	0.42	0.01	2.85	1.56	0.24	0.26	0.05	0.19	0.500	0.528	0.584	0.429	0.444	0.556	0.452
1990 - 91	0.03	5.54	3.34	0.55	0.28	0.05	0.47	0.02	2.93	1.78	0.23	0.12	0.03	0.24	0.667	0.529	0.533	0.418	0.425	0.500	0.511
1991 - 92	0.04	5.33	3.19	0.54	0.43	0.06	0.54	0.02	2.74	1.86	0.35	0.19	0.13	0.27	0.500	0.514	0.583	0.648	0.442	0.567	0.500
1992 - 93	0.04	4.39	3.20	0.45	0.45	0.04	0.44	0.02	2.29	1.88	0.29	0.20	0.02	0.22	0.500	0.522	0.588	0.630	0.444	0.500	0.500
1993 - 94	0.04	4.41	3.13	0.38	0.44	0.04	0.42	0.02	2.25	1.55	0.23	0.16	0.02	0.22	0.500	0.510	0.495	0.605	0.455	0.500	0.524
1994 - 95	0.03	4.61	3.13	0.37	0.39	0.03	0.44	0.01	2.37	1.55	0.10	0.17	0.01	0.23	0.333	0.514	0.495	0.588	0.435	0.333	0.523
1995 - 96	0.02	6.86	3.13	0.31	0.42	0.08	0.51	0.01	3.72	1.55	0.19	0.18		0.28	0.500	0.542	0.495	0.613	0.425		0.549
1996 - 97	0.02	5.88	3.14	0.25	0.43	0.04	0.40	0.01	3.14	1.57	0.17	0.20	0.02	0.22	0.500	0.534	0.500	0.654	0.455	0.500	0.550
1997 - 98	0.03	6.01	3.14	0.30	0.45	0.07	0.31	0.01	3.20	1.56	0.18	0.18	0.03	0.15	0.333	0.532	0.497	0.643	0.455	0.429	0.484
1998 - 99	0.03	5.90	3.16	0.25	0.48	0.17	0.30	0.01	3.15	1.57	0.19	0.21	0.09	0.16	0.333	0.534	0.497	0.655	0.435	0.529	0.533
1999 - 2000	0.03	5.92	3.35	0.35	0.47	0.15	0.23	0.01	3.16	1.62	0.19	0.21	0.09	0.12	0.333	0.534	0.484	0.633	0.447	0.500	0.522

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.15.

OTHER RABI PULSES

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	1.36	8.72	23.33	8.80	19.02	7.81	4.37	0.47	2.89	7.91	3.36	5.01	2.90	1.98	0.346	0.331	0.339	0.395	0.443	0.371	0.453
1952 - 53	1.37	8.88	19.71	8.75	11.01	5.67	4.62	0.41	3.92	5.94	3.17	3.35	2.11	1.86	0.299	0.441	0.301	0.396	0.448	0.372	0.403
1953 - 54	1.34	9.63	21.81	8.75	11.29	4.86	4.04	0.66	4.32	7.82	3.32	5.05	1.96	2.00	0.493	0.449	0.359	0.470	0.448	0.403	0.495
1954 - 55	1.22	9.51	27.87	9.24	12.19	4.28	3.41	0.48	3.73	10.94	3.67	4.78	1.68	1.34	0.393	0.392	0.393	0.393	0.393	0.393	0.393
1955 - 56	1.23	9.57	25.12	9.43	14.63	2.60	3.14	0.48	3.76	10.25	3.72	5.74	1.02	1.23	0.390	0.393	0.392	0.392	0.392	0.392	0.392
1956 - 57	1.27	9.84	28.67	8.95	15.42	7.59	4.03	0.50	3.86	11.25	3.52	6.05	2.98	1.58	0.394	0.392	0.392	0.392	0.392	0.393	0.392
1957 - 58	1.24	8.42	24.33	8.24	19.34	7.29	4.73	0.49	3.30	9.55	3.21	7.59	2.86	1.86	0.395	0.392	0.393	0.390	0.392	0.392	0.393
1958 - 59	1.34	8.77	26.45	8.62	19.35	7.30	4.40	0.52	3.44	10.38	2.48	7.59	2.87	1.73	0.388	0.392	0.392	0.392	0.392	0.393	0.393
1959 - 60	1.38	8.38	25.26	9.03	19.34	5.89	4.27	0.31	2.82	8.83	2.56	4.34	1.98	1.68	0.225	0.337	0.336	0.393	0.224	0.336	0.393
1960 - 61	1.75	8.27	27.05	8.67	13.78	4.62	4.35	0.59	4.64	9.10	3.12	3.05	1.56	1.46	0.337	0.561	0.336	0.337	0.224	0.338	0.336
1961 - 62	1.79	9.13	26.80	10.53	13.89	4.68	4.42	0.67	5.48	9.38	4.28	7.02	1.70	1.50	0.374	0.600	0.350	0.403	0.335	0.363	0.339
1962 - 63	2.30	8.56	27.24	8.33	13.79	4.49	4.53	0.83	4.32	10.08	3.32	4.33	1.61	1.62	0.361	0.505	0.370	0.369	0.334	0.359	0.358
1963 - 64	3.00	16.17	24.61	9.23	15.39	5.10	4.67	1.26	6.15	9.46	4.38	6.61	2.21	1.85	0.420	0.380	0.384	0.530	0.428	0.433	0.396
1964 - 65	2.79	16.64	24.19	9.07	13.46	5.06	4.45	1.25	7.31	10.01	3.38	5.63	2.03	1.83	0.448	0.439	0.382	0.593	0.418	0.401	0.411
1965 - 66	2.65	17.05	27.65	8.90	15.35	4.38	4.49	1.18	8.61	9.93	3.19	6.22	1.82	1.85	0.445	0.505	0.359	0.524	0.418	0.416	0.412
1966 - 67	2.55	17.82	26.31	9.12	12.81	4.29	4.44	1.06	8.48	8.89	3.02	4.64	2.03	1.76	0.416	0.476	0.338	0.548	0.342	0.473	0.396
1967 - 68	2.58	18.13	25.15	9.40	13.39	5.21	4.98	1.28	8.12	8.84	3.15	4.85	2.51	1.97	0.496	0.448	0.338	0.548	0.342	0.473	0.396
1968 - 69	2.62	17.97	25.58	9.60	15.16	6.40	5.06	1.31	8.09	9.04	3.26	5.54	3.04	2.03	0.500	0.450	0.340	0.550	0.345	0.475	0.401
1969 - 70	2.37	17.83	27.60	9.63	15.72	6.81	5.50	0.88	7.38	8.19	4.02	6.20	3.36	1.98	0.371	0.414	0.297	0.418	0.394	0.493	0.360
1970 - 71	1.42	14.15	23.88	11.03	12.50	3.73	5.37	0.49	5.39	8.72	3.35	4.87	1.23	1.85	0.345	0.381	0.302	0.438	0.391	0.380	0.345
1971 - 72	1.50	16.20	25.15	10.06	15.47	4.20	5.10	0.47	6.48	7.69	3.55	5.86	1.61	1.65	0.313	0.400	0.273	0.353	0.378	0.383	0.324
1972 - 73	1.70	16.06	26.45	11.40	16.80	6.20	4.84	0.83	9.56	10.35	6.71	8.50	3.24	2.28	0.488	0.595	0.391	0.578	0.346	0.523	0.471
1973 - 74	2.66	16.47	27.70	15.38	13.27	6.85	4.65	1.13	7.00	9.14	11.63	5.39	3.16	2.07	0.425	0.425	0.330	0.734	0.426	0.461	0.445

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Blank space indicates Data Not Available at source. (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	2.24	17.60	27.92	12.81	14.60	5.34	8.92	0.77	7.63	10.30	5.16	4.93	2.24	3.26	0.344	0.434	0.369	0.419	0.311	0.416	0.365
1975 - 76	1.97	16.99	27.53	12.67	14.11	4.54	7.99	0.66	5.60	10.02	4.47	5.44	1.55	2.73	0.335	0.388	0.364	0.383	0.292	0.341	0.342
1976 - 77	1.98	17.20	28.80	12.68	14.77	4.87	8.30	0.62	6.78	9.45	1.82	5.98	1.71	3.88	0.348	0.394	0.353	0.313	0.315	0.351	0.467
1977 - 78	1.87	17.63	27.59	10.91	16.14	6.04	9.64	0.62	5.19	10.41	1.28	5.46	2.26	4.09	0.332	0.351	0.377	0.301	0.315	0.374	0.424
1978 - 79	2.03	16.34	26.87	11.11	16.41	6.29	9.93	0.73	6.02	10.30	4.33	6.24	2.47	4.35	0.360	0.268	0.383	0.390	0.300	0.393	0.438
1979 - 80	2.10	15.89	26.42	10.14	15.81	7.99	14.06	0.72	5.71	9.73	1.77	5.82	2.97	5.88	0.343	0.359	0.383	0.368	0.352	0.372	0.418
1980 - 81	1.54	16.43	26.38	12.88	16.83	9.20	16.14	0.56	6.52	9.95	3.95	5.16	1.91	6.67	0.364	0.397	0.392	0.428	0.307	0.425	0.413
1981 - 82	1.40	17.00	27.57	16.11	17.40	8.40	16.29	0.54	6.34	11.89	7.50	6.07	3.69	8.35	0.386	0.373	0.431	0.465	0.343	0.439	0.513
1982 - 83	1.83	19.53	28.60	17.01	20.03	9.17	16.99	0.66	8.45	11.26	5.98	6.63	3.63	7.07	0.361	0.433	0.394	0.410	0.331	0.396	0.416
1983 - 84	3.16	16.50	21.52	14.41	16.89	9.81	21.56	1.12	6.83	12.30	6.24	5.86	3.68	8.43	0.354	0.414	0.390	0.427	0.332	0.375	0.391
1984 - 85	2.64	21.82	22.87	17.48	17.72	10.84	18.44	1.07	10.04	13.18	7.75	5.83	4.09	7.45	0.405	0.460	0.401	0.443	0.329	0.377	0.404
1985 - 86	2.32	22.69	26.10	15.16	14.31	8.66	26.76	1.06	9.75	13.19	5.69	6.93	3.79	11.92	0.457	0.430	0.438	0.569	0.382	0.432	0.445
1986 - 87	2.83	22.47	21.30	15.37	26.13	16.29	14.13	1.10	9.47	12.37	5.69	9.33	5.94	6.00	0.389	0.421	0.395	0.422	0.385	0.365	0.425
1987 - 88	2.49	22.44	29.96	20.33	18.72	7.60	14.30	1.10	9.75	14.11	9.91	7.09	4.18	6.09	0.442	0.434	0.471	0.487	0.379	0.550	0.426
1988 - 89	2.68	26.28	22.11	14.45	16.56	9.62	9.83	0.98	10.00	13.31	6.48	5.78	3.02	3.76	0.366	0.381	0.442	0.442	0.348	0.350	0.383
1989 - 90	3.51	22.15	29.59	17.55	15.22	8.35	8.75	1.35	9.92	14.81	5.52	5.48	3.05	3.62	0.385	0.448	0.501	0.429	0.350	0.365	0.414
1990 - 91	3.16	21.53	21.63	11.83	16.60	6.42	8.99	1.93	8.04	14.54	4.23	6.25	2.61	3.00	0.611	0.373	0.460	0.366	0.377	0.407	0.334
1991 - 92	3.32	23.76	20.51	12.11	16.34	9.23	8.22	1.25	11.00	14.60	5.82	5.67	3.57	3.37	0.377	0.463	0.479	0.524	0.347	0.387	0.410
1992 - 93	4.08	22.69	28.06	10.81	14.93	7.41	9.38	1.68	10.25	13.80	5.21	5.65	3.38	4.14	0.412	0.452	0.492	0.490	0.372	0.456	0.441
1993 - 94	4.21	21.47	21.45	9.15	15.63	6.64	9.07	1.93	11.17	17.89	4.55	7.13	3.53	3.91	0.458	0.520	0.569	0.497	0.388	0.532	0.431
1994 - 95	3.52	21.06	20.54	11.73	15.37	5.96	9.19	1.60	12.02	17.60	5.82	7.22	3.32	3.99	0.455	0.571	0.576	0.581	0.474	0.557	0.434
1995 - 96	3.28	20.60	23.50	11.82	14.56	6.80	9.37	1.43	10.44	16.46	5.77	7.14	4.01	3.90	0.436	0.507	0.558	0.588	0.490	0.590	0.416
1996 - 97	3.92	20.73	23.16	15.14	15.65	12.22	10.95	1.96	11.53	17.61	5.64	7.62	5.91	5.51	0.500	0.556	0.625	0.597	0.500	0.565	0.503
1997 - 98	3.99	20.55	23.31	15.41	15.63	10.25	12.05	1.88	10.74	16.95	5.41	7.54	5.80	5.67	0.471	0.523	0.599	0.546	0.508	0.566	0.471
1998 - 99	3.69	20.78	24.27	9.31	17.05	11.82	11.08	1.77	9.93	21.90	5.06	8.22	5.30	5.18	0.480	0.478	0.639	0.865	0.482	0.533	0.468
1999 - 2000	3.70	21.03	28.04	15.15	14.15	10.50	10.17	1.84	12.57	16.40	10.00	5.51	5.70	4.52	0.497	0.598	0.585	0.611	0.418	0.543	0.444

Blank space indicates Data Not Available at source. (hence Average Yield could not be calculated)

Table B.16.

PAPAYA

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1988 - 89	0.18	0.70	0.67	0.71	0.73	0.27	0.28	2.86	10.50	12.63	9.21	9.57	4.12	4.33	15.889	15.000	18.851	12.972	13.110	15.259	15.464
1989 - 90	0.18	0.92	0.83	0.71	0.73	0.28	0.37	2.76	13.86	15.68	10.23	9.57	4.30	5.70	15.333	15.065	18.892	13.640	13.110	15.357	15.405
1990 - 91	0.19	0.66	0.79	0.71	0.73	0.44	0.42	2.74	9.82	15.55	10.42	9.52	5.93	6.40	14.421	14.879	19.684	13.532	13.041	15.750	15.238
1991 - 92	0.21	0.75	0.91	0.74	0.74	0.45	0.50	3.22	11.45	17.06	10.57	9.70	7.10	7.61	15.333	15.267	18.747	13.608	13.103	15.778	15.220
1992 - 93	0.22	0.74	1.18	0.83	0.77	0.50	0.56	3.44	11.33	23.00	9.28	10.27	7.82	8.52	15.636	15.311	19.492	13.851	13.333	15.640	15.214
1993 - 94	0.21	0.93	1.20	0.71	2.22	0.61	0.57	3.37	14.21	21.95	10.35	27.95	9.52	8.62	16.048	15.280	18.292	14.389	12.555	15.607	15.123
1994 - 95	0.23	0.96	1.22	0.74	2.77	0.58	0.66	3.54	14.38	22.81	10.58	34.64	9.01	9.98	15.391	14.979	18.697	14.297	12.573	15.534	15.121
1995 - 96	0.23	1.04	0.95	0.83	2.21	0.51	0.79	3.54	15.67	17.93	10.09	27.67	7.92	11.92	15.391	15.067	18.874	12.772	12.411	15.529	15.039
1996 - 97	0.23	1.01	1.01	0.83	2.23	0.45	0.91	3.35	15.29	19.02	12.44	28.05	5.96	13.64	14.565	15.139	18.832	13.978	12.573	15.467	14.939
1997 - 98	0.48	1.01	1.09	0.83	2.27	0.46	0.92	5.42	15.30	20.55	10.24	28.71	7.14	13.92	13.375	15.149	18.853	12.488	12.543	15.522	15.130
1998 - 99	0.43	0.99	1.12	0.83	2.07	0.44	0.69	5.91	14.99	21.27	10.25	26.15	6.88	11.01	13.744	15.141	18.991	12.500	12.633	15.636	15.357
1999 - 2000	0.46	1.00	1.06	0.84	2.04	0.46	0.71	5.09	15.07	14.22	10.50	25.60	7.32	10.63	13.239	15.070	13.415	12.500	12.647	15.250	15.254

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.17.

PINEAPPLE

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1988 - 89	1.25	0.94	3.16	1.53	0.20	0.59	0.65	15.57	11.52	38.92	8.51	2.45	7.20	8.13	12.456	12.255	12.317	16.119	12.250	12.223	12.318
1989 - 90	1.28	1.11	1.99	1.51	0.57	0.61	0.84	15.90	13.68	36.90	8.79	7.57	7.54	11.35	12.422	12.324	18.543	16.049	11.404	12.361	13.512
1990 - 91	1.33	2.05	2.89	1.63	0.57	1.07	0.65	16.56	22.52	35.60	10.15	7.55	13.13	11.80	12.451	10.985	12.318	16.111	11.368	12.271	13.721
1991 - 92	1.63	1.94	3.00	1.55	0.58	1.15	1.03	20.63	25.39	38.06	6.18	8.53	15.03	13.36	12.656	13.088	12.693	11.236	14.707	13.078	12.971
1992 - 93	1.69	1.00	2.90	1.51	2.20	1.36	1.21	21.30	13.56	37.00	7.10	32.63	15.53	15.74	12.604	13.560	12.759	11.639	14.359	11.415	13.008
1993 - 94	1.74	1.00	2.40	1.54	1.73	1.31	1.20	24.83	14.12	44.85	8.16	22.31	15.94	15.54	14.270	14.120	18.688	13.879	11.890	12.165	12.950
1994 - 95	1.64	1.03	2.41	1.57	2.20	1.30	1.30	23.32	14.97	44.65	10.03	28.06	16.49	16.88	14.220	14.534	18.527	14.970	11.755	12.625	12.985
1995 - 96	1.69	1.05	2.50	1.51	2.01	0.92	1.35	23.99	15.19	45.65	8.83	25.45	11.77	18.04	14.195	14.467	18.260	14.475	12.682	12.794	12.978
1996 - 97	1.64	0.95	2.61	1.55	2.13	0.76	1.70	24.10	14.58	48.77	12.39	27.51	10.06	22.57	14.695	14.727	18.686	14.407	13.103	13.237	13.277
1997 - 98	1.84	1.05	2.68	1.74	2.20	0.76	1.53	28.00	16.10	51.41	11.00	31.17	10.47	20.75	15.217	14.907	19.183	14.865	14.168	13.775	13.562
1998 - 99	1.96	1.10	2.47	1.51	2.06	0.71	1.13	30.04	16.52	45.61	12.32	28.15	9.68	15.09	15.327	15.018	18.466	15.210	13.555	13.634	13.354
1999 - 2000	1.94	1.10	2.54	1.55	1.96	0.62	1.31	32.87	16.55	39.65	13.87	26.57	8.74	17.60	16.943	15.045	15.610	16.128	13.760	14.097	13.435

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.18.

POTATO

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	1.28	5.50	4.06	2.22	1.58	1.71	1.03	6.61	25.17	22.50	11.78	4.13	12.90	5.07	5.164	4.576	5.542	4.075	2.314	7.544	4.922
1952 - 53	1.37	4.34	4.07	2.24	1.46	1.62	2.36	6.57	22.30	18.08	13.34	7.43	6.92	10.66	4.796	5.138	4.442	6.232	5.130	4.272	4.517
1953 - 54	1.39	4.36	4.33	3.12	1.55	1.67	2.62	5.28	24.18	30.67	17.87	5.53	7.20	13.35	3.799	5.546	7.083	5.619	3.632	4.311	5.095
1954 - 55	1.27	4.25	3.83	3.12	1.54	1.93	2.27	5.01	19.22	17.92	12.45	7.95	9.98	9.65	3.945	4.522	4.695	3.940	3.169	5.171	4.251
1955 - 56	1.28	4.23	4.22	3.42	2.02	1.71	2.22	5.46	20.04	21.97	16.96	6.91	8.28	11.01	4.266	4.738	5.206	4.874	3.421	4.642	4.829
1956 - 57	1.45	4.31	4.29	3.37	1.07	1.14	2.47	6.28	14.72	12.50	12.82	2.33	2.52	8.98	4.331	3.415	2.914	3.804	2.224	2.211	3.636
1957 - 58	1.52	5.06	4.26	3.41	1.04	1.45	2.53	8.83	20.57	20.10	15.36	4.12	5.84	5.43	5.809	4.065	4.718	4.504	3.962	4.022	2.146
1958 - 59	1.87	5.16	4.40	3.54	1.38	1.45	2.81	5.70	25.87	27.01	16.59	4.59	12.35	16.55	3.048	4.994	6.139	4.552	3.543	8.517	5.890
1959 - 60	1.95	5.26	4.45	3.52	1.56	1.21	3.22	6.50	24.42	23.06	15.09	5.67	6.55	17.58	3.233	4.643	5.182	4.134	3.250	5.413	5.234
1960 - 61	1.76	5.31	4.33	2.52	1.57	1.58	3.09	4.76	25.34	22.13	14.48	4.71	9.77	20.13	2.705	4.772	5.111	4.033	3.000	6.124	6.711
1961 - 62	1.76	5.42	5.32	4.15	1.54	1.24	2.93	5.68	24.37	19.83	17.24	3.12	5.58	16.95	3.227	4.496	3.727	4.154	2.026	4.500	5.785
1962 - 63	1.82	5.56	5.40	4.13	1.89	1.26	3.27	5.96	19.45	28.65	17.01	7.15	4.39	9.50	3.275	3.498	5.313	4.149	3.783	3.424	2.905
1963 - 64	1.89	5.36	5.51	4.02	1.75	1.26	3.21	6.29	15.89	18.13	14.49	1.59	3.71	6.41	3.328	2.965	3.290	3.543	2.966	2.944	1.997
1964 - 65	2.04	5.63	5.34	4.17	1.92	1.39	3.19	7.65	22.17	18.36	12.19	5.75	3.87	7.66	3.750	3.938	3.438	2.995	3.316	2.724	2.401
1965 - 66	2.02	5.35	5.84	3.57	1.73	1.38	3.22	1.96	9.75	19.53	16.66	1.22	2.02	8.08	0.970	1.822	3.344	4.195	0.740	1.464	2.509
1966 - 67	2.00	6.78	5.78	4.42	2.14	1.26	3.21	7.03	37.66	23.24	17.73	4.22	4.78	12.85	3.515	5.555	4.021	3.984	1.972	3.794	4.003
1967 - 68	2.11	6.70	5.62	4.22	2.18	1.19	3.24	6.13	36.09	26.61	11.45	3.22	5.41	18.61	2.905	5.387	4.735	2.686	1.422	4.542	5.744
1968 - 69	2.00	7.17	5.24	4.53	1.97	1.13	3.27	6.27	37.04	32.89	16.17	5.92	7.07	22.38	3.135	5.166	6.277	3.554	3.005	6.257	6.844
1969 - 70	2.21	7.08	5.84	4.12	1.63	1.27	3.62	8.08	31.17	20.67	10.58	3.32	3.62	12.86	3.656	4.685	3.539	2.549	2.037	2.855	3.552
1970 - 71	2.42	6.45	5.02	4.77	1.06	1.03	3.21	4.55	36.42	23.88	12.26	2.55	5.61	14.08	1.880	5.647	4.757	2.570	2.415	5.447	4.386
1971 - 72	2.40	6.60	6.40	5.95	1.70	1.06	3.49	9.91	38.08	32.79	25.58	3.33	4.79	30.00	4.129	5.770	5.123	4.089	3.153	4.512	8.596
1972 - 73	2.40	6.90	6.02	4.14	1.60	1.40	3.12	3.01	35.31	31.53	19.29	6.04	6.35	14.36	1.254	5.117	5.238	4.659	3.775	4.512	4.603
1973 - 74	2.40	5.05	6.92	4.57	1.35	2.02	3.19	4.15	11.93	17.74	19.03	3.25	9.37	13.80	1.729	2.786	2.564	4.164	2.415	4.635	4.326

Table continued on next page.

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974-75	2.30	3.45	6.12	4.67	2.98	1.34	3.18	6.07	20.17	25.98	19.33	7.65	4.28	12.57	2.639	5.846	4.316	4.086	3.965	3.194	3.353
1975-76	2.34	3.47	6.42	5.67	2.02	1.44	4.39	6.50	24.84	34.70	35.67	9.71	10.94	27.47	3.632	7.159	5.405	6.077	4.607	7.597	6.257
1976-77	2.50	4.28	4.88	6.03	2.87	1.05	4.69	13.90	34.23	25.35	22.39	11.22	5.68	17.60	5.560	7.998	5.173	3.719	3.809	5.211	3.753
1977-78	2.69	4.91	6.26	6.41	2.78	2.31	5.63	12.10	33.93	28.74	24.23	5.27	3.38	19.60	4.498	6.890	4.591	3.788	1.896	1.463	3.451
1978-79	2.77	4.33	6.24	6.58	2.96	2.36	6.16	10.33	26.41	37.62	23.66	11.68	15.26	32.16	3.729	6.099	5.934	3.637	3.946	6.412	5.224
1979-80	2.71	4.06	6.35	5.65	3.48	2.35	8.53	10.68	36.75	38.74	22.77	13.91	13.86	45.39	3.941	9.052	5.655	4.030	3.957	5.824	5.321
1980-81	2.79	5.00	7.40	7.45	3.18	2.59	8.33	16.23	42.73	40.88	43.03	10.61	15.98	46.91	5.817	8.546	5.524	5.776	3.335	6.170	5.631
1981-82	2.59	5.50	7.52	7.60	3.80	2.54	9.47	10.49	46.16	55.15	51.68	24.64	17.30	64.54	4.050	8.393	7.334	6.826	6.464	6.811	6.315
1982-83	2.95	6.86	8.13	7.66	3.85	2.42	10.58	11.64	87.45	38.79	36.33	24.60	6.36	56.54	3.946	12.748	4.629	4.743	6.390	2.565	5.344
1983-84	3.17	6.88	8.65	8.59	4.26	2.61	9.46	16.27	75.76	73.70	60.55	23.82	14.31	51.05	5.132	11.012	8.520	7.171	5.592	5.483	5.396
1984-85	3.80	9.20	9.12	8.57	5.33	2.76	9.55	20.21	76.82	60.12	51.55	35.73	14.96	62.51	5.318	8.350	6.592	6.015	6.704	5.420	6.546
1985-86	4.27	9.62	14.53	9.15	4.98	2.67	8.04	17.39	51.53	98.64	43.36	27.69	17.12	42.63	4.073	5.357	6.789	4.765	5.550	5.965	5.302
1986-87	3.28	8.47	13.30	11.60	7.02	3.16	8.64	13.17	53.45	93.30	77.95	37.61	18.23	39.21	4.015	6.311	7.015	6.720	5.358	5.769	4.538
1987-88	3.54	8.50	12.24	11.09	5.13	4.29	8.44	17.11	56.48	87.43	53.47	32.40	36.08	41.07	4.833	6.645	7.143	4.821	6.316	8.410	4.866
1988-89	3.55	8.17	15.21	12.05	5.08	4.55	8.30	13.74	53.57	99.50	56.12	20.50	33.59	63.23	3.870	6.557	6.547	4.646	4.335	7.334	7.613
1989-90	3.82	7.91	17.07	9.74	5.04	4.64	7.67	14.72	66.40	107.07	37.70	30.23	31.17	41.74	3.853	8.394	6.272	3.871	5.999	6.718	5.402
1990-91	3.54	6.50	17.45	9.41	5.02	5.28	7.67	16.21	75.96	120.79	49.69	31.35	40.68	46.10	4.579	11.686	6.922	5.281	6.245	7.705	6.010
1991-92	3.84	9.68	18.95	9.21	5.22	6.37	7.34	12.44	73.79	191.82	51.44	35.62	54.12	45.48	3.240	7.623	10.117	5.585	6.824	8.496	6.196
1992-93	3.84	10.48	21.11	7.25	5.13	5.67	8.91	11.70	80.58	152.13	40.66	16.40	30.72	48.69	3.047	7.689	7.207	5.529	2.675	5.418	5.465
1993-94	4.15	10.28	19.75	7.33	5.57	5.49	9.50	16.63	83.98	182.38	62.16	54.86	42.41	54.76	4.489	8.169	9.234	8.483	8.350	7.725	5.764
1994-95	3.90	10.96	21.33	12.23	6.48	5.86	9.91	16.99	105.73	202.90	66.25	42.14	40.26	64.04	4.356	9.647	9.295	7.101	6.503	6.870	6.462
1995-96	4.25	11.44	21.67	12.22	7.71	5.69	9.88	20.40	90.20	186.04	69.69	37.10	32.05	62.40	4.800	7.885	8.585	5.708	4.812	5.441	6.316
1996-97	4.29	11.83	21.93	10.67	7.42	5.41	10.81	17.38	108.51	241.81	65.62	33.54	41.82	62.70	4.051	9.172	11.026	6.150	4.525	7.730	5.600
1997-98	4.55	12.03	22.47	11.18	7.04	5.73	11.22	19.52	102.02	286.59	77.31	77.30	36.39	62.81	4.290	8.480	12.754	6.960	10.925	6.353	5.598
1998-99	4.19	11.92	23.17	11.95	6.92	6.33	11.40	17.01	104.27	208.29	81.63	69.05	54.94	66.45	4.060	8.747	8.990	6.848	9.578	8.679	5.229
1999-2000	4.49	12.06	20.77	13.57	6.86	6.45	11.54	20.16	115.10	235.51	125.32	78.45	56.66	75.54	4.490	9.544	11.339	9.449	11.416	8.784	6.546

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.19.

APE & MUSTARD

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	2.48	24.12	30.17	20.51	21.00	11.04	6.13	1.12	10.90	11.93	8.16	9.49	5.89	3.11	0.452	0.452	0.395	0.402	0.452	0.452	0.507
1952 - 53	2.02	22.91	32.33	21.50	18.95	9.85	6.65	0.81	9.06	9.94	8.64	7.49	4.45	3.38	0.401	0.396	0.308	0.402	0.395	0.452	0.508
1953 - 54	1.87	23.02	28.93	21.02	18.36	11.06	6.92	0.74	9.03	11.35	8.25	7.20	4.34	2.72	0.396	0.392	0.392	0.393	0.392	0.392	0.393
1954 - 55	1.50	22.26	26.74	21.40	19.63	11.42	5.15	0.59	8.73	10.49	8.79	7.70	4.48	2.02	0.393	0.392	0.392	0.392	0.392	0.392	0.392
1955 - 56	1.41	22.46	28.62	17.22	22.35	11.35	7.18	0.63	8.81	12.83	7.72	11.27	5.73	3.62	0.447	0.392	0.448	0.448	0.504	0.505	0.504
1956 - 57	1.39	23.58	29.27	21.12	20.73	11.15	7.28	0.70	10.57	14.78	11.66	10.46	5.62	3.67	0.504	0.448	0.504	0.504	0.505	0.504	0.504
1957 - 58	1.31	21.13	30.77	21.19	19.91	10.63	7.03	0.54	9.99	12.14	13.72	6.67	6.53	3.33	0.412	0.473	0.395	0.592	0.335	0.614	0.474
1958 - 59	1.42	21.90	29.81	21.17	21.58	11.13	7.20	0.91	11.02	17.21	15.86	6.62	5.44	4.13	0.641	0.503	0.577	0.630	0.316	0.489	0.574
1959 - 60	1.58	21.26	30.36	21.44	20.96	9.92	6.40	1.03	6.53	5.17	14.23	6.66	3.57	2.25	0.652	0.307	0.170	0.559	0.327	0.360	0.352
1960 - 61	1.62	21.93	29.74	21.33	20.24	9.90	6.44	0.83	8.95	7.14	10.19	6.53	6.35	2.78	0.512	0.408	0.240	0.456	0.323	0.641	0.432
1961 - 62	1.62	21.32	29.24	21.55	21.29	10.15	6.13	0.54	5.32	7.21	12.45	5.20	6.53	2.48	0.333	0.250	0.247	0.501	0.244	0.642	0.405
1962 - 63	1.62	23.83	31.13	21.10	24.46	12.12	7.20	0.78	8.16	8.58	9.11	7.98	6.70	3.09	0.482	0.342	0.276	0.412	0.326	0.553	0.429
1963 - 64	1.62	24.11	30.90	21.93	24.61	11.94	7.50	0.89	11.08	8.35	12.11	9.55	6.24	2.72	0.549	0.460	0.270	0.555	0.392	0.523	0.363
1964 - 65	1.75	24.48	30.53	21.65	24.21	11.63	9.05	0.53	8.67	7.39	13.32	9.60	6.92	5.04	0.303	0.354	0.242	0.615	0.405	0.595	0.557
1965 - 66	1.70	25.41	29.43	21.41	23.91	10.61	9.31	0.65	11.59	6.33	13.09	10.52	6.90	3.90	0.382	0.456	0.215	0.584	0.440	0.650	0.419
1966 - 67	1.87	25.84	29.47	21.24	23.54	11.21	9.51	0.61	12.58	6.63	10.53	9.73	9.75	6.28	0.325	0.487	0.225	0.453	0.371	0.670	0.660
1967 - 68	1.94	26.02	29.61	21.76	24.56	12.04	10.20	0.76	12.02	10.75	11.29	10.73	7.76	3.98	0.392	0.462	0.363	0.496	0.437	0.645	0.390
1968 - 69	1.95	27.21	28.73	21.01	23.82	12.74	16.09	0.55	9.47	6.58	9.04	10.91	4.70	4.20	0.282	0.348	0.229	0.393	0.458	0.369	0.261
1969 - 70	1.81	26.42	29.94	21.17	24.27	12.99	10.81	0.51	11.39	5.93	9.62	9.76	6.32	4.32	0.282	0.431	0.198	0.434	0.361	0.487	0.400
1970 - 71	1.46	27.38	32.01	21.51	23.00	14.12	13.60	0.55	11.12	11.01	10.42	6.76	6.16	7.44	0.377	0.406	0.344	0.463	0.294	0.436	0.547
1971 - 72	1.40	27.60	33.02	21.59	24.10	17.08	13.77	0.48	12.86	12.58	11.37	11.35	9.10	7.06	0.343	0.466	0.381	0.482	0.471	0.533	0.513
1972 - 73	1.90	25.00	31.65	21.00	20.77	14.90	16.29	0.52	8.03	7.03	12.23	8.56	7.29	11.68	0.274	0.321	0.222	0.453	0.316	0.489	0.717
1973 - 74	1.30	23.90	32.70	21.00	26.00	11.95	21.77	0.96	13.48	10.69	12.29	8.29	6.74	17.05	0.739	0.564	0.327	0.435	0.319	0.564	0.783

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Blank space indicates Data Not Available at source; hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	1.35	26.65	27.41	26.80	21.10	17.56	19.65	0.90	8.80	9.55	9.59	4.22	11.24	11.77	0.667	0.338	0.197	0.367	1.219	0.643	0.634
1975 - 76	1.59	24.55	22.16	27.64	22.57	14.80	22.19	0.54	11.10	3.65	9.05	6.72	6.98	16.62	0.340	0.452	0.174	0.327	1.386	0.472	0.918
1976 - 77	1.58	22.29	25.71	25.54	27.10	16.12	23.69	0.53	8.43	6.65	7.72	6.36	5.28	12.67	0.335	0.380	0.265	0.302	1.254	0.325	0.561
1977 - 78	2.13	26.93	26.80	25.70	26.02	16.79	23.36	0.97	10.99	7.35	6.30	6.22	10.14	12.57	0.455	0.408	0.274	0.245	1.308	0.604	0.538
1978 - 79	2.24	29.00	27.70	25.93	26.70	17.65	24.66	0.83	12.67	7.39	10.89	7.21	12.51	15.43	0.371	0.437	0.267	0.420	1.270	0.705	0.626
1979 - 80	1.96	32.41	32.78	26.94	33.60	22.67	31.31	0.86	13.66	9.15	11.84	9.31	16.94	15.23	0.439	0.422	0.279	0.440	1.277	0.747	0.556
1980 - 81	1.81	28.25	31.70	28.56	34.41	22.43	25.45	1.01	11.86	10.00	17.65	7.39	16.00	24.26	0.558	0.420	0.316	0.618	1.215	0.713	0.953
1981 - 82	1.63	30.00	42.70	35.00	32.00	23.08	43.30	0.76	11.02	15.44	16.74	6.97	15.33	30.00	0.466	0.367	0.362	0.478	1.218	0.664	0.659
1982 - 83	2.05	42.10	46.45	39.56	35.46	33.98	56.13	0.92	15.66	16.87	20.76	6.42	28.61	17.12	0.449	0.372	0.363	0.525	1.181	0.642	0.661
1983 - 84	4.50	36.73	45.72	43.53	42.25	36.89	60.66	1.90	13.64	12.15	21.77	16.50	29.78	17.40	0.422	0.371	0.267	0.500	1.438	0.807	0.617
1984 - 85	3.80	52.93	57.90	46.89	38.60	38.94	66.94	1.74	14.37	13.15	22.05	14.36	23.97	26.93	0.458	0.272	0.228	0.470	1.370	0.616	0.402
1985 - 86	3.85	46.59	44.16	44.97	35.65	34.18	65.07	1.33	17.83	10.61	27.29	11.61	23.16	35.28	0.346	0.383	0.240	0.607	1.326	0.675	0.562
1986 - 87	6.23	44.82	53.42	51.48	36.05	34.86	69.70	3.34	20.42	17.06	24.30	12.91	20.78	43.11	0.536	0.456	0.319	0.472	1.358	0.595	0.619
1987 - 88	4.58	53.13	56.26	60.47	36.16	40.09	72.33	2.17	23.52	18.96	30.09	16.02	31.84	35.16	0.474	0.443	0.337	0.496	1.443	0.794	0.486
1988 - 89	4.21	53.54	56.30	51.20	36.59	37.41	68.35	2.14	25.57	18.81	25.57	11.79	20.80	35.55	0.508	0.478	0.334	0.499	1.322	0.566	0.520
1989 - 90	5.04	46.07	53.05	47.29	33.89	34.43	61.44	2.60	25.02	16.54	16.96	14.35	18.29	30.54	0.536	0.543	0.312	0.359	1.184	0.531	0.497
1990 - 91	4.40	48.42	50.10	45.74	35.00	32.44	61.66	2.23	20.64	23.34	26.34	17.61	24.67	30.29	0.507	0.426	0.466	0.576	1.303	0.761	0.490
1991 - 92	4.68	47.31	53.52	51.53	37.27	31.29	57.45	2.34	23.23	32.02	22.20	23.65	29.49	29.05	0.500	0.491	0.598	0.431	0.619	0.943	0.506
1992 - 93	4.67	52.11	54.04	44.97	35.93	29.87	47.15	1.72	24.22	27.25	20.88	16.66	13.18	21.10	0.368	0.465	0.504	0.464	1.457	0.441	0.447
1993 - 94	5.31	52.82	48.68	43.59	36.92	23.24	50.26	2.14	21.83	23.29	18.20	15.50	10.45	29.01	0.403	0.413	0.478	0.418	1.536	0.450	0.577
1994 - 95	2.20	53.03	50.73	44.15	36.13	25.52	50.33	1.26	25.99	23.25	26.33	20.54	17.09	25.50	0.573	0.490	0.459	0.596	0.569	0.670	0.524
1995 - 96	2.60	52.33	50.75	42.58	32.50	27.13	52.03	1.52	24.61	23.53	18.56	14.90	20.93	33.26	0.585	0.470	0.464	0.435	0.459	0.772	0.639
1996 - 97	2.62	48.10	51.32	44.22	34.65	20.87	55.31	1.57	26.21	30.86	19.43	17.02	11.23	26.26	0.599	0.545	0.604	0.439	0.491	0.535	0.475
1997 - 98	2.85	51.48	51.71	44.19	35.09	20.81	54.10	1.71	29.28	32.31	22.31	19.15	13.35	26.65	0.600	0.569	0.625	0.505	0.546	0.642	0.493
1998 - 99	1.03	50.72	52.58	51.66	38.73	22.92	50.67	1.24	27.72	25.82	21.03	18.50	10.77	23.52	1.204	0.547	0.491	0.407	1.478	0.470	0.464
1999 - 2000	2.40	169.33	42.45	55.25	33.91	22.91	49.90	1.91	22.26	26.93	24.05	14.72	12.85	19.04	0.796	0.131	0.636	0.435	0.434	0.561	0.382

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.20.

SESAMUM

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Assam	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.11	1.17	1.41	0.83	0.52	0.07	1.22	0.08	0.47	0.50	0.29	0.21	0.03	0.09	0.727	0.402	0.355	0.348	0.404	0.429	0.409
1952 - 53	0.11	1.17	1.33	1.44	0.81	0.11	1.25	0.05	0.60	0.53	0.65	0.41	0.05	0.13	0.485	0.513	0.399	0.451	0.506	0.455	0.520
1953 - 54	0.09	0.55	1.43	1.36	0.89	0.07	1.20	0.04	0.28	0.48	0.61	0.45	0.03	0.10	0.444	0.509	0.336	0.448	0.506	0.429	0.500
1954 - 55	0.09	1.21	1.70	1.32	0.91	0.05	1.19	0.04	0.48	0.67	0.52	0.36	0.02	0.08	0.444	0.397	0.394	0.394	0.396	0.400	0.421
1955 - 56	0.11	1.28	1.56	1.91	1.20	0.15	1.14	0.07	0.79	0.87	1.07	0.74	0.09	0.08	0.636	0.617	0.558	0.560	0.617	0.600	0.571
1956 - 57	0.11	1.30	1.93	1.61	1.08	0.15	1.15	0.05	0.66	0.76	0.63	0.61	0.09	0.06	0.455	0.508	0.394	0.391	0.565	0.500	0.400
1957 - 58	0.11	1.23	1.91	1.55	1.18	0.15	1.15	0.06	0.55	0.83	0.70	0.70	0.07	0.07	0.546	0.447	0.435	0.452	0.593	0.467	0.467
1958 - 59	0.16	1.17	1.62	2.09	1.25	0.14	1.20	0.08	0.52	0.73	0.93	0.69	0.06	0.09	0.500	0.444	0.451	0.447	0.600	0.429	0.450
1959 - 60	0.11	1.17	1.73	2.06	1.23	0.10	1.17	0.05	0.53	0.78	0.97	0.69	0.05	0.08	0.455	0.453	0.451	0.048	0.561	0.500	0.471
1960 - 61	0.12	1.15	1.72	2.23	1.24	0.06	1.24	0.06	0.53	0.77	1.02	0.67	0.03	0.11	0.500	0.461	0.448	0.457	0.540	0.500	0.458
1961 - 62	0.12	1.17	1.74	2.51	1.16	0.07	1.25	0.05	0.53	0.78	1.13	0.64	0.03	0.11	0.417	0.453	0.448	0.450	0.542	0.429	0.440
1962 - 63	0.13	1.69	1.88	2.70	1.32	0.05	1.26	0.05	0.76	0.84	1.36	0.71	0.02	0.12	0.385	0.450	0.447	0.504	0.538	0.400	0.462
1963 - 64	0.13	2.40	1.82	2.68	1.16	0.06	1.36	0.04	1.21	0.92	1.35	0.59	0.02	0.16	0.308	0.504	0.506	0.504	0.509	0.333	0.444
1964 - 65	0.14	2.45	1.90	2.42	1.14	0.06	1.30	0.05	1.18	0.89	1.09	0.58	0.02	0.10	0.357	0.482	0.468	0.450	0.509	0.333	0.333
1965 - 66	0.13	2.46	1.93	2.26	1.15	0.14	1.27	0.05	1.18	0.91	1.02	0.57	0.05	0.12	0.385	0.480	0.472	0.451	0.496	0.357	0.444
1966 - 67	0.13	2.46	1.93	2.27	1.17	0.14	1.30	0.05	1.18	0.91	1.11	0.59	0.05	0.13	0.385	0.480	0.472	0.489	0.504	0.357	0.433
1967 - 68	0.16	2.52	1.72	2.17	1.36	0.16	1.32	0.06	1.21	0.82	1.02	0.68	0.06	0.14	0.375	0.480	0.477	0.470	0.500	0.375	0.438
1968 - 69	0.15	2.59	1.59	2.20	0.98	0.15	1.32	0.05	1.24	0.75	1.04	0.49	0.06	0.15	0.313	0.479	0.472	0.473	0.500	0.400	0.469
1969 - 70	0.16	2.66	1.60	2.57	1.05	0.15	1.35	0.05	1.28	0.75	1.21	0.52	0.06	0.16	0.313	0.481	0.469	0.471	0.495	0.400	0.457
1970 - 71	0.16	2.38	1.64	2.58	1.22	0.15	1.42	0.07	1.14	0.77	1.20	0.61	0.06	0.19	0.438	0.479	0.470	0.465	0.500	0.400	0.452
1971 - 72	0.15	3.60	2.20	2.45	1.64	0.25	1.47	0.06	1.73	1.02	1.13	0.82	0.10	0.21	0.400	0.481	0.464	0.461	0.500	0.400	0.447
1972 - 73	0.15	2.40	2.58	2.58	2.71	0.29	1.52	0.06	1.13	1.21	1.23	1.30	0.12	0.24	0.400	0.471	0.469	0.477	0.480	0.414	0.462
1973 - 74	0.18	3.30	2.74	2.23	1.95	0.23	1.51	0.07	1.65	1.34	1.09	0.98	0.10	0.23	0.385	0.500	0.489	0.489	0.503	0.435	0.451

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Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.19	2.80	2.39	1.40	1.37	0.22	0.55	0.07	1.38	1.16	1.16	0.69	0.10	0.35	0.368	0.493	0.485	0.483	0.504	0.455	0.393
1975 - 76	0.17	2.75	1.82	1.26	1.57	0.25	0.57	0.06	1.35	0.88	0.67	0.79	0.11	0.36	0.353	0.491	0.484	0.532	0.503	0.440	0.414
1976 - 77	0.17	2.45	2.57	1.31	1.76	0.16	0.93	0.06	1.23	1.21	0.71	0.89	0.07	0.38	0.353	0.502	0.471	0.542	0.500	0.438	0.409
1977 - 78	0.19	2.08	2.48	1.37	1.69	0.20	0.95	0.07	1.01	1.16	0.78	0.84	0.09	0.39	0.368	0.486	0.476	0.569	0.497	0.450	0.406
1978 - 79	0.19	2.11	2.51	1.35	1.77	0.23	0.99	0.07	1.05	1.21	0.76	0.89	0.10	0.41	0.368	0.498	0.482	0.563	0.503	0.435	0.414
1979 - 80	0.20	2.16	2.73	1.33	1.93	0.35	1.22	0.07	1.10	1.33	0.73	0.97	0.16	0.42	0.350	0.509	0.487	0.549	0.503	0.457	0.412
1980 - 81	0.21	2.62	2.56	1.26	1.99	0.36	1.13	0.08	1.45	1.24	0.70	0.96	0.16	0.47	0.381	0.553	0.484	0.556	0.482	0.444	0.416
1981 - 82	0.18	2.60	2.80	1.31	2.00	0.33	1.38	0.07	1.32	1.36	0.73	0.97	0.15	0.57	0.389	0.508	0.486	0.557	0.485	0.455	0.413
1982 - 83	0.18	2.65	2.78	1.36	2.02	0.35	1.51	0.07	1.41	1.39	0.74	0.97	0.16	0.47	0.389	0.532	0.500	0.544	0.480	0.457	0.292
1983 - 84	0.15	2.16	3.02	1.96	1.48	0.39	1.93	0.06	1.04	1.51	1.07	0.71	0.17	0.75	0.400	0.482	0.500	0.546	0.480	0.436	0.389
1984 - 85	0.18	3.16	4.44	1.93	1.88	0.46	1.85	0.08	1.57	2.36	1.08	0.91	0.21	0.71	0.444	0.497	0.518	0.546	0.484	0.457	0.382
1985 - 86	0.15	2.89	4.48	1.78	1.76	0.35	1.36	0.07	1.33	2.31	0.98	0.91	0.16	0.49	0.467	0.460	0.516	0.551	0.517	0.457	0.360
1986 - 87	0.15	2.50	4.15	1.94	1.32	0.29	1.33	0.06	1.21	2.08	1.08	0.67	0.13	0.51	0.400	0.484	0.501	0.557	0.508	0.448	0.384
1987 - 88	0.17	3.35	4.00	2.15	1.37	0.33	1.53	0.07	1.75	1.89	1.26	0.56	0.15	0.59	0.412	0.522	0.473	0.586	0.482	0.455	0.386
1988 - 89	0.20	3.56	3.95	1.69	1.32	0.21	1.67	0.09	1.82	2.06	0.94	0.58	0.09	0.47	0.450	0.511	0.522	0.556	0.515	0.429	0.439
1989 - 90	0.18	3.38	3.81	1.78	1.33	0.35	0.78	0.08	1.69	1.93	0.99	0.59	0.16	0.40	0.444	0.500	0.507	0.556	0.444	0.457	0.513
1990 - 91	0.24	3.76	3.91	1.46	1.46	0.40	0.87	0.11	1.79	1.97	0.84	0.67	0.16	0.35	0.458	0.476	0.504	0.575	0.453	0.450	0.402
1991 - 92	0.18	3.52	3.98	1.62	1.51	0.47	0.72	0.08	1.77	2.03	0.89	0.69	0.23	0.29	0.444	0.503	0.510	0.549	0.457	0.489	0.403
1992 - 93	0.23	3.62	3.68	1.68	1.48	0.37	0.74	0.10	1.75	1.84	0.97	0.68	0.17	0.32	0.435	0.483	0.500	0.577	0.460	0.460	0.432
1993 - 94	0.24	3.58	3.71	1.56	1.71	0.38	0.71	0.11	1.73	1.72	0.95	0.79	0.18	0.32	0.458	0.483	0.464	0.609	0.462	0.474	0.451
1994 - 95	0.24	3.61	3.68	1.97	1.96	0.38	1.10	0.10	1.77	1.86	1.22	0.92	0.17	0.51	0.417	0.490	0.505	0.619	0.469	0.447	0.464
1995 - 96	0.23	3.76	3.68	1.88	1.88	0.37	1.15	0.09	1.91	1.55	1.18	0.89	0.17	0.56	0.391	0.508	0.503	0.628	0.473	0.460	0.487
1996 - 97	0.21	3.89	3.77	1.77	2.04	0.46	0.95	0.08	2.00	1.90	1.11	0.96	0.22	0.45	0.381	0.514	0.504	0.627	0.471	0.478	0.474
1997 - 98	0.24	4.04	3.79	1.80	1.83	0.37	0.88	0.09	2.04	1.90	1.12	0.85	0.17	0.41	0.375	0.505	0.501	0.622	0.465	0.450	0.466
1998 - 99	0.23	3.96	3.65	1.86	1.88	0.34	0.95	0.09	2.01	1.94	1.17	0.82	0.15	0.39	0.391	0.508	0.504	0.629	0.436	0.441	0.443
1999 - 2000	0.23	3.97	3.46	1.88	1.50	0.32	0.87	0.09	1.99	1.69	1.17	0.69	0.14	0.40	0.391	0.501	0.488	0.622	0.460	0.438	0.460

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.21.

SUMMER RICE

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.33	0.45	0.20	N/A	0.33	N/A	0.81	0.33	0.39	0.20	0.00	0.29	N/A	0.71	1.000	0.867	1.000	N/A	0.879	N/A	0.877
1952 - 53	0.71	0.73	0.16	0.14	1.15	N/A	0.26	0.71	0.73	0.14	0.13	1.01	N/A	0.26	1.000	1.000	0.875	0.929	0.878	N/A	1.000
1953 - 54	2.61	0.49	0.29	0.16	1.26	N/A	0.45	2.47	0.43	0.26	0.14	1.10	N/A	0.27	0.879	0.878	0.897	0.875	0.873	N/A	0.600
1954 - 55	2.28	0.81	0.27	0.81	2.37	N/A	0.02	3.08	1.22	0.41	1.22	3.59	N/A	0.04	1.345	1.506	1.519	1.506	1.515	N/A	2.000
1955 - 56	1.77	0.91	0.31	0.01	1.31	N/A	0.11	2.38	1.22	0.44	0.02	1.77	N/A	0.15	1.345	1.341	1.419	2.000	1.351	N/A	1.364
1956 - 57	4.66	0.94	0.34	0.07	1.08	1.66	0.02	6.53	1.26	0.46	0.10	1.46	2.49	0.02	1.344	1.340	1.353	1.429	1.352	1.346	1.000
1957 - 58	4.66	1.03	0.60	0.05	0.54	2.77	0.02	6.43	1.37	0.80	0.07	0.72	3.66	0.02	1.323	1.330	1.333	1.400	1.333	1.321	1.000
1958 - 59	4.05	1.46	0.63	0.16	4.88	1.33	0.20	5.44	1.96	0.84	0.21	6.57	1.50	0.27	1.343	1.343	1.333	1.313	1.346	1.327	1.350
1959 - 60	4.24	1.49	0.56	0.59	2.39	1.35	0.20	3.80	1.25	0.50	0.60	2.00	1.22	0.22	0.896	0.839	0.893	1.017	0.837	0.904	1.100
1960 - 61	4.65	1.56	0.74	0.59	8.21	1.34	0.20	4.17	1.31	0.66	0.63	6.90	0.88	0.22	0.897	0.840	0.892	1.063	0.840	0.710	1.100
1961 - 62	3.70	1.62	0.59	0.47	1.89	1.25	0.39	3.32	1.36	0.49	0.45	1.59	1.06	0.22	0.897	0.840	0.831	0.957	0.841	0.841	0.951
1962 - 63	2.55	1.35	0.57	0.59	2.78	0.57	0.32	2.30	1.21	0.48	0.56	2.34	0.73	0.31	0.898	0.896	0.842	0.949	0.842	0.839	0.969
1963 - 64	2.65	3.24	0.59	0.35	1.28	0.47	0.32	2.71	2.72	0.50	0.31	1.21	0.44	0.31	0.951	0.840	0.848	0.886	0.945	0.936	0.969
1964 - 65	2.65	4.33	0.67	0.27	2.43	0.67	0.64	2.73	3.88	0.59	0.23	2.31	0.06	0.57	0.955	0.896	0.881	0.852	0.951	0.857	0.891
1965 - 66	5.11	6.68	0.52	0.28	2.21	0.66	0.69	5.80	5.99	0.46	0.29	2.10	0.06	0.61	1.135	0.897	0.885	1.036	0.950	0.750	0.884
1966 - 57	11.45	7.51	3.31	0.43	4.35	0.33	0.26	13.17	7.70	3.31	0.46	5.01	0.10	0.22	1.150	1.025	1.000	1.070	1.152	0.833	0.846
1967 - 68	11.74	6.77	5.71	0.43	4.41	0.28	0.43	13.61	6.97	5.77	0.45	5.11	0.25	0.38	1.159	1.030	1.011	1.047	1.159	0.862	0.884
1968 - 69	11.78	6.87	6.77	0.51	4.46	0.33	0.45	14.73	7.42	7.11	0.56	5.26	0.30	0.40	1.250	1.080	1.050	1.098	1.179	0.909	0.869
1969 - 70	11.94	6.43	6.90	1.43	2.46	0.33	0.34	15.59	7.52	7.73	1.58	2.95	0.79	0.30	1.306	1.170	1.120	1.105	1.159	1.000	0.882
1970 - 71	12.54	6.00	3.83	0.84	2.12	0.33	0.10	16.55	7.02	4.25	0.93	2.56	0.06	0.09	1.320	1.170	1.110	1.107	1.208	1.000	0.900
1971 - 72	11.70	5.60	6.47	1.70	4.20	0.33	0.09	17.96	8.33	9.59	2.50	6.20	1.17	0.12	1.535	1.488	1.482	1.471	1.476	1.258	1.333
1972 - 73	10.40	8.80	9.94	1.39	6.20	1.44	0.14	16.02	14.52	16.30	2.29	10.41	1.87	0.19	1.540	1.650	1.640	1.548	1.679	1.299	1.357
1973 - 74	12.30	9.50	7.50	1.70	6.54	0.74	0.07	19.68	15.20	12.00	2.72	10.46	1.18	0.11	1.600	1.600	1.600	1.600	1.599	1.595	1.571

Table continued on next page.

Blank space indicates Data Not Available at source. (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	12.42	5.19	5.72	0.75	8.21	0.02	0.17	14.85	6.73	5.03	0.52	10.26	0.03	0.19	1.196	1.297	0.988	1.211	1.250	1.500	1.118
1975 - 76	12.63	4.82	6.45	0.75	10.78	0.04	0.22	14.90	5.49	6.43	0.55	13.80	0.05	0.25	1.180	1.135	0.995	0.562	1.280	1.250	1.136
1976 - 77	13.20	6.09	6.60	0.83	12.50	0.06	0.17	14.42	4.79	4.19	0.51	10.21	0.03	0.10	0.259	0.787	0.635	0.615	0.817	0.600	0.585
1977 - 78	12.53	5.98	6.34	1.02	12.74	0.25	0.20	15.72	9.16	7.76	1.09	16.16	0.33	0.02	1.255	1.532	1.224	1.069	1.269	1.320	0.100
1978 - 79	12.13	6.64	6.57	1.05	12.95	0.25	0.23	14.80	7.64	6.16	1.04	13.74	0.27	0.25	1.220	1.151	0.936	0.551	1.061	1.080	1.087
1979 - 80	12.00	6.16	7.11	0.82	11.51	0.05	0.31	15.21	6.01	8.13	0.77	11.90	0.06	0.35	1.268	0.976	1.144	0.939	1.034	1.200	1.129
1980 - 81	8.30	6.51	7.14	0.93	11.63	0.18	0.42	11.47	6.74	8.93	1.21	15.57	0.22	0.53	1.382	1.035	1.251	1.301	1.339	1.222	1.262
1981 - 82	7.80	6.00	5.22	1.00	11.20	0.15	0.43	4.81	9.52	6.30	1.32	12.01	0.15	0.42	0.617	1.190	1.013	1.320	1.072	1.000	0.977
1982 - 83	8.01	8.52	5.71	0.84	9.90	0.14	0.65	1.65	9.81	6.29	1.13	10.40	0.12	0.58	0.206	1.151	1.102	1.345	1.051	0.857	0.892
1983 - 84	11.02	9.16	6.22	2.33	13.99	0.15	0.36	11.78	13.99	7.30	2.55	16.56	0.18	0.45	1.069	1.527	1.174	1.270	1.184	1.200	1.250
1984 - 85	11.50	11.48	6.85	2.41	14.25	0.37	0.44	5.56	11.98	9.78	3.05	20.46	0.43	0.51	0.744	1.044	1.428	1.270	1.436	1.162	1.159
1985 - 86	11.80	8.91	7.25	2.43	13.53	0.07	0.49	11.40	8.59	8.15	2.55	13.93	0.07	0.50	0.966	0.964	1.123	1.062	1.030	1.000	1.020
1986 - 87	12.89	9.04	9.70	1.58	14.37	0.25	0.33	13.01	11.96	11.21	1.66	22.84	0.37	0.43	1.009	1.323	1.156	1.177	1.589	1.276	1.303
1987 - 88	12.38	13.79	9.72	1.85	14.65	0.18	0.41	16.67	16.05	11.30	2.67	22.15	0.24	0.54	1.347	1.165	1.163	1.443	1.512	1.263	1.317
1988 - 89	11.89	14.85	11.16	2.38	19.38	0.25	0.25	18.91	15.62	34.64	2.01	31.44	0.43	0.35	1.590	1.052	3.104	0.845	1.622	1.593	1.400
1989 - 90	14.00	14.02	16.24	3.49	26.86	0.35	0.40	7.51	17.67	28.43	2.85	50.34	0.49	0.56	0.536	1.260	1.751	0.817	1.744	1.400	1.400
1990 - 91	13.99	17.70	20.15	4.45	59.60	0.44	0.81	13.36	26.72	33.58	3.53	103.05	0.68	1.26	0.955	1.510	1.667	0.793	1.729	1.546	1.556
1991 - 92	14.83	20.97	23.13	2.95	65.24	0.30	0.74	21.90	29.72	40.82	3.94	117.63	0.51	1.24	1.477	1.417	1.765	1.342	1.803	1.700	1.676
1992 - 93	13.84	20.91	23.13	2.94	65.52	0.20	1.17	10.60	25.00	42.97	35.47	126.80	0.32	1.92	0.766	1.196	1.858	1.617	1.906	1.600	1.641
1993 - 94	16.25	18.06	24.16	6.31	61.71	0.12	1.42	19.40	26.45	42.08	9.05	119.29	0.20	2.15	1.194	1.465	1.742	1.434	1.933	1.667	1.514
1994 - 95	12.40	17.96	22.85	5.84	70.50	0.41	1.52	20.65	23.41	37.29	9.12	118.81	0.65	2.45	1.665	1.304	1.632	1.562	1.685	1.585	1.612
1995 - 96	12.32	25.22	30.47	10.93	67.25	2.21	5.23	15.54	31.10	51.50	14.69	123.94	3.58	8.40	1.261	1.233	1.690	1.254	1.843	1.620	1.606
1996 - 97	12.12	32.98	30.11	12.43	72.98	0.66	8.92	19.86	42.66	57.36	20.78	135.17	1.12	12.53	1.639	1.294	1.905	1.672	1.852	1.697	1.405
1997 - 98	12.50	38.60	30.98	13.77	60.51	9.67	8.73	17.54	49.91	62.59	20.45	137.85	17.33	8.39	1.403	1.293	2.020	1.485	2.278	1.792	0.951
1998 - 99	11.32	53.47	41.30	14.83	81.68	4.62	15.35	16.28	101.40	80.46	18.12	203.93	8.46	15.88	1.438	1.896	1.948	2.22	2.497	1.831	1.935
1999 - 2000	14.30	69.66	53.01	22.58	97.65	11.33	24.60	21.52	171.56	114.57	14.93	256.46	24.45	21.86	1.505	2.463	2.161	0.651	2.626	2.158	0.869

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.22.

SWEET POTATO

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976-77	0.33	2.36	2.31	1.50	0.71	0.58	1.21	1.34	8.20	7.83	4.84	2.24	1.56	3.78	4.467	3.475	3.390	3.227	3.155	3.120	3.124
1977-78	0.32	2.35	2.48	1.15	0.65	0.42	1.47	1.44	8.35	7.47	3.90	2.06	1.30	4.57	4.500	3.553	3.012	3.291	3.169	3.095	3.109
1978-79	0.35	1.91	2.56	1.18	0.69	0.46	1.52	1.57	6.78	7.83	4.04	2.24	1.43	4.73	4.486	3.550	3.059	3.424	3.246	3.109	3.112
1979-80	0.37	1.84	2.35	1.07	0.67	0.50	1.58	1.66	6.52	7.25	3.72	2.14	1.57	4.92	4.487	3.544	3.085	3.477	3.194	3.140	3.114
1980-81	0.43	1.96	2.47	1.10	0.76	0.48	1.60	1.88	6.91	7.57	3.75	2.50	1.49	4.95	4.372	3.526	3.065	3.409	3.290	3.104	3.113
1981-82	0.40	2.48	2.70	0.80	0.90	0.50	1.82	1.69	8.60	8.30	2.58	2.87	1.52	5.51	4.225	3.468	3.074	3.225	3.189	3.040	3.028
1982-83	0.42	2.47	2.51	1.02	0.92	0.47	1.40	1.75	9.11	7.74	3.33	2.94	1.43	4.23	4.167	3.688	3.084	3.265	3.196	3.043	3.021
1983-84	0.41	1.52	2.46	1.05	1.00	0.50	1.46	1.73	5.14	7.92	3.42	3.21	1.53	4.50	4.220	3.382	3.220	3.257	3.210	3.060	3.082
1984-85	0.34	3.15	2.57	1.00	0.95	0.38	1.73	1.38	11.30	8.02	3.20	3.03	1.16	5.26	4.059	3.587	3.121	3.200	3.190	3.053	3.041
1985-86	0.32	3.20	1.54	0.40	0.85	0.43	1.20	1.34	11.65	4.21	1.33	2.68	1.29	3.63	4.188	2.703	2.734	3.325	3.153	3.000	3.025
1986-87	0.38	3.21	2.30	0.66	0.67	0.44	1.06	1.45	11.58	5.87	2.11	2.11	1.34	3.24	4.028	3.608	2.552	3.197	3.149	3.046	3.057
1987-88	0.28	2.82	2.17	0.65	0.68	0.42	1.22	1.16	10.51	5.45	2.20	2.14	1.22	3.71	4.143	3.727	2.512	3.385	3.147	3.050	3.041
1988-89	0.22	3.19	2.23	0.73	0.69	0.50	0.71	0.91	11.87	5.60	2.35	2.17	1.52	2.04	4.136	3.721	2.511	3.219	3.145	3.040	2.873
1989-90	0.21	3.24	2.11	0.83	0.69	0.50	0.55	0.87	12.02	5.41	2.66	2.15	1.52	1.74	4.143	3.710	2.564	3.205	3.116	3.040	2.949
1990-91	0.24	3.98	2.13	0.82	0.61	0.43	0.78	1.02	14.52	5.28	2.34	1.92	1.31	2.29	4.250	3.648	2.479	2.819	3.148	3.047	2.936
1991-92	0.27	4.01	1.82	0.60	0.69	0.47	0.74	1.16	14.64	4.44	2.14	2.14	1.35	2.14	4.296	3.651	2.440	2.675	3.101	2.872	2.892
1992-93	0.29	3.79	1.85	0.92	0.56	0.45	0.77	1.22	14.27	4.97	2.51	1.73	1.33	2.37	4.207	3.765	2.687	2.728	3.089	2.956	3.078
1993-94	0.29	3.89	1.77	0.93	0.65	0.38	0.83	1.25	14.65	4.87	2.53	2.15	1.09	2.51	4.310	3.766	2.751	2.720	3.308	2.868	3.024
1994-95	0.29	3.88	1.84	0.80	0.75	0.38	0.78	1.22	15.23	5.30	2.32	2.26	1.13	2.39	4.207	3.925	2.880	2.900	3.013	2.974	3.064
1995-96	0.30	3.96	1.78	0.90	0.73	0.38	0.75	1.32	15.51	5.10	2.65	2.29	1.20	2.25	4.400	3.917	2.865	2.944	3.137	3.077	3.040
1996-97	0.26	4.05	1.82	0.77	0.78	0.28	0.75	1.20	16.17	5.18	2.34	2.45	0.91	2.41	4.615	3.993	2.846	3.039	3.141	3.138	3.213
1997-98	0.30	4.22	1.86	0.88	0.77	0.27	0.84	1.35	16.66	5.26	2.56	2.40	0.84	2.57	4.500	3.948	2.828	2.977	3.117	3.111	3.060
1998-99	0.31	4.04	1.77	1.06	0.84	0.31	0.83	1.39	16.00	4.89	3.14	2.63	1.00	2.49	4.484	3.960	2.763	2.962	3.131	3.226	3.000
1999-2000	0.31	3.95	1.37	1.38	0.86	0.32	0.82	1.32	15.51	3.81	3.08	2.76	1.02	2.50	4.258	3.932	2.781	2.232	3.209	3.188	3.049

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.23.

TAPIOCA

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976 - 77	N/A	0.19	0.22	0.12	0.02	0.04	0.14	N/A	0.89	0.57	0.55	0.07	0.17	0.52	N/A	4.664	2.591	4.917	3.500	4.250	3.714
1977 - 78	N/A	0.17	0.14	0.15	0.02	0.05	0.15	N/A	0.82	0.38	0.75	N/A	0.20	0.53	N/A	4.824	2.714	5.000	N/A	4.000	3.533
1978 - 79	0.01	0.23	0.18	0.15	0.02	0.07	0.15	0.03	1.10	0.50	0.75	0.08	0.26	0.56	3.000	4.783	2.778	5.000	4.000	3.714	3.733
1979 - 80	0.01	0.25	0.19	0.21	0.03	0.07	0.16	0.04	1.19	0.54	1.05	0.12	0.28	0.57	4.000	4.760	2.842	5.000	4.000	4.000	3.563
1980 - 81	0.01	0.39	0.21	0.18	0.13	0.09	0.16	0.02	1.89	0.73	0.90	0.06	0.36	0.57	2.000	4.846	3.476	5.000	0.462	4.000	3.563
1981 - 82	0.01	0.38	0.26	0.26	0.10	0.10	0.16	0.03	1.84	0.83	1.32	0.41	0.40	0.55	3.000	4.842	3.192	5.077	4.100	4.000	3.625
1982 - 83	0.01	0.35	0.25	0.37	0.11	0.13	0.16	0.03	1.64	0.86	1.60	0.45	0.52	0.60	3.000	4.686	3.440	4.865	4.091	4.000	3.750
1983 - 84	0.02	0.38	0.19	0.47	0.12	0.09	0.18	0.05	1.84	0.64	2.31	0.47	0.38	0.66	2.500	4.842	3.368	4.915	3.917	4.222	3.667
1984 - 85	0.02	0.51	0.26	0.87	0.14	0.05	0.09	0.05	2.55	0.86	4.25	0.56	0.20	0.36	2.500	5.000	3.308	4.931	4.000	4.000	4.000
1985 - 86	N/A	0.54	0.51	0.67	0.16	0.12	0.10	N/A	2.67	1.67	2.72	0.66	0.46	0.46	N/A	4.944	3.275	4.060	4.125	3.833	4.000
1986 - 87	0.01	0.47	0.31	0.44	0.10	0.09	0.11	0.03	2.29	1.00	2.01	0.32	0.38	0.42	3.000	4.872	3.226	4.568	3.200	4.222	3.909
1987 - 88	0.02	0.59	0.32	0.79	0.03	0.04	0.07	0.02	2.83	1.05	3.57	0.10	0.14	0.28	2.000	4.797	3.281	4.519	3.333	3.500	4.000
1988 - 89	0.01	0.75	0.25	0.68	0.02	0.02	0.07	0.05	3.42	0.82	2.76	0.07	0.12	0.28	5.000	4.560	3.280	4.059	3.500	4.000	4.000
1989 - 90	0.01	0.52	0.34	0.66	0.02	0.03	0.09	0.04	2.41	1.12	2.91	0.07	0.13	0.36	4.000	4.635	3.294	4.409	3.500	4.333	4.000
1990 - 91	0.01	0.82	0.34	0.64	0.02	0.06	0.11	0.04	3.79	1.11	2.78	0.06	0.22	0.41	4.000	4.622	3.265	4.344	3.000	3.667	3.727
1991 - 92	0.01	0.73	0.30	0.62	0.02	0.08	0.12	0.04	3.37	0.97	2.68	0.06	0.22	0.47	4.000	4.616	3.233	4.323	3.000	2.750	3.917
1992 - 93	0.01	0.91	0.32	0.22	0.02	0.04	0.13	0.05	4.20	1.04	0.98	0.07	0.16	0.50	5.000	4.615	3.250	4.455	3.500	4.000	3.846
1993 - 94	0.01	0.90	0.32	0.36	0.02	0.05	0.09	0.04	4.02	1.29	1.51	0.08	0.19	0.38	4.000	4.467	4.031	4.194	4.000	3.800	4.222
1994 - 95	0.01	0.88	0.32	0.56	0.02	0.02	0.09	0.06	3.86	1.35	2.31	0.10	0.09	0.35	6.000	4.386	4.219	4.125	5.000	4.500	3.629
1995 - 96	0.01	0.90	0.57	0.63	0.02	0.02	0.08	0.04	4.00	3.17	2.71	0.10	0.10	0.33	4.000	4.444	5.561	4.302	5.000	5.000	4.125
1996 - 97	0.02	0.94	0.59	0.32	0.03	0.04	0.15	0.07	4.17	3.25	1.36	0.13	0.19	0.62	3.500	4.436	5.509	4.250	4.333	4.750	4.133
1997 - 98	0.04	1.03	0.59	0.31	0.03	0.02	0.10	0.17	4.60	3.28	1.28	0.11	0.09	0.38	4.250	4.466	5.559	4.129	3.667	4.500	3.600
1998 - 99	0.04	1.25	0.51	0.50	0.03	0.02	0.11	0.18	5.62	2.94	2.08	0.12	0.09	0.45	4.500	4.496	5.765	4.160	4.000	4.500	4.091
1999 - 2000	0.04	1.26	0.51	0.51	0.04	0.02	0.11	0.19	5.69	2.97	2.15	0.15	0.09	0.46	4.750	4.516	5.824	4.216	3.750	4.500	4.162

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.24.

TOBACCO

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.21	1.90	2.85	1.20	0.46	0.51	0.45	0.12	1.23	1.93	0.82	0.21	0.29	0.32	0.571	0.679	0.677	0.683	0.457	0.569	0.667
1952 - 53	0.23	2.07	3.23	1.15	0.58	0.53	0.45	0.25	1.63	2.55	0.89	0.39	0.30	0.35	0.893	0.787	0.790	0.788	0.672	0.909	0.792
1953 - 54	0.20	1.85	3.33	1.22	0.61	0.45	0.45	0.27	1.45	2.61	0.96	0.44	0.40	0.35	0.900	0.805	0.784	0.787	0.721	0.889	0.796
1954 - 55	0.22	1.94	3.33	1.37	0.73	0.59	0.51	0.30	1.51	2.61	1.07	0.57	0.30	0.40	0.790	0.784	0.784	0.781	0.751	0.769	0.784
1955 - 56	0.42	1.76	3.30	1.23	0.94	0.43	0.53	0.42	1.55	2.59	0.83	0.85	0.34	0.41	0.913	0.898	0.785	0.675	0.904	0.791	0.774
1956 - 57	0.51	1.83	3.33	1.09	0.73	0.43	0.55	0.45	1.48	2.61	0.74	0.58	0.34	0.43	0.882	0.809	0.784	0.679	0.755	0.791	0.729
1957 - 58	0.52	1.73	3.46	1.07	0.65	0.42	0.60	0.40	1.51	2.71	0.48	0.44	0.36	0.47	0.769	0.873	0.783	0.449	0.677	0.857	0.783
1958 - 59	0.55	2.06	3.44	1.14	0.66	0.32	0.61	0.44	1.50	2.70	0.51	0.52	0.27	0.51	0.786	0.728	0.785	0.447	0.733	0.844	0.536
1959 - 60	0.55	2.28	3.50	1.13	0.69	0.23	0.53	0.44	1.65	2.75	0.51	0.54	0.24	0.45	0.786	0.728	0.786	0.451	0.733	0.857	0.849
1960 - 61	0.60	2.06	3.52	1.23	0.72	0.25	0.55	0.41	1.63	2.76	0.69	0.40	0.24	0.52	0.683	0.786	0.784	0.561	0.556	0.857	0.397
1961 - 62	0.52	2.24	3.82	1.41	0.69	0.13	0.60	0.45	1.85	3.17	0.79	0.39	0.11	0.52	0.726	0.830	0.830	0.560	0.555	0.846	0.333
1962 - 63	0.54	2.27	3.80	1.47	0.88	0.14	0.65	0.47	1.85	3.15	0.83	0.49	0.12	0.55	0.734	0.828	0.825	0.565	0.557	0.857	0.641
1963 - 64	0.55	2.01	3.81	1.35	0.81	0.14	0.65	0.48	1.62	3.20	0.82	0.49	0.11	0.54	0.727	0.806	0.840	0.607	0.605	0.786	0.783
1964 - 65	0.55	1.98	3.78	1.24	0.83	0.14	0.70	0.49	1.62	3.05	0.83	0.56	0.11	0.55	0.721	0.818	0.807	0.669	0.675	0.786	0.786
1965 - 66	0.55	1.81	3.75	1.23	0.70	0.24	0.61	0.41	1.45	3.00	0.62	0.47	0.17	0.52	0.603	0.801	0.800	0.504	0.671	0.708	0.853
1966 - 67	0.55	2.04	3.89	1.22	0.71	0.25	0.60	0.46	1.67	3.11	0.59	0.47	0.18	0.51	0.697	0.819	0.800	0.484	0.662	0.720	0.850
1967 - 68	0.70	2.03	3.87	1.31	0.75	0.25	0.60	0.49	1.67	3.10	0.66	0.50	0.18	0.51	0.700	0.823	0.801	0.504	0.667	0.720	0.850
1968 - 69	0.69	1.85	3.89	1.33	0.76	0.25	0.62	0.48	1.55	3.11	0.67	0.51	0.20	0.52	0.696	0.820	0.800	0.504	0.671	0.714	0.839
1969 - 70	0.75	1.67	3.31	1.51	0.76	0.25	0.60	0.53	1.37	2.69	0.76	0.51	0.20	0.51	0.697	0.820	0.813	0.503	0.671	0.714	0.850
1970 - 71	0.85	1.24	3.34	1.21	0.65	0.24	0.57	0.60	1.03	2.70	0.62	0.43	0.17	0.49	0.698	0.831	0.808	0.512	0.662	0.708	0.860
1971 - 72	0.77	1.22	3.01	1.16	0.60	0.25	0.71	0.54	1.01	2.45	0.58	0.40	0.18	0.50	0.701	0.828	0.814	0.500	0.667	0.720	0.845
1972 - 73	0.35	1.46	3.08	1.93	0.36	0.23	0.62	0.25	1.24	2.52	1.06	0.24	0.17	0.52	0.694	0.849	0.818	0.549	0.667	0.739	0.839
1973 - 74	0.75	0.94	2.75	1.32	0.23	0.23	0.67	0.59	0.75	2.20	0.98	0.15	0.15	0.50	0.787	0.830	0.800	0.742	0.652	0.652	0.746

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.91	1.14	1.70	1.06	0.33	0.19	0.68	0.49	0.91	2.07	0.80	0.22	0.17	0.51	0.690	0.807	0.76	0.734	0.667	0.654	0.750
1975 - 76	0.97	1.06	1.30	1.17	0.30	0.13	0.53	0.40	0.91	1.75	0.86	0.19	0.15	0.47	0.702	0.755	0.76	0.735	0.633	0.652	0.758
1976 - 77	0.98	0.85	1.39	1.54	0.31	0.16	0.51	0.39	0.95	1.84	1.12	0.20	0.17	0.46	0.696	0.755	0.77	0.727	0.645	0.654	0.754
1977 - 78	0.92	0.80	1.96	1.19	0.31	0.25	0.65	0.27	0.92	1.50	0.84	0.20	0.17	0.48	0.519	0.750	0.755	0.706	0.645	0.654	0.739
1978 - 79	0.90	0.84	1.95	1.27	0.34	0.25	0.65	0.34	0.92	1.49	0.83	0.22	0.18	0.48	0.680	0.750	0.764	0.709	0.647	0.643	0.729
1979 - 80	0.40	0.74	1.99	0.97	0.39	0.31	0.63	0.28	0.95	1.53	0.69	0.25	0.21	0.47	0.700	0.743	0.765	0.711	0.641	0.677	0.746
1980 - 81	0.42	0.79	2.16	0.85	0.37	0.34	0.62	0.21	0.97	1.65	0.61	0.22	0.23	0.47	0.500	0.722	0.764	0.718	0.595	0.677	0.746
1981 - 82	0.35	0.86	1.90	0.85	0.49	0.32	0.65	0.17	0.95	1.45	0.53	0.29	0.21	0.49	0.486	0.659	0.763	0.616	0.592	0.656	0.754
1982 - 83	0.25	0.83	1.69	0.64	0.67	0.32	0.74	0.12	0.95	1.22	0.38	0.22	0.21	0.55	0.480	0.663	0.722	0.594	0.328	0.656	0.743
1983 - 84	0.24	0.86	1.76	1.03	0.36	0.15	0.76	0.11	0.95	1.28	0.67	0.20	0.10	0.57	0.458	0.674	0.727	0.651	0.556	0.667	0.750
1984 - 85	0.23	1.01	1.61	0.88	0.47	0.17	0.88	0.11	0.97	1.17	0.54	0.28	0.11	0.64	0.478	0.594	0.727	0.614	0.596	0.647	0.727
1985 - 86	0.15	0.97	1.46	0.75	0.32	0.12	0.61	0.08	0.47	1.13	0.46	0.18	0.08	0.45	0.533	0.485	0.774	0.613	0.563	0.667	0.738
1986 - 87	0.13	0.92	1.24	0.52	0.23	0.15	0.55	0.07	0.45	0.89	0.29	0.13	0.11	0.40	0.539	0.489	0.715	0.558	0.565	0.688	0.727
1987 - 88	0.11	0.87	1.18	0.42	0.11	0.14	0.42	0.06	0.45	0.86	0.25	0.06	0.09	0.39	0.546	0.517	0.725	0.595	0.546	0.647	0.714
1988 - 89	0.10	0.78	1.01	0.35	0.12	0.07	0.39	0.05	0.39	0.54	0.21	0.07	0.05	0.28	0.500	1.000	0.535	0.600	0.583	0.714	0.718
1989 - 90	0.05	0.77	1.10	0.31	0.12	0.06	0.30	0.03	0.44	0.60	0.18	0.07	0.04	0.19	0.600	0.571	0.545	0.581	0.583	0.667	0.633
1990 - 91	0.05	0.70	0.81	0.32	0.16	0.03	0.34	0.02	0.35	0.41	0.20	0.09	0.05	0.22	0.400	0.543	0.505	0.625	0.563	0.625	0.647
1991 - 92	0.03	0.52	0.61	0.32	0.14	0.03	0.33	0.02	0.30	0.33	0.20	0.08	0.05	0.21	0.667	0.577	0.541	0.625	0.571	0.625	0.636
1992 - 93	0.02	0.51	0.60	0.36	0.13	0.06	0.27	0.01	0.22	0.29	0.23	0.07	0.04	0.16	0.500	0.549	0.483	0.590	0.539	0.667	0.593
1993 - 94	0.03	0.46	0.50	0.32	0.09	0.05	0.26	0.01	0.25	0.19	0.19	0.04	0.04	0.15	0.333	0.565	0.380	0.594	0.444	0.667	0.577
1994 - 95	0.02	0.42	0.51	0.22	0.08	0.06	0.27	0.01	0.22	0.19	0.15	0.03	0.04	0.16	0.500	0.524	0.373	0.682	0.375	0.667	0.593
1995 - 96	0.02	0.41	0.57	0.15	0.07	0.05	0.23	0.01	0.22	0.22	0.10	0.03	0.04	0.13	0.500	0.537	0.385	0.667	0.429	0.667	0.565
1996 - 97	0.01	0.41	0.56	0.10	0.08	0.05	0.24	0.01	0.23	0.22	0.07	0.03	0.03	0.15	1.000	0.561	0.393	0.700	0.375	0.600	0.625
1997 - 98	0.01	0.41	0.56	0.10	0.06	0.04	0.24	0.01	0.22	0.22	0.07	0.02	0.03	0.14	1.000	0.537	0.393	0.700	0.333	0.750	0.583
1998 - 99	0.01	0.28	0.54	0.13	0.07	0.05	0.25	0.01	0.25	0.20	0.08	0.03	0.03	0.16	1.000	0.571	0.375	0.615	0.429	0.600	0.615
1999 - 2000	0.01	0.25	0.50	0.14	0.07	0.05	0.23	0.01	0.14	0.20	0.09	0.03	0.03	0.14	1.000	0.560	0.400	0.643	0.429	0.600	0.509

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.25.

TUR

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	0.15	0.68	1.87	0.71	0.03	N/A	N/A	0.05	0.21	0.67	0.19	N/A	N/A	N/A	0.313	0.369	0.355	0.268	0.000	N/A	N/A
1952 - 53	0.11	0.77	1.61	0.49	0.02	0.24	0.33	N/A	0.20	0.50	0.15	0.01	0.01	0.11	0.000	0.280	0.311	0.306	0.500	0.250	0.394
1953 - 54	0.01	0.65	1.46	0.57	0.02	0.15	0.34	N/A	0.51	0.98	0.41	0.01	0.06	0.22	N/A	0.735	0.671	0.719	0.500	0.750	0.576
1954 - 55	0.11	0.61	0.41	0.56	0.02	0.08	N/A	0.09	0.44	0.30	0.40	0.01	0.06	N/A	0.750	0.721	0.732	0.714	0.500	0.750	N/A
1955 - 56	N/A	0.65	0.50	0.59	0.06	N/A	N/A	N/A	0.55	0.33	0.43	0.05	N/A	N/A	N/A	0.546	0.660	0.729	0.833	N/A	N/A
1956 - 57	N/A	0.49	0.47	0.55	0.18	N/A	N/A	N/A	0.35	0.34	0.40	0.13	N/A	N/A	N/A	0.714	0.723	0.727	0.722	N/A	N/A
1957 - 58	N/A	0.46	0.45	0.61	0.05	N/A	N/A	N/A	0.34	0.33	0.45	0.04	N/A	N/A	N/A	0.739	0.733	0.738	0.800	N/A	N/A
1958 - 59	0.11	0.45	0.46	0.55	0.06	0.04	N/A	0.30	0.35	0.40	0.05	0.03	N/A	N/A	2.500	0.778	0.833	0.091	0.500	0.000	N/A
1959 - 60	N/A	0.08	0.45	0.81	0.73	0.07	0.04	0.06	0.28	0.50	0.49	0.04	0.03	N/A	N/A	3.500	1.111	0.605	0.055	0.429	0.000
1960 - 61	0.07	0.41	0.91	0.73	0.06	0.01	0.06	0.05	0.29	0.61	0.53	0.04	0.04	N/A	0.714	0.707	0.670	0.726	0.667	4.000	0.000
1961 - 62	0.07	0.43	0.74	0.81	0.06	0.01	0.06	0.05	0.31	0.49	0.59	0.04	0.02	0.01	0.714	0.721	0.662	0.728	0.667	0.667	0.500
1962 - 63	0.05	0.64	0.77	0.88	0.06	0.02	0.15	0.05	0.46	0.52	0.64	0.04	0.02	0.09	0.833	0.719	0.675	0.727	0.667	1.000	0.000
1963 - 64	0.05	0.38	0.78	0.87	0.07	0.02	0.15	0.05	0.28	0.54	0.64	0.05	0.10	N/A	0.833	0.737	0.692	0.736	0.714	5.000	0.000
1964 - 65	0.05	0.45	0.73	0.84	0.07	0.02	0.13	0.04	0.33	0.51	0.61	0.05	0.09	N/A	0.667	0.733	0.699	0.726	0.714	4.500	0.000
1965 - 66	0.11	0.49	0.75	0.91	0.11	0.03	0.11	0.09	0.36	0.52	0.66	0.08	0.02	0.07	0.818	0.735	0.693	0.725	0.727	0.667	0.536
1966 - 67	0.10	0.50	0.80	1.07	0.12	0.03	0.11	0.07	0.37	0.56	0.78	0.09	0.02	0.08	0.700	0.740	0.700	0.729	0.750	0.667	0.727
1967 - 68	0.11	0.50	0.86	1.18	0.13	0.04	0.14	0.08	0.27	0.60	0.86	0.10	0.03	0.10	0.727	0.540	0.698	0.729	0.769	0.750	0.714
1968 - 69	0.11	0.48	1.29	1.25	0.14	0.04	0.15	0.09	0.35	0.91	0.91	0.11	0.03	0.11	0.750	0.729	0.705	0.728	0.786	0.750	0.733
1969 - 70	0.10	0.44	1.31	1.30	0.15	0.05	0.15	0.07	0.32	0.93	0.95	0.11	0.03	0.10	0.700	0.727	0.710	0.731	0.733	0.600	0.657
1970 - 71	0.08	0.37	1.32	1.48	0.22	0.03	0.22	0.07	0.27	0.94	1.89	0.16	0.02	0.15	0.875	0.730	0.712	1.270	0.727	0.667	0.652
1971 - 72	0.08	0.50	1.01	1.50	0.43	0.03	0.15	0.07	0.37	2.14	1.10	0.32	0.02	0.11	0.778	0.740	0.711	0.733	0.744	0.667	0.733
1972 - 73	0.08	0.39	2.33	2.35	0.43	0.04	0.16	0.07	0.29	1.66	1.72	0.32	0.03	0.11	0.778	0.744	0.712	1.732	0.744	0.750	0.655
1973 - 74	0.08	0.48	1.40	1.79	0.33	0.03	0.16	0.06	0.35	1.00	1.29	0.23	0.02	0.11	0.667	0.729	0.714	0.721	0.697	0.667	0.658

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated).

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	0.08	1.37	1.22	2.02	0.37	0.04	0.10	0.06	0.42	0.88	1.45	0.26	0.02	0.21	0.750	0.737	0.721	0.718	0.703	0.500	0.700
1975 - 76	0.09	1.39	1.36	1.27	0.41	0.04	0.28	0.07	0.42	1.01	0.91	0.29	0.01	0.20	0.778	0.712	0.743	0.717	0.707	0.750	0.714
1976 - 77	0.09	1.30	1.42	1.28	0.51	0.07	0.33	0.06	0.42	1.06	0.90	0.35	0.05	0.23	0.667	0.700	0.746	0.703	0.686	0.714	0.697
1977 - 78	0.10	1.32	1.42	1.25	0.56	0.06	0.17	0.07	0.42	1.04	0.90	0.41	0.03	0.25	0.700	0.677	0.732	0.720	0.707	0.500	0.676
1978 - 79	0.11	1.32	1.52	1.28	0.53	0.10	0.41	0.08	0.49	1.11	0.92	0.45	0.06	0.28	0.727	0.681	0.737	0.719	0.714	0.500	0.691
1979 - 80	0.09	1.32	1.63	1.21	0.95	0.14	0.44	0.06	0.50	1.35	0.09	0.68	0.09	0.31	0.667	0.694	0.738	0.704	0.716	0.643	0.705
1980 - 81	0.11	1.36	1.38	1.22	1.18	0.17	0.46	0.09	0.61	1.07	0.89	0.64	0.11	0.32	0.727	0.709	0.775	0.730	0.712	0.647	0.696
1981 - 82	0.10	1.37	1.54	1.30	1.16	0.16	0.46	0.07	0.91	1.20	0.97	0.81	0.11	0.33	0.700	0.717	0.779	0.745	0.698	0.688	0.717
1982 - 83	0.12	1.40	1.67	1.41	1.69	0.19	0.67	0.08	0.97	1.30	1.05	1.16	0.12	0.48	0.667	0.693	0.778	0.745	0.686	0.632	0.716
1983 - 84	0.11	1.39	1.52	1.90	3.66	0.18	0.81	0.08	1.04	1.18	1.50	2.56	0.12	0.58	0.727	0.748	0.776	0.785	0.699	0.667	0.716
1984 - 85	0.09	1.33	1.36	1.77	3.90	0.15	0.50	0.06	0.97	1.05	1.36	2.72	0.10	0.36	0.667	0.729	0.772	0.765	0.697	0.667	0.720
1985 - 86	0.11	1.30	1.60	1.85	3.65	0.10	0.67	0.08	0.92	1.27	1.49	2.56	0.07	0.49	0.727	0.708	0.794	0.805	0.701	0.700	0.731
1986 - 87	0.11	1.32	1.55	1.55	2.97	0.13	0.57	0.08	1.55	1.18	1.20	2.05	0.08	0.41	0.727	0.731	0.761	0.774	0.690	0.615	0.719
1987 - 88	0.11	1.35	1.34	1.35	3.00	0.07	0.55	0.08	0.92	1.04	1.06	2.01	0.05	0.39	0.727	0.736	0.776	0.785	0.670	0.714	0.709
1988 - 89	0.03	1.33	1.57	0.88	3.15	0.11	0.29	0.07	0.77	1.00	0.55	2.16	0.07	0.21	0.667	0.713	0.637	0.625	0.686	0.636	0.724
1989 - 90	0.09	1.31	1.31	0.56	2.68	0.10	0.29	0.06	0.81	0.83	0.40	1.87	0.07	0.21	0.667	0.730	0.634	0.714	0.698	0.700	0.724
1990 - 91	0.09	1.33	1.28	0.54	2.80	0.09	0.22	0.06	0.81	0.84	0.30	1.91	0.06	0.16	0.667	0.723	0.656	0.704	0.682	0.667	0.727
1991 - 92	0.10	1.33	1.00	0.71	2.44	0.12	0.25	0.07	0.74	0.87	0.43	1.60	0.08	0.18	0.700	0.740	0.670	0.695	0.656	0.667	0.720
1992 - 93	0.10	1.33	0.84	0.84	2.43	0.11	0.23	0.07	0.74	0.61	0.51	1.63	0.06	0.17	0.700	0.822	0.726	0.607	0.671	0.545	0.739
1993 - 94	0.10	1.32	0.82	0.49	2.09	0.11	0.26	0.07	0.74	0.59	0.30	1.40	0.07	0.19	0.700	0.771	0.720	0.611	0.670	0.615	0.731
1994 - 95	0.09	1.32	0.82	0.80	2.10	0.12	0.35	0.07	0.74	0.63	0.45	1.41	0.08	0.26	0.778	0.755	0.716	0.600	0.671	0.667	0.743
1995 - 96	0.10	1.34	0.90	0.74	1.82	0.10	0.41	0.07	0.75	0.66	0.48	1.23	0.07	0.30	0.700	0.798	0.733	0.642	0.676	0.700	0.732
1996 - 97	0.10	1.34	1.01	0.67	2.16	0.27	0.35	0.07	0.75	0.75	0.46	1.45	0.18	0.27	0.700	0.766	0.743	0.647	0.671	0.667	0.750
1997 - 98	0.23	1.36	1.03	0.73	1.83	0.27	0.33	0.15	0.73	0.76	0.50	1.23	0.18	0.25	0.695	0.760	0.738	0.665	0.672	0.667	0.755
1998 - 99	0.21	1.38	1.09	0.77	2.57	0.32	0.27	0.14	0.74	0.82	0.53	1.73	0.21	0.20	0.667	0.574	0.752	0.668	0.673	0.656	0.741
1999 - 2000	0.23	1.30	1.05	0.88	2.12	0.27	0.27	0.15	0.91	0.78	0.58	1.43	0.18	0.20	0.696	0.758	0.752	0.673	0.675	0.667	0.741

Blank space indicates Data Not Available at source hence average Average Yield could not be calculated

Table B.26.

TURMERIC

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1976 - 77	0.21	0.45	1.80	1.20	0.78	0.51	0.95	0.11	0.27	1.08	0.75	0.46	0.33	0.55	0.524	0.600	0.611	0.625	0.590	0.647	0.579
1977 - 78	0.26	0.49	2.14	1.35	0.59	0.57	1.15	0.14	0.31	1.28	0.85	0.35	0.39	0.67	0.500	0.633	0.625	0.630	0.593	0.684	0.583
1978 - 79	0.25	0.50	2.17	1.32	0.59	0.56	1.15	0.13	0.32	1.30	0.83	0.35	0.39	0.67	0.448	0.640	0.625	0.629	0.593	0.672	0.583
1979 - 80	0.31	0.51	2.17	1.38	0.82	0.63	1.16	0.15	0.31	1.30	0.88	0.50	0.41	0.68	0.484	0.608	0.625	0.638	0.610	0.651	0.586
1980 - 81	0.33	0.60	2.31	1.38	0.89	0.69	1.22	0.16	0.39	1.39	0.87	0.54	0.46	0.71	0.485	0.650	0.611	0.630	0.607	0.667	0.582
1981 - 82	0.26	0.68	2.14	1.43	0.87	0.66	1.40	0.15	0.43	1.31	0.94	0.58	0.43	0.84	0.536	0.632	0.612	0.657	0.667	0.632	0.600
1982 - 83	0.27	0.69	2.08	1.45	0.98	0.73	1.46	0.14	0.46	1.40	0.95	0.69	0.46	0.74	0.519	0.667	0.623	0.655	0.704	0.630	0.507
1983 - 84	0.28	0.66	1.82	1.77	1.07	0.79	1.63	0.14	0.41	1.15	1.19	0.69	0.51	0.97	0.500	0.621	0.612	0.672	0.645	0.646	0.595
1984 - 85	0.30	0.88	1.56	1.68	1.17	0.75	1.56	0.15	0.54	0.99	1.12	0.62	0.48	0.93	0.500	0.614	0.613	0.667	0.530	0.640	0.596
1985 - 86	0.30	0.89	2.36	1.46	1.15	0.81	1.55	0.15	0.55	1.53	0.98	0.70	0.52	0.92	0.500	0.618	0.648	0.671	0.609	0.642	0.594
1986 - 87	0.31	1.02	2.37	1.38	1.03	0.79	1.53	0.16	0.61	1.52	0.89	0.62	0.58	0.91	0.516	0.598	0.641	0.645	0.602	0.734	0.595
1987 - 88	0.25	1.04	2.14	1.45	1.04	0.95	1.73	0.14	0.64	1.38	0.93	0.63	0.61	1.03	0.500	0.615	0.645	0.641	0.605	0.642	0.595
1988 - 89	0.27	1.01	2.26	1.42	1.00	0.79	1.11	0.13	0.63	1.67	0.92	0.61	0.51	0.64	0.482	0.624	0.629	0.648	0.610	0.646	0.577
1989 - 90	0.25	1.13	2.03	1.41	1.19	0.85	0.88	0.13	0.70	1.38	0.92	0.71	0.56	0.50	0.520	0.620	0.620	0.653	0.597	0.636	0.568
1990 - 91	0.27	1.08	2.15	0.91	1.20	0.88	0.86	0.14	0.67	1.48	0.61	0.71	0.46	0.51	0.519	0.620	0.625	0.670	0.592	0.523	0.580
1991 - 92	0.30	1.06	2.16	0.93	1.13	0.87	0.82	0.15	0.67	1.52	0.63	0.56	0.40	0.54	0.500	0.632	0.624	0.677	0.496	0.460	0.659
1992 - 93	0.33	1.13	2.25	0.94	1.15	0.87	0.84	0.17	0.75	1.68	0.65	0.61	0.48	0.50	0.515	0.664	0.747	0.692	0.530	0.495	0.595
1993 - 94	0.40	1.26	2.11	0.95	1.46	1.12	1.05	0.20	0.83	1.68	0.59	0.95	0.73	0.64	0.500	0.659	0.726	0.621	0.651	0.652	0.610
1994 - 95	0.35	1.24	2.12	1.38	1.54	1.20	1.24	0.18	0.81	1.85	0.91	1.04	0.75	0.76	0.514	0.653	0.873	0.659	0.675	0.625	0.613
1995 - 96	0.37	1.52	2.27	1.31	1.55	0.65	1.22	0.21	1.00	1.99	0.86	1.05	0.41	0.75	0.568	0.658	0.877	0.657	0.677	0.631	0.615
1996 - 97	0.31	1.57	2.31	1.50	1.57	0.75	1.40	0.19	1.05	1.95	0.98	1.07	0.45	0.85	0.613	0.669	0.844	0.653	0.682	0.600	0.607
1997 - 98	0.32	1.62	2.27	1.32	1.60	0.73	N/A	0.20	1.07	1.96	0.86	1.08	0.45	0.99	0.625	0.661	0.813	0.652	0.675	0.616	N/A
1998 - 99	0.54	1.60	2.31	1.75	1.65	0.81	1.49	0.31	1.07	1.99	1.13	1.16	0.48	0.90	0.574	0.669	0.825	0.646	0.703	0.593	0.604
1999 - 2000	0.55	1.60	2.38	1.77	1.65	0.79	1.48	0.42	1.07	2.04	1.18	1.12	0.46	0.90	0.609	0.669	0.825	0.667	0.679	0.582	0.608

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.27.

WHEAT

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	N/A	0.71	0.81	0.10	0.26	N/A	N/A	N/A	0.66	0.76	0.12	0.14	N/A	N/A	N/A	0.930	0.533	1.200	0.539	N/A	N/A
1952 - 53	N/A	0.88	0.89	0.12	0.55	0.00	0.05	N/A	0.81	0.74	0.07	0.41	N/A	0.05	N/A	0.921	0.532	0.583	0.746	N/A	0.625
1953 - 54	N/A	0.81	0.73	0.14	0.55	0.02	0.05	N/A	0.73	0.52	0.09	0.35	0.01	0.05	N/A	0.901	0.712	0.643	0.636	0.500	0.625
1954 - 55	N/A	0.85	1.20	0.12	0.66	N/A	N/A	N/A	0.48	0.67	0.07	0.37	N/A	N/A	N/A	0.565	0.556	0.583	0.561	N/A	N/A
1955 - 56	N/A	0.85	0.06	0.13	0.66	N/A	N/A	N/A	0.43	0.03	0.07	0.33	N/A	N/A	N/A	0.506	0.500	0.539	0.500	N/A	N/A
1956 - 57	N/A	1.31	0.07	0.09	0.44	N/A	N/A	N/A	0.66	0.03	0.04	0.22	N/A	N/A	N/A	0.504	0.429	0.444	0.500	N/A	N/A
1957 - 58	N/A	1.25	0.08	0.17	0.57	N/A	N/A	N/A	0.7	0.04	0.09	0.32	N/A	N/A	N/A	0.560	0.500	0.529	0.561	N/A	N/A
1958 - 59	N/A	1.25	2.15	0.32	0.12	N/A	N/A	N/A	0.77	1.2	0.16	0.06	N/A	N/A	N/A	0.616	0.556	0.500	0.500	N/A	N/A
1959 - 60	N/A	1.23	2.89	0.32	0.09	N/A	N/A	N/A	0.69	1.05	0.16	0.04	N/A	N/A	N/A	0.561	0.367	0.500	0.444	N/A	N/A
1960 - 61	N/A	1.25	1.98	0.32	0.07	N/A	N/A	N/A	1.23	1.6	0.16	0.03	N/A	N/A	N/A	0.954	0.266	0.500	0.429	N/A	N/A
1961 - 62	N/A	1.27	2.20	0.29	0.09	N/A	N/A	N/A	1.18	1.79	0.15	0.05	N/A	N/A	N/A	0.929	0.314	0.517	0.556	N/A	N/A
1962 - 63	N/A	1.62	2.06	0.06	0.07	N/A	0.02	N/A	1.36	1.66	0.03	0.04	N/A	0.01	N/A	0.840	0.206	0.500	0.571	N/A	0.500
1963 - 64	N/A	1.62	1.80	0.07	0.10	N/A	0.02	N/A	1.36	1.51	0.04	0.06	N/A	0.01	N/A	0.840	0.339	0.571	0.600	N/A	0.500
1964 - 65	N/A	1.63	2.00	0.05	0.10	N/A	0.02	N/A	1.46	1.69	0.03	0.06	N/A	0.01	N/A	0.896	0.345	0.600	0.600	N/A	0.500
1965 - 66	N/A	2.64	1.92	0.05	0.01	N/A	0.02	N/A	1.58	1.61	0.03	0.01	N/A	0.01	N/A	0.599	0.329	0.600	1.000	N/A	0.500
1966 - 67	0.01	3.03	1.97	0.15	0.05	0.03	0.04	N/A	1.67	1.66	0.08	0.03	0.02	0.02	N/A	0.551	0.343	0.533	0.600	0.667	0.500
1967 - 68	0.01	3.94	2.06	0.10	0.19	0.07	0.06	N/A	2.17	1.73	0.05	0.11	0.04	0.03	N/A	0.551	0.340	0.500	0.579	0.571	0.500
1968 - 69	0.01	3.98	1.96	0.26	0.13	0.07	0.14	N/A	2.09	1.65	0.14	0.07	0.04	0.07	N/A	0.525	0.642	0.539	0.539	0.571	0.500
1969 - 70	0.08	4.21	3.40	0.28	0.25	0.30	0.16	0.04	2.13	2.72	0.15	0.14	0.18	0.23	0.500	0.506	0.360	0.536	0.560	0.600	1.438
1970 - 71	0.18	9.77	4.83	1.82	1.54	1.17	0.73	0.09	4.89	3.87	0.97	0.84	0.68	0.35	0.500	0.501	0.201	0.533	0.546	0.561	0.480
1971 - 72	0.14	13.00	14.50	6.00	4.00	0.75	0.60	0.15	15.68	17.55	7.23	4.62	0.9	0.84	1.071	1.206	1.210	1.205	1.205	1.200	1.050
1972 - 73	0.30	32.40	38.50	6.60	10.00	4.60	2.52	0.17	45.31	38.72	17.83	12.76	5.78	4.8	0.567	1.522	1.006	2.073	1.276	1.257	1.644
1973 - 74	0.18	20.63	13.50	3.44	5.50	1.24	1.00	0.21	28.51	11.34	5.64	5.5	1.43	1.16	1.167	1.384	0.240	1.640	1.000	1.153	1.160

Table continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1974 - 75	1.14	15.65	14.46	7.50	9.70	3.35	1.43	0.18	16.44	19.82	6.73	11.77	4.57	1.8	1.265	1.240	1.271	1.164	1.213	1.364	1.259
1975 - 76	0.12	10.41	12.97	6.32	9.30	2.52	1.33	0.14	12.19	15.63	8.12	10.59	3.25	1.78	1.167	1.194	1.220	1.191	1.139	1.292	1.336
1976 - 77	0.15	15.00	15.92	9.20	10.92	2.77	1.90	0.17	16.01	16.75	11.64	9.36	3.09	2.24	1.132	1.201	1.252	1.265	0.857	1.116	1.179
1977 - 78	0.23	16.62	17.38	10.10	10.47	3.56	2.20	0.27	17.47	19.99	12.66	11.38	4.62	2.7	1.174	1.051	1.250	1.254	1.087	1.292	1.227
1978 - 79	0.21	16.32	18.11	10.70	10.62	3.85	2.25	0.21	16.23	16.91	10.54	13.63	4.53	2.42	1.000	0.959	0.934	0.985	1.283	1.177	1.076
1979 - 80	0.26	16.53	23.70	12.06	7.41	5.36	2.42	0.29	17.29	26.67	15.83	8.78	6.87	2.78	1.115	0.933	1.125	1.313	1.185	1.282	1.149
1980 - 81	0.35	19.63	25.13	16.50	12.15	6.17	3.70	0.41	21.3	28.37	19.86	15.01	7.34	4.37	1.171	1.085	1.129	1.204	1.235	1.190	1.181
1981 - 82	0.15	20.00	25.56	20.50	18.00	4.00	2.10	0.17	22.69	25.29	24.61	21.05	5.03	2.54	1.133	1.135	0.929	1.201	1.169	1.258	1.210
1982 - 83	0.23	23.01	26.44	19.81	19.72	3.79	10.63	0.26	27.48	32.83	24.18	17.17	4.83	12.27	1.130	1.194	1.242	1.221	0.871	1.274	1.154
1983 - 84	0.18	21.59	24.60	21.01	17.07	3.29	9.72	0.24	24.16	29.56	25.03	20.3	4.26	14.06	1.333	1.120	1.202	1.191	1.189	1.295	1.447
1984 - 85	0.08	44.67	48.01	22.07	18.78	4.06	10.02	0.08	45.69	44.57	26.77	19.48	3.92	9.33	1.000	1.090	0.926	1.213	1.037	0.966	0.931
1985 - 86	0.07	32.77	23.78	15.90	13.02	1.71	4.19	0.07	35.96	25.02	18.02	14.65	2.36	3.49	1.000	1.097	1.052	1.133	1.125	1.380	0.833
1986 - 87	0.24	33.91	26.64	16.35	26.83	9.08	4.43	0.24	38.03	23.27	19.45	25.4	11.25	5.16	1.000	1.122	0.874	1.154	0.947	1.239	1.165
1987 - 88	0.32	27.63	19.52	16.57	13.72	6.91	6.63	0.35	31.76	21.52	13.23	20.88	8.99	7.54	1.094	1.141	1.103	0.703	1.115	1.301	1.142
1988 - 89	0.17	29.11	23.13	13.29	21.85	8.81	6.11	0.19	32.27	25.43	15.56	25.48	10.51	11.33	1.116	1.109	1.099	1.111	1.166	1.193	1.314
1989 - 90	0.05	17.51	23.21	7.30	21.29	6.12	5.11	0.04	27.37	21.64	6.55	17.7	6.33	6.55	0.500	1.563	0.932	0.533	0.831	1.034	1.159
1990 - 91	0.14	19.08	23.24	8.17	18.56	3.41	3.86	0.17	37.91	29.23	8.38	18.07	5.33	3.85	1.214	1.987	1.258	1.026	0.974	1.563	0.997
1991 - 92	0.12	20.87	16.08	7.59	20.24	3.91	2.59	0.18	40.98	22.03	9.44	27.63	5.29	2.93	1.500	1.964	1.170	1.245	1.365	1.353	1.131
1992 - 93	0.16	25.00	16.86	6.19	19.21	2.76	1.51	0.17	28.12	16.15	6.08	19.11	3.34	1.87	1.063	1.125	0.958	0.982	0.995	1.210	1.033
1993 - 94	0.18	27.82	19.01	8.56	16.13	2.18	3.16	0.23	37.82	23.65	12.63	17.77	1.91	3.62	1.278	1.360	1.244	1.476	1.102	0.876	1.146
1994 - 95	0.05	27.67	20.95	10.65	15.08	1.95	2.64	0.07	37.27	28.54	15.54	13.09	2.31	4.06	1.400	1.347	1.362	1.459	0.868	1.185	1.538
1995 - 96	0.05	28.32	23.18	10.42	16.14	2.70	3.11	0.06	35.03	25.2	11.33	13.69	3.07	3.89	1.200	1.237	1.057	1.087	0.848	1.117	1.251
1996 - 97	0.04	29.95	23.05	7.01	15.40	4.33	6.22	0.06	43.14	31.97	8.44	12.74	5.47	7.52	1.500	1.606	1.337	1.204	0.827	1.263	1.209
1997 - 98	0.04	29.93	23.12	6.99	13.76	3.11	5.90	0.05	41.52	29.65	7.49	17.95	3.55	7.07	1.250	1.387	1.282	1.072	1.305	1.142	1.198
1998 - 99	0.05	23.50	24.05	7.67	14.69	5.80	6.93	0.05	28.71	25.57	7.44	15.98	5.23	4.81	1.000	1.007	1.063	0.970	1.088	0.902	0.694
1999 - 2000	0.05	24.43	20.96	7.93	12.20	3.25	6.06	0.06	35.34	24.96	11.07	13.98	3.34	6.71	1.200	1.447	1.151	1.396	1.146	1.028	1.107

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.28.

WINTER RICE

Year	Area under crop (Thousand Hectares)						Total Production (Thousand Tonnes)						Average Yield (Tonnes per Hectare)								
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1951 - 52	135.72	168.43	260.57	156.22	141.71	188.81	156.73	138.17	161.26	193.79	156.98	145.36	188.06	188.39	1.018	0.957	0.744	1.005	1.026	0.996	1.202
1952 - 53	135.63	170.84	268.11	164.53	142.03	188.73	146.86	135.54	179.86	228.28	167.21	157.83	237.39	158.83	0.997	1.053	0.895	1.138	1.111	1.278	1.082
1953 - 54	135.28	175.56	268.27	168.35	146.90	175.92	146.52	109.75	192.16	212.94	214.00	158.68	190.23	196.55	0.811	1.095	0.624	1.271	1.060	1.081	1.341
1954 - 55	139.64	161.67	238.46	165.60	151.89	201.46	141.34	166.38	164.64	209.27	241.66	132.45	235.29	177.74	1.191	1.017	0.678	1.459	0.872	1.168	1.258
1955 - 56	141.26	153.78	232.42	167.62	162.75	203.07	147.14	128.82	150.04	194.08	190.10	170.08	218.69	135.31	0.912	0.976	0.763	1.134	1.045	1.077	0.920
1956 - 57	140.26	160.66	244.97	168.22	159.10	156.66	145.81	159.92	158.27	218.85	177.55	179.99	180.32	193.34	1.140	0.985	0.688	1.055	1.131	0.917	1.326
1957 - 58	141.09	144.59	219.63	168.02	149.46	200.56	147.71	155.29	157.71	172.30	177.32	108.13	226.93	175.93	1.101	1.091	0.718	1.055	0.723	1.131	1.191
1958 - 59	145.69	151.82	254.08	192.80	159.02	206.40	153.01	140.67	158.65	213.68	200.82	166.16	230.92	161.57	0.966	1.045	0.642	1.042	1.045	1.119	1.056
1959 - 60	151.60	156.32	246.97	173.86	164.66	208.82	164.71	180.07	171.89	217.55	207.29	204.41	257.15	200.11	1.186	1.099	0.881	1.193	1.241	1.231	1.215
1960 - 61	158.63	156.37	248.45	173.51	166.43	220.51	163.37	194.44	159.26	199.34	179.87	185.46	225.07	183.32	1.226	1.018	0.795	1.024	1.114	1.021	1.122
1961 - 62	158.00	162.28	248.86	172.50	167.04	220.84	165.81	198.58	182.73	172.46	182.17	165.53	261.24	193.21	1.257	0.880	0.693	1.056	0.981	1.183	1.165
1962 - 63	157.59	165.92	248.23	173.31	163.13	222.02	166.16	137.38	148.49	158.05	177.10	147.61	241.52	181.90	0.872	0.895	0.637	1.022	0.905	1.097	1.095
1963 - 64	156.57	160.45	247.69	173.71	163.03	222.62	163.37	180.21	152.69	216.32	205.15	177.62	265.11	197.98	1.151	0.952	0.673	1.181	1.089	1.191	1.212
1964 - 65	157.27	165.92	230.73	174.53	161.96	224.25	163.30	206.49	154.48	223.33	222.09	164.98	288.82	199.62	1.313	0.931	0.891	1.273	1.019	1.199	1.222
1965 - 66	157.47	166.16	231.68	174.47	162.68	224.58	164.35	205.36	149.76	176.66	188.86	142.46	259.26	189.25	1.304	0.901	0.696	1.082	0.876	1.154	1.152
1966 - 67	149.87	196.95	230.41	175.36	161.94	221.99	170.00	185.92	168.71	193.05	179.39	155.30	232.23	178.09	1.241	0.857	0.771	1.023	0.959	1.037	1.048
1967 - 68	153.53	200.47	251.25	179.75	161.83	222.81	175.35	195.57	145.64	186.24	195.52	141.78	286.45	198.85	1.274	0.726	0.741	1.088	0.876	1.286	1.134
1968 - 69	157.17	200.41	255.44	180.58	165.39	224.29	182.50	193.17	181.62	223.82	216.95	188.78	279.63	236.87	1.229	0.906	0.673	1.201	1.141	1.247	1.298
1969 - 70	154.34	203.50	257.14	180.36	166.03	223.84	191.19	136.67	188.42	193.76	174.10	139.99	242.76	230.51	0.886	0.926	0.754	0.965	0.843	1.085	1.206
1970 - 71	150.72	200.04	258.24	180.00	162.95	230.55	198.95	186.68	172.73	250.52	211.76	173.76	295.10	222.33	1.239	0.863	0.978	1.176	1.066	1.280	1.118
1971 - 72	151.02	209.47	259.40	178.50	153.00	223.00	185.94	187.86	192.69	231.81	190.05	142.70	312.10	214.82	1.244	0.920	0.894	1.065	0.933	1.400	1.155
1972 - 73	144.77	205.53	261.48	170.95	170.75	220.11	185.58	132.46	201.21	280.00	220.22	203.82	244.54	242.27	0.915	0.979	1.053	1.288	1.194	1.111	1.305
1973 - 74	146.91	206.00	270.72	176.06	203.51	228.21	195.20	155.42	178.56	238.66	197.52	236.94	276.74	223.15	1.058	0.867	0.682	1.122	1.164	1.223	1.143

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Year	Area under crop (Thousand Hectares)							Total Production (Thousand Tonnes)							Average Yield (Tonnes per Hectare)						
	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar	Cachar	Goalpara	Kamrup	Darrang	Nagaon	Lakhimpur	Sibsagar
1975-76	147.93	193.05	272.55	188.97	175.60	217.70	223.03	155.73	194.42	253.41	210.22	181.20	244.73	263.05	1.053	1.607	0.922	1.113	1.032	1.124	1.178
1976-77	159.71	212.71	273.95	198.01	186.40	216.63	215.37	173.98	203.16	261.48	232.41	233.82	276.72	261.67	1.089	0.955	0.954	1.174	1.254	1.277	1.215
1977-78	163.03	215.77	276.70	196.80	187.40	220.30	216.55	180.39	207.72	208.36	211.59	212.34	263.01	270.71	1.107	0.963	0.953	1.075	1.133	1.194	1.250
1978-79	166.41	217.66	278.06	201.22	188.55	223.22	215.17	203.28	223.67	244.25	216.36	210.06	276.93	281.81	1.222	1.028	0.678	1.075	1.114	1.241	1.310
1979-80	166.90	220.00	277.30	202.00	189.40	224.93	216.12	155.44	181.60	246.35	219.37	196.33	291.05	268.50	0.931	0.825	0.833	1.086	1.037	1.294	1.241
1979-80	167.10	214.45	281.60	195.74	187.30	231.35	219.25	136.71	177.47	268.50	155.20	204.12	276.84	232.58	0.818	0.828	0.921	0.946	1.090	1.197	1.058
1980-81	165.70	218.71	282.39	193.30	191.19	240.14	224.25	236.14	209.31	256.88	194.91	218.85	347.34	310.43	1.437	0.957	0.879	1.008	1.145	1.446	1.385
1981-82	153.10	220.00	280.00	175.65	195.60	269.00	238.95	118.42	208.48	288.92	180.81	194.03	405.82	304.86	0.773	0.948	1.032	1.029	0.992	1.509	1.276
1982-83	155.81	219.32	284.31	189.05	191.76	264.58	238.02	192.58	239.29	340.76	226.41	203.71	396.33	315.14	1.235	1.091	1.159	1.198	1.062	1.498	1.324
1983-84	151.15	216.05	278.41	190.99	196.82	263.82	258.71	191.95	225.32	396.23	317.72	195.71	216.38	224.58	1.270	1.043	1.423	1.664	0.994	0.820	0.868
1984-85	158.30	204.01	266.63	203.74	194.07	263.12	271.33	172.90	185.65	251.66	223.35	212.22	379.22	360.29	1.092	0.910	0.944	1.096	1.094	1.441	1.328
1985-86	171.20	227.24	317.54	208.64	193.19	268.59	283.30	219.16	227.69	373.17	239.21	280.07	393.78	367.57	1.265	1.002	1.175	1.386	1.450	1.466	1.297
1986-87	171.25	233.88	309.52	190.61	177.23	253.85	266.06	199.82	238.87	313.68	243.36	187.42	364.43	323.80	1.167	1.021	1.033	1.277	1.057	1.436	1.217
1987-88	172.35	224.65	298.54	197.81	178.59	238.08	269.89	267.09	239.30	349.56	272.12	266.65	347.83	350.14	1.550	1.065	1.171	1.376	1.493	1.461	1.297
1988-89	165.17	206.23	312.17	183.95	184.66	242.92	256.74	130.09	190.94	291.15	205.50	205.16	326.19	335.82	0.788	0.926	0.903	1.117	1.111	1.343	1.306
1989-90	162.83	223.60	325.68	210.07	193.42	271.47	281.12	249.05	230.97	359.97	259.94	224.18	392.46	383.40	1.530	1.033	1.125	1.237	1.159	1.561	1.364
1990-91	176.00	229.64	325.79	210.66	192.05	262.83	288.19	294.17	243.74	400.51	267.56	273.31	401.61	393.69	1.671	1.060	1.229	1.270	1.423	1.530	1.366
1991-92	180.60	223.73	316.24	214.19	199.10	263.57	290.60	297.24	281.43	329.79	280.84	268.89	469.06	410.17	1.646	1.258	1.043	1.311	1.351	1.780	1.411
1992-93	165.48	228.93	313.15	198.45	187.63	272.24	273.75	330.52	259.56	362.00	242.21	259.39	441.40	390.02	1.782	1.134	1.160	1.221	1.382	1.621	1.425
1993-94	160.48	224.29	322.84	208.50	203.52	263.75	276.39	238.80	294.63	404.93	308.51	279.48	451.50	405.76	1.323	1.314	1.254	1.480	1.373	1.712	1.468
1994-95	181.90	199.81	303.51	197.72	183.38	258.03	265.43	306.32	263.63	352.60	270.24	269.37	432.90	369.92	1.684	1.319	1.162	1.367	1.469	1.678	1.394
1995-96	185.60	212.30	314.57	201.93	195.40	252.17	278.97	318.29	267.81	382.83	269.09	317.22	477.67	400.21	1.715	1.261	1.217	1.328	1.623	1.894	1.435
1996-97	187.20	205.32	310.19	211.03	175.02	261.73	267.94	351.92	258.22	355.90	261.39	245.26	488.86	380.16	1.880	1.258	1.147	1.239	1.401	1.868	1.419
1997-98	185.02	210.27	312.66	208.82	181.22	264.11	262.91	302.22	226.37	410.15	299.19	251.10	434.44	366.53	1.633	1.077	1.312	1.433	1.386	1.645	1.394
1998-99	168.07	196.02	292.77	187.11	189.67	236.34	240.22	340.68	201.10	342.89	250.95	262.53	406.65	332.84	1.811	1.026	1.171	1.341	1.384	1.721	1.386
1999-2000	168.75	164.46	314.35	227.87	202.99	260.71	275.00	322.57	264.08	406.03	300.55	356.33	480.34	394.24	1.709	1.606	1.292	1.319	1.755	1.842	1.434

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Table B.29.

STATE TOTAL : AREA (ALL CROPS)

(Thousand Hectares)

Year	Areca nut	Autumn Rice	Hennum	Castor	Chillies	Coconut	Gram	Jute	Linseed	Maize	Meata	Onion	Orange	Other Cereal & Small Millets	Other Rabi Pulses	Papaya	Pineapple	Potato	Rape & Mustard	Seamum	Summer Rice	Sweet Potato	Taploca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1951 - 52		322.37		1.03	3.55		4.16	123.25	1.59	1.58	0.21			2.18	73.11			18.05	117.25	4.33	1.12			7.61	3.45	1.68	1208.18	
1952 - 53		338.31		1.31	1.32		3.01	121.22	0.81	2.21	1.24			4.17	59.52			18.15	114.21	5.22	1.5			8.12	3.27	2.52	1200.98	
1953 - 54		340.51		1.47	1.89		2.83	109.78	0.98	2.81	1.11			2.82	61.09			19.12	111.18	4.59	5.40			8.25	3.13	2.33	1206.84	
1954 - 55		332.31		1.84	2.01		1.95	109.58	1.13	2.71	0.89			1.54	67.82			18.25	109.11	5.47	6.57			8.65	1.83	2.83	1200.26	
1955 - 56		347.18		1.82	3.41		2.52	128.49	0.69	4.01	1.87			4.29	66.77			19.22	110.59	6.35	4.42			8.65	1.82	1.73	1228.04	
1956 - 57		353.26		1.82	3.73		1.28	114.03	0.75	3.91	1.64			3.80	75.80			18.11	116.52	6.33	9.18			8.51	1.69	1.91	1217.68	
1957 - 58		371.56		1.68	4.08		1.54	123.57	1.91	5.34	2.22			1.60	73.59			19.27	113.97	6.28	9.87			8.45	1.57	2.07	1191.06	
1958 - 59		390.66		1.94	5.14		1.40	118.31	0.85	5.35	4.23			3.74	76.51			20.73	118.21	6.52	12.51			8.79	1.72	3.84	1262.82	
1959 - 60		392.11		1.94	5.72		1.45	129.96	0.88	3.92	4.58			3.69	74.59			21.36	115.92	6.57	10.82			8.97	2.18	4.53	1267.2	
1960 - 61		379.26		2.04	5.36		1.44	125.28	0.86	4.41	5.03			3.61	68.79			21.14	112.22	6.76	17.19			8.99	2.25	3.66	1298.27	
1961 - 62		406.59		1.98	5.62		1.55	133.88	0.96	4.31	7.91			3.54	71.34			22.36	114.63	7.04	9.92			9.51	2.21	3.85	1295.33	
1962 - 63		431.27		2.01	5.19		1.94	127.61	0.91	5.57	8.67			5.19	69.90			23.31	122.51	8.03	9.04			9.89	2.58	3.83	1296.38	
1963 - 64		425.03		1.94	5.63		1.73	128.48	0.91	4.91	8.96			4.55	78.14			23.07	122.51	8.61	9.11			9.47	2.33	3.61	1297.44	
1964 - 65		436.54		1.92	5.31		1.66	130.16	0.91	4.79	10.05			4.70	77.66			23.58	123.31	8.41	11.27			9.35	2.31	3.83	1297.94	
1965 - 66		445.55		1.95	6.63		2.05	126.58	0.83	8.08	11.47			5.17	81.47			23.51	122.78	8.34	15.57			9.02	2.51	4.64	1303.39	
1966 - 67		449.72		1.78	8.61		1.94	127.87	0.97	6.28	9.46			5.23	77.34			25.62	124.68	8.45	17.43			9.37	2.73	5.28	1329.52	
1967 - 68		464.72		1.82	8.45		2.04	135.13	1.05	6.77	8.02			5.01	79.95			25.33	127.13	8.41	22.78			9.51	2.96	6.43	1344.99	
1968 - 69		504.61		1.92	6.66		1.91	104.16	1.04	7.43	7.07			4.79	83.39			25.32	133.55	7.96	31.17			9.46	3.47	6.55	1366.78	
1969 - 70		501.98		2.42	7.39		2.02	119.55	0.87	7.97	7.11			4.93	85.44			25.22	129.41	8.54	30.29			8.89	3.51	8.68	1376.41	
1970 - 71		508.47		1.97	7.75		1.52	128.46	0.69	8.75	6.61			4.24	78.04			23.96	134.08	9.55	25.49			8.11	3.72	20.04	1379.45	
1971 - 72		505.96		1.93	9.59		3.83	132.43	0.89	8.41	12.72			13.92	80.68			26.15	140.55	10.76	30.89			7.72	5.71	39.19	1360.33	
1972 - 73		524.45		1.51	10.93		4.49	121.95	0.77	7.91	10.35			11.53	83.66			25.58	137.51	11.73	38.31			8.04	5.79	97.32	1361.17	
1973 - 74		532.85		1.32	15.52		2.75	144.16	2.45	10.18	10.51			19.48	87.45			25.45	145.62	11.14	34.35			6.89	4.28	45.46	1421.61	
1974 - 75		555.54		1.67	13.48		3.52	109.43	2.22	10.92	13.36			24.08	86.94			22.94	138.13	10.26	31.95			6.91	4.61	52.28	1449.23	

Table Continued on next page

Blank space indicates Data Not Available at source (hence average Average Yield could not be calculated)

Year	Alseanut	Autumn Rice	Banana	Castor	Chillie	Coconut	Gram	Jute	Linseed	Maize	Mesta	Onion	Orange	Other Cereals & Small Millets	Other Rabi Pulses	Papaya	Pineapple	Potato	Rape & Mustard	Senamim	Summer Rice	Sweet Potato	Tapioca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1975 - 76		599.38		1.77	12.76		2.96	92.45	4.87	11.69	10.73			22.22	84.81			25.95	133.61	8.69	35.74			8.25	4.04	43.27	1462.81	
1976 - 77	36.13	595.96	15.71	1.55	11.13	4.75	2.26	102.61	4.72	11.81	11.08			17.39	85.52			26.35	138.85	9.37	39.44	8.89	0.73	6.52	4.3	5.90	55.86	1476.47
1977 - 78	38.99	578.19	19.19	1.59	10.21	4.83	2.45	98.25	4.28	10.96	10.63			18.12	89.81			30.99	147.73	8.97	39.06	8.84	0.68	5.89	4.4	6.57	60.58	1490.29
1978 - 79	40.79	586.43	19.35	1.65	10.29	4.85	2.65	100.21	4.69	10.84	11.82			18.96	88.97			31.50	153.88	9.15	39.82	8.67	0.81	5.73	4.77	6.60	62.66	1498.85
1979 - 80	43.81	546.55	20.58	1.77	10.49	5.24	3.04	104.86	5.26	10.17	12.69			19.44	91.51			33.66	183.17	9.72	37.96	8.38	0.92	5.43	5.38	6.88	69.74	1507.34
1980 - 81	48.08	556.71	22.89	1.78	10.34	5.88	3.52	103.39	5.67	10.16	13.16	5.32		19.12	99.41			36.74	172.61	10.13	35.11	8.80	1.17	5.58	5.38	7.42	83.63	1525.63
1981 - 82	48.34	574.91	23.99	1.88	10.07	6.43	2.87	104.41	5.54	10.42	12.43	4.91		18.46	104.18			39.02	209.91	10.60	34.81	9.60	1.27	5.45	5.99	7.46	90.31	1532.30
1982 - 83	48.16	611.02	25.18	1.68	9.35	6.44	3.17	114.61	6.07	11.28	12.34	3.98		7.83	113.18			42.75	255.73	10.95	33.77	9.21	1.33	5.10	7.15	7.66	103.63	1542.95
1983 - 84	49.22	601.05	25.39	1.83	9.56	7.30	3.52	98.82	7.42	9.33	10.47	4.28		9.29	114.04			43.53	270.28	11.06	43.23	8.40	1.45	5.10	7.57	8.02	97.46	1555.95
1984 - 85	49.76	592.54	25.59	1.91	10.93	7.29	3.85	106.55	9.00	9.46	12.53	4.83		11.63	121.82			48.23	306.2	13.96	47.31	10.12	1.94	5.20	9.1	7.90	147.69	1561.20
1985 - 86	49.71	625.95	27.83	1.91	10.44	7.81	4.72	127.04	8.85	9.77	12.24	4.47		9.51	120.11			53.41	277.47	12.77	44.49	7.94	2.11	4.38	9.23	8.52	91.44	1671.70
1986 - 87	56.64	505.56	28.88	1.65	10.81	9.02	2.96	94.31	8.57	8.97	9.75	5.45		9.83	129.02			55.47	296.59	11.68	48.21	8.73	1.53	3.75	9.06	8.43	117.88	1602.40
1987 - 88	54.96	581.89	30.56	1.59	10.97	8.82	2.95	95.62	8.72	8.84	9.33	5.13		9.91	115.84			53.23	323.02	12.90	52.99	8.22	1.85	3.25	7.67	8.63	96.47	1579.91
1988 - 89	58.93	580.35	31.97	1.35	12.18	9.04	2.84	93.03	7.88	7.97	8.14	5.68	2.61	10.22	108.73	3.54	7.39	56.97	307.60	12.00	60.18	8.27	1.81	2.82	7.11	7.88	104.98	1551.85
1989 - 90	60.73	611.01	32.66	1.35	11.94	9.43	2.58	91.56	7.68	7.51	5.33	5.73	2.59	9.79	100.43	4.06	7.01	55.89	281.20	11.61	77.36	8.17	1.67	2.71	6.14	7.77	81.71	1648.19
1990 - 91	64.61	591.09	33.49	1.28	12.37	9.99	2.64	93.37	8.13	8.15	7.37	5.87	2.83	10.27	100.18	4.00	9.40	54.87	277.96	12.12	117.14	9.02	1.99	2.48	6.14	7.37	76.46	1685.10
1991 - 92	66.42	621.38	37.52	1.22	11.97	13.29	2.59	99.37	8.24	7.08	7.29	6.03	2.87	10.13	104.39	4.31	9.88	60.62	283.05	12.01	129.16	8.81	1.88	2.03	5.62	7.27	71.39	1688.03
1992 - 93	68.86	617.47	33.39	1.21	12.21	15.27	2.52	90.27	8.08	6.95	6.45	6.08	3.43	9.02	97.18	4.64	10.97	63.53	269.77	11.81	129.71	8.63	1.85	1.98	5.45	7.61	71.99	1658.64
1993 - 94	69.98	618.25	35.37	1.17	12.39	16.92	2.29	73.98	9.02	6.83	5.71	5.91	3.59	8.88	97.62	6.46	10.04	63.07	290.80	11.89	129.03	8.74	1.75	1.72	4.83	8.35	77.04	1679.77
1994 - 95	71.06	628.34	40.74	1.12	12.53	17.37	2.27	88.73	9.52	7.11	5.32	4.71	3.64	8.81	97.37	7.16	10.55	71.17	262.29	12.94	131.48	8.72	1.91	1.58	5.32	9.07	78.99	1589.78
1995 - 96	70.81	607.04	37.48	1.13	13.52	17.79	2.33	86.38	9.56	7.00	5.46	6.92	3.64	11.25	95.63	6.52	10.17	73.05	253.97	12.95	153.63	8.81	2.23	1.51	5.01	8.89	83.92	1640.94
1996 - 97	72.58	603.35	32.21	1.12	13.91	19.09	2.32	91.77	10.01	7.32	5.42	7.07	3.67	10.17	107.77	6.73	10.69	72.36	256.89	13.05	170.21	8.72	2.09	1.45	5.51	9.41	86.03	1618.43
1997 - 98	74.17	591.33	41.19	0.87	13.71	19.05	2.41	92.29	10.02	7.33	5.84	7.83	3.57	10.29	108.18	7.05	10.83	74.22	260.23	12.95	174.76	9.12	2.12	1.42	5.38	7.86	82.85	1625.01
1998 - 99	72.82	577.33	42.50	1.12	14.15	19.78	2.44	76.54	10.13	7.82	5.13	7.93	3.45	10.33	108.01	6.57	10.18	75.85	268.31	13.01	172.56	9.16	2.45	1.34	6.52	10.14	87.70	1530.20
1999 - 2000	71.76	522.48	39.71	1.12	13.85	20.01	2.22	71.42	10.16	7.72	5.11	7.13	3.11	10.47	103.87	6.58	10.32	75.75	376.15	12.11	193.14	8.67	2.50	1.25	6.02	10.37	74.88	1634.13

Blank space indicates Data Not available at source (hence average Average field could not be calculated)

Table B.30.

STATE TOTAL : PRODUCTION (ALL CROPS)
(Thousand Tonnes)

Year	Areca nut	Autumn Rice	Banana	Castor	Chillies	Coconut	Gram	Jute	Linnseed	Maize	Meata	Onion	Orange	Other Cereal & Small Millets	Other Rabi Pulses	Papaya	Pineapple	Potato	Rape & Mustard	Sesamum	Summer Rice	Sweet Potato	Tapioca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1951 - 52		210.31		0.36	0.81		2.43	742.46	0.66	1.13	0.00			1.09	24.52			68.15	50.60	1.67	1.92			4.98	1.12	1.95	1172.01	
1952 - 53		235.15		0.46			1.75	874.88	0.28	1.59	7.63			2.40	20.90			90.36	43.77	2.42	2.08			6.39	1.00	2.02	1284.94	
1953 - 54		277.27		0.53	0.46		1.66	888.70	0.36	1.67	7.04			1.53	25.64			104.18	43.63	1.99	4.67			6.56	2.20	1.75	1274.31	
1954 - 55		254.40		0.93	0.80		1.10	726.43	0.33	1.32	3.62			0.71	26.62			82.25	42.80	2.17	9.56			6.77	1.30	1.59	1327.43	
1955 - 56		327.57		0.56	2.50		1.06	1053.5	0.30	1.05	9.20			2.17	26.20			90.63	50.61	3.71	5.98			7.02	1.36	0.86	1187.12	
1956 - 57		316.32		0.54	2.47		0.65	855.13	0.32	1.06	8.16			2.21	29.74			60.20	57.44	2.86	12.32			6.63	1.22	0.95	1268.24	
1957 - 58		331.04		0.58	2.67		0.66	982.52	0.75	0.78	11.10			0.92	28.86			80.25	52.92	2.98	13.07			6.37	1.16	1.15	1173.61	
1958 - 59		280.63		0.71	3.38		0.62	1002.9	0.34	2.36	20.06			1.47	30.02			106.96	61.39	3.10	16.79			6.45	1.13	2.19	1272.47	
1959 - 60		198.79		0.70	3.09		0.74	993.65	0.32	2.00	21.39			1.81	23.52			98.27	39.64	3.15	9.59			6.59	1.40	1.95	1438.57	
1960 - 61		266.49		0.72	3.25		0.78	855.54	0.33	2.28	18.32			1.79	23.46			101.32	42.77	3.19	14.77			6.64	1.56	3.02	1324.56	
1961 - 62		294.01		0.70	3.54		0.84	1044.5	0.36	2.24	33.03			1.75	30.03			92.77	39.73	3.27	11.99			7.27	1.53	3.17	1315.92	
1962 - 63		245.41		0.69	3.26		1.05	663.04	0.35	2.88	32.87			2.61	26.11			92.15	44.40	3.86	7.93			7.52	1.82	3.10	1194.05	
1963 - 64		313.72		0.76	3.36		1.10	986.38	0.40	2.47	33.36			2.27	32.42			66.61	51.04	4.26	8.20			7.26	1.66	2.98	1395.08	
1964 - 65		306.87		0.76	3.45		1.01	882.46	0.38	2.49	35.91			2.48	33.44			79.65	51.67	3.91	10.37			7.21	1.63	3.25	1439.80	
1965 - 66		356.44		0.76	4.23		1.05	817.44	0.37	3.23	41.22			2.51	34.80			59.22	52.98	3.90	15.31			6.64	1.80	3.24	1311.61	
1966 - 67		251.15		0.75	4.21		1.04	923.03	0.41	3.43	35.19			2.59	31.86			107.51	55.11	4.02	29.97			6.99	1.97	3.45	1292.69	
1967 - 68		348.13		0.77	4.10		1.07	985.22	0.45	3.70	29.24			2.46	32.72			107.40	57.29	3.96	32.54			7.11	2.04	4.13	1350.05	
1968 - 69		365.35		0.82	4.26		1.02	754.62	0.44	4.03	26.01			2.37	34.33			127.74	45.45	3.78	35.78			7.04	2.51	4.06	1520.85	
1969 - 70		354.45		0.74	4.56		1.05	1039.3	0.39	4.34	26.66			2.43	32.01			92.30	46.85	4.03	36.46			6.57	2.51	5.53	1306.21	
1970 - 71		351.84		0.69	4.90		0.85	916.82	0.31	4.88	25.16			2.13	27.80			99.36	53.46	4.04	31.46			6.04	3.49	11.66	1512.88	
1971 - 72		300.73		0.78	6.13		1.91	1052.1	0.40	4.64	47.99			6.72	27.31			147.51	64.80	5.07	45.87			5.76	4.13	47.17	1472.03	
1972 - 73		397.69		0.66	6.89		2.19	918.07	0.35	4.32	38.56			5.67	41.47			115.69	53.34	5.29	61.60			6.00	4.20	129.37	1524.52	
1973 - 74		394.33		0.55	6.66		2.11	1078.9	1.05	5.41	28.45			9.01	39.52			81.25	59.50	5.49	81.13			5.35	3.06	53.75	1506.01	
1974 - 75		387.14		0.68	6.15		1.44	742.95	1.18	5.84	50.26			11.5	34.29			96.10	52.32	4.81	38.01			5.18	3.30	66.31	1502.76	

Table Continued on next page

Blank space indicates Data Not Available at source (hence Average Average Yield could not be calculated)

Year	Areca nut	Autumn Rice	Banana	Castor	Chillies	Coconut	Gram	Jute	Linseed	Maize	Musta	Onion	Orange	Other Cereals & Small Millets	Other Rabi Pulses	Papaya	Pineapple	Potato	Rape & Mustard	Senamum	Summer Rice	Sweet Potato	Tapioca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1975 - 76	443.54	0.69	7.69	1.13	704.40	2.06	5.24	43.63						10.6	31.47			151.83	58.86	4.11	41.68		4.82	2.93		51.85	1643.24	
1976 - 77	38.77	371.66	218.43	0.64	6.69	25.00	0.67	680.92	2.04	5.24	48.75			8.46	32.11			130.37	47.81	4.55	23.25	29.79	2.81	4.83	3.07	3.55	61.25	1554.12
1977 - 78	40.68	402.80	250.34	0.68	5.09	36.62	0.65	577.44	1.82	5.84	42.99			8.50	32.25			127.20	59.34	4.36	50.24	29.09	2.68	4.06	3.12	3.99	59.05	1656.38
1978 - 79	37.46	403.73	252.51	0.69	5.10	32.34	0.71	778.66	2.01	5.81	48.83			9.02	34.44			157.34	66.93	4.45	43.90	28.62	3.28	4.17	3.40	3.99	64.47	1558.64
1979 - 80	39.94	322.42	273.52	0.70	5.28	35.30	0.84	804.65	2.24	5.45	51.25			8.36	34.60			182.10	79.99	4.79	42.43	27.78	3.79	3.88	3.08	4.23	78.51	1481.42
1980 - 81	47.99	449.06	252.25	0.72	6.11	48.81	1.10	832.46	2.43	5.57	53.35	9.18		9.48	38.72			216.37	88.17	5.05	44.67	29.08	4.53	3.96	3.92	4.52	96.66	1775.86
1981 - 82	49.82	360.95	316.26	0.70	5.84	48.72	0.91	901.19	2.38	5.59	51.57	10.56		9.07	44.38			270.16	96.25	5.17	34.53	31.07	5.41	3.72	4.40	4.68	101.35	1701.34
1982 - 83	34.88	473.78	333.37	0.74	5.51	43.44	1.03	914.24	2.67	6.04	50.65	9.16		4.00	44.68			281.71	128.38	5.21	29.96	33.53	5.90	3.25	5.16	4.84	119.02	1914.22
1983 - 84	47.05	451.27	330.98	0.78	5.55	47.15	1.07	834.87	3.22	5.10	51.05	10.83		4.86	44.30			315.86	135.18	5.31	53.27	27.45	6.35	3.51	7.05	5.05	117.63	1767.89
1984 - 85	62.71	452.02	385.70	0.83	6.43	50.84	1.66	809.09	4.38	5.20	55.15	12.69		6.04	49.41			321.90	118.60	6.86	54.78	35.21	8.67	3.45	6.62	4.83	152.84	1785.29
1985 - 86	58.23	494.57	355.93	0.82	6.04	53.06	2.29	1141.5	3.97	5.39	53.17	12.80		4.96	55.39			298.36	130.11	6.14	45.22	26.33	8.58	2.85	6.88	5.35	99.57	2150.65
1986 - 87	57.53	322.04	370.91	0.68	6.30	67.68	1.38	927.27	3.65	4.93	43.34	13.03		4.96	50.87			332.92	141.92	5.74	81.68	27.70	6.46	2.34	6.55	5.29	122.90	1871.38
1987 - 88	60.23	343.45	390.20	0.71	6.44	78.89	1.38	863.87	1.75	4.85	43.72	12.39		5.28	52.23			324.04	157.76	6.37	69.63	26.39	7.99	2.07	5.55	5.36	104.27	2092.69
1988 - 89	78.09	409.75	413.13	0.45	7.45	65.44	1.45	655.07	3.80	4.38	37.64	11.00	26.12	5.16	43.31	53.22	93.30	340.33	140.23	6.15	103.40	26.46	7.52	1.98	4.78	5.11	120.77	1584.85
1989 - 90	69.25	430.64	434.17	0.58	7.17	76.80	1.23	775.92	3.22	4.18	34.15	10.96	26.62	5.18	43.75	62.10	102.23	328.72	124.30	5.54	107.85	26.37	7.04	1.55	4.25	4.90	86.15	2099.97
1990 - 91	50.11	493.00	445.99	0.57	7.44	80.54	1.27	846.43	3.42	4.48	34.56	10.05	28.66	5.35	40.70	61.38	116.81	380.78	145.12	5.91	182.18	28.68	8.41	1.37	4.22	4.58	102.94	2274.59
1991 - 92	55.01	475.35	494.12	0.56	7.38	93.43	1.32	842.12	3.73	3.77	33.55	11.65	29.00	5.58	48.28	66.21	127.20	484.71	181.38	5.96	215.78	28.01	7.81	1.19	3.77	4.47	108.45	2337.40
1992 - 93	54.57	593.38	513.18	0.38	8.00	102.6	1.24	1014.5	3.89	4.11	29.45	12.33	34.64	4.92	44.11	73.66	142.92	381.06	125.22	5.53	243.08	28.40	7.00	1.08	5.45	4.84	74.84	2285.09
1993 - 94	53.82	567.21	545.31	0.31	8.21	115.4	1.06	659.27	4.56	4.03	23.96	14.79	36.38	4.47	50.11	96.99	148.74	499.20	124.72	5.80	218.62	29.05	7.51	0.88	4.83	5.62	97.53	2383.61
1994 - 95	56.76	594.11	587.57	0.28	8.29	120.32	1.07	902.37	5.04	4.20	25.29	15.56	39.30	4.44	52.64	105.14	154.40	558.91	140.99	6.55	212.38	29.85	8.12	0.80	5.32	6.30	100.68	2264.98
1995 - 96	51.37	491.55	535.73	0.26	10.05	138.0	1.21	822.59	5.22	4.39	26.29	15.85	45.05	5.93	50.15	54.94	148.96	497.68	137.31	6.25	218.75	30.35	10.4	0.75	4.92	6.27	92.27	2432.12
1996 - 97	92.62	499.51	546.39	0.22	9.38	116.2	1.21	782.34	5.38	4.61	26.57	16.21	46.23	5.33	60.98	98.75	160.38	571.38	132.58	6.71	239.48	30.66	9.79	0.74	5.51	6.54	114.34	2341.71
1997 - 98	60.15	577.54	571.87	0.26	9.17	130.23	1.30	873.94	5.32	4.53	28.65	17.53	45.48	5.31	57.39	102.23	168.90	662.44	144.76	6.52	314.06	31.64	9.91	0.71	5.38	6.61	107.25	2290.00
1998 - 99	54.62	499.01	532.00	0.46	9.37	147.96	1.23	667.85	4.34	4.26	25.25	17.92	45.41	5.38	61.36	96.45	157.41	601.84	128.81	6.55	444.53	31.51	11.46	0.67	4.61	7.05	87.75	2137.42
1999 - 2000	51.90	493.51	553.14	0.60	9.19	149.09	1.15	633.09	5.29	4.76	22.55	16.00	37.57	5.40	56.94	59.55	158.25	709.74	121.81	5.15	525.36	30.02	11.89	0.64	4.25	7.18	95.45	2524.14

Blank space indicates Data Not Available at source (hence Average Average Yield could not be calculated)

Table B.31.

STATE TOTAL : AVERAGE YIELD (ALL CROPS)
(Tonnes per Hectares)

Year	Arecaanut	Autumn Rice	Banana	Castor	Chillies	Coconut	Gram	Jute	Linseed	Maize	Mesta	Onion	Orange	Other Cereal & Small Millets	Other Rabi Pulses	Papaya	Pineapple	Potato	Rape & Mustard	Sesamum	Summer Rice	Sweet Potato	Tapioca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1952 - 52		0.652		0.350	0.228		0.584	6.024	0.377	0.715	0.000			0.335				4.684	0.432	0.386	0.906			0.654	0.325	0.854	0.970	
1953 - 53		0.695		0.351	0.235		0.587	7.217	0.346	0.719	6.153			0.351				4.573	0.383	0.464	0.948			0.787	0.306	0.825	1.070	
1954 - 54		0.814		0.361	0.243		0.587	7.913	0.367	0.594	6.342			0.345	0.420			5.449	0.392	0.434	0.855			0.795	0.703	0.751	1.056	
1954 - 55		0.766		0.505	0.398		0.584	6.629	0.292	0.487	4.067			0.461	0.393			4.507	0.392	0.397	1.455			0.783	0.710	0.562	1.106	
1955 - 56		0.944		0.308	0.733		0.421	8.199	0.435	0.262	4.920			0.506	0.392			4.715	0.458	0.584	1.353			0.812	0.747	0.497	0.967	
1956 - 57		0.895		0.297	0.662		0.508	7.499	0.427	0.271	4.975			0.582	0.392			3.224	0.493	0.452	1.345			0.779	0.722	0.497	1.042	
1957 - 58		0.891		0.345	0.654		0.552	7.951	0.393	0.146	5.000			0.575	0.392			4.165	0.464	0.475	1.324			0.754	0.739	0.556	0.985	
1958 - 59		0.715		0.366	0.658		0.586	8.477	0.420	0.441	4.747			0.393	0.392			5.266	0.519	0.475	1.342			0.734	0.657	0.573	1.008	
1959 - 60		0.507		0.381	0.540		0.510	7.646	0.364	0.510	4.670			0.491	0.315			4.601	0.342	0.479	0.886			0.735	0.642	0.436	1.135	
1960 - 61		0.703		0.353	0.606		0.529	6.829	0.384	0.517	3.642			0.496	0.341			4.733	0.381	0.472	0.859			0.739	0.693	0.825	1.028	
1961 - 62		0.723		0.354	0.630		0.542	7.802	0.375	0.520	4.176			0.494	0.421			4.149	0.347	0.464	1.209			0.764	0.692	0.823	1.016	
1962 - 63		0.569		0.343	0.628		0.541	5.196	0.385	0.517	3.791			0.500	0.374			3.953	0.362	0.481	0.877			0.760	0.705	0.809	0.921	
1963 - 64		0.738		0.392	0.600		0.636	7.677	0.440	0.503	3.715			0.499	0.415			2.582	0.417	0.498	0.900			0.787	0.712	0.825	1.084	
1964 - 65		0.703		0.396	0.550		0.608	5.780	0.418	0.520	3.573			0.523	0.431			3.225	0.419	0.455	0.920			0.771	0.706	0.842	1.109	
1965 - 66		0.800		0.390	0.638		0.512	6.453	0.446	0.531	3.594			0.485	0.427			2.521	0.432	0.468	0.983			0.736	0.717	0.698	1.006	
1966 - 67		0.555		0.421	0.637		0.528	7.219	0.423	0.546	3.720			0.495	0.412			4.196	0.442	0.477	1.093			0.746	0.722	0.659	0.973	
1967 - 68		0.749		0.423	0.636		0.525	7.291	0.429	0.547	3.646			0.491	0.409			4.242	0.451	0.474	1.093			0.748	0.689	0.642	1.004	
1968 - 69		0.724		0.427	0.640		0.524	7.245	0.423	0.542	3.679			0.495	0.412			5.043	0.340	0.474	1.148			0.744	0.723	0.625	1.113	
1969 - 70		0.705		0.396	0.617		0.520	8.693	0.443	0.545	3.750			0.493	0.375			3.523	0.365	0.472	1.204			0.739	0.715	0.644	0.949	
1970 - 71		0.692		0.350	0.634		0.559	7.250	0.449	0.555	3.806			0.502	0.356			4.147	0.399	0.473	1.234			0.745	0.933	0.582	1.097	
1971 - 72		0.594		0.404	0.639		0.499	7.945	0.449	0.552	3.773			0.483	0.338			5.242	0.461	0.471	1.495			0.746	0.723	1.204	1.082	
1972 - 73		0.759		0.437	0.630		0.458	7.528	0.455	0.548	3.722			0.492	0.496			4.530	0.338	0.471	1.608			0.746	0.725	1.329	1.120	
1973 - 74		0.740		0.417	0.610		0.372	7.484	0.429	0.531	2.708			0.488	0.157			3.154	0.477	0.490	1.600			0.776	0.715	1.153	1.058	
1974 - 75		0.697		0.395	0.565		0.387	6.780	0.411	0.535	3.762			0.473	0.136			4.185	0.379	0.479	1.193			0.750	0.716	1.257	1.059	

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Blank space indicates Data not Available at source (hence average Average Yield could not be calculated)

Year	Areca nut	Autumn Rice	Banana	Castor	Chillie	Coconut	Gram	Jute	Linseed	Maize	Mesta	Onion	Orange	Other Cereal & Small Millets	Other Rabi Pulse	Papaya	Pineapple	Potato	Rape & Mustard	Sesamum	Summer Rice	Sweet Potato	Taploca	Tobacco	Tur	Turmeric	Wheat	Winter Rice
1975 - 76	0.740	0.390	0.603	0.352	7.619	0.423	0.448	4.068					0.477	0.371				5.851	0.441	0.486	1.166			0.739	0.725	1.199	1.123	
1976 - 77	1.073	0.624	13.072	0.413	0.601	5.283	0.296	5.636	0.422	0.444	4.400		0.486	0.375				4.943	0.344	0.486	0.590	3.351	3.849	0.741	0.714	0.602	1.097	1.053
1977 - 78	1.043	0.697	13.045	0.415	0.596	7.909	0.282	5.877	0.425	0.533	4.044		0.469	0.359				4.105	0.381	0.486	1.288	3.291	3.941	0.714	0.709	0.607	1.147	1.111
1978 - 79	0.918	0.688	13.050	0.418	0.593	6.668	0.292	7.770	0.429	0.518	4.131		0.476	0.387				4.995	0.435	0.491	1.102	3.301	4.049	0.728	0.713	0.605	1.029	1.041
1979 - 80	0.912	0.590	13.291	0.409	0.599	6.737	0.275	7.674	0.425	0.536	4.042		0.430	0.378				5.410	0.437	0.492	1.118	3.315	4.120	0.733	0.572	0.606	1.126	0.983
1980 - 81	1.041	0.807	12.439	0.409	0.591	8.329	0.313	8.052	0.429	0.548	4.055	1.726	0.496	0.389				5.885	0.511	0.500	1.272	3.305	3.872	0.712	0.729	0.609	1.156	1.164
1981 - 82	0.969	0.628	13.183	0.417	0.580	7.266	0.317	8.631	0.430	0.536	4.153	2.151	0.491	0.426				6.824	0.459	0.488	0.902	3.238	4.260	0.683	0.735	0.626	1.122	1.110
1982 - 83	1.135	0.775	13.239	0.440	0.589	8.747	0.422	7.077	0.443	0.536	4.105	2.200	0.508	0.395				6.120	0.494	0.476	0.888	3.315	4.275	0.632	0.722	0.632	1.111	1.241
1983 - 84	0.956	0.751	13.036	0.426	0.531	8.459	0.474	8.446	0.445	0.547	4.880	2.542	0.523	0.388				7.254	0.500	0.476	1.231	3.268	4.379	0.680	0.738	0.631	1.207	1.136
1984 - 85	1.260	0.763	13.035	0.435	0.588	8.974	0.483	7.593	0.453	0.550	4.404	2.627	0.519	0.406				6.660	0.381	0.491	1.158	3.295	4.572	0.657	0.727	0.611	1.035	1.144
1985 - 86	1.171	0.790	12.789	0.429	0.579	8.794	0.485	8.985	0.449	0.552	4.344	2.864	0.522	0.461				5.586	0.469	0.489	1.016	3.316	4.066	0.651	0.741	0.628	1.089	1.287
1986 - 87	1.016	0.637	12.543	0.412	0.583	7.503	0.465	9.832	0.426	0.550	4.445	2.391	0.507	0.394				6.002	0.479	0.491	1.279	3.173	4.222	0.624	0.723	0.628	1.041	1.168
1987 - 88	1.096	0.590	12.758	0.447	0.587	8.944	0.458	9.034	0.201	0.549	4.686	2.415	0.531	0.451				6.068	0.488	0.494	1.314	3.210	4.319	0.637	0.724	0.621	1.081	1.325
1988 - 89	1.325	0.706	12.922	0.333	0.612	7.239	0.511	7.041	0.482	0.550	4.624	1.937	10.008	0.505	0.398	15.034	12.625	5.974	0.456	0.513	1.718	3.200	4.155	0.702	0.672	0.650	1.150	1.085
1989 - 90	1.140	0.705	13.294	0.430	0.601	8.144	0.477	8.474	0.419	0.557	6.407	1.913	10.278	0.529	0.436	15.296	14.583	5.882	0.442	0.503	1.394	3.228	4.216	0.572	0.692	0.631	1.055	1.274
1990 - 91	0.776	0.834	13.317	0.445	0.601	8.062	0.481	9.065	0.421	0.550	4.689	1.712	10.127	0.521	0.406	15.345	12.427	6.940	0.522	0.488	1.555	3.180	4.226	0.557	0.687	0.621	1.345	1.350
1991 - 92	0.828	0.765	13.170	0.459	0.517	7.030	0.512	8.475	0.453	0.532	4.604	1.932	10.105	0.549	0.443	15.362	12.874	7.666	0.570	0.498	1.684	3.179	4.154	0.586	0.671	0.615	1.520	1.385
1992 - 93	0.792	0.961	13.368	0.298	0.656	6.719	0.422	11.239	0.481	0.591	4.571	2.028	10.099	0.545	0.454	15.875	13.028	5.992	0.464	0.494	1.689	3.291	4.242	0.545	1.000	0.636	1.040	1.378
1993 - 94	0.769	0.917	13.851	0.265	0.663	6.820	0.453	8.911	0.508	0.590	4.200	2.140	10.134	0.505	0.513	14.855	14.616	7.915	0.478	0.488	1.708	3.324	4.291	0.512	1.000	0.673	1.267	1.419
1994 - 95	0.789	0.946	13.832	0.250	0.662	6.827	0.471	10.170	0.529	0.591	4.752	2.319	10.797	0.504	0.541	14.654	14.635	7.853	0.538	0.506	1.615	3.423	4.251	0.506	1.000	0.695	1.277	1.425
1995 - 96	0.725	0.810	13.822	0.230	0.743	7.757	0.512	9.523	0.549	0.621	4.815	2.260	12.376	0.517	0.524	14.551	14.647	6.615	0.528	0.514	1.619	3.445	4.664	0.497	0.982	0.705	1.099	1.432
1996 - 97	1.278	0.829	13.835	0.196	0.674	6.087	0.521	8.525	0.527	0.630	4.902	2.293	12.597	0.524	0.566	14.673	15.003	7.891	0.516	0.513	1.701	3.516	4.664	0.510	1.000	0.695	1.329	1.447
1997 - 98	0.811	0.977	13.834	0.388	0.669	6.836	0.537	9.469	0.531	0.618	4.906	2.298	12.729	0.516	0.540	14.506	15.596	6.925	0.556	0.508	1.797	3.469	4.675	0.500	1.000	0.841	1.295	1.409
1998 - 99	0.750	0.864	13.830	0.411	0.662	7.488	0.524	8.726	0.493	0.545	4.922	2.250	13.162	0.521	0.568	14.581	15.493	7.931	0.479	0.503	1.997	3.440	4.678	0.500	0.707	0.695	1.001	1.397
1999 - 2000	0.723	0.944	13.829	0.536	0.564	7.451	0.512	8.864	0.522	0.617	4.413	2.244	12.080	0.516	0.548	13.555	15.141	9.370	0.324	0.503	2.133	3.463	4.678	0.512	0.705	0.692	1.275	1.545

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*ARTICLES BASED ON
THIS STUDY*

Agricultural Land Use in the Plains of Assam

The three aspects of agricultural land use examined here relate to extensive cultivation, intensive cultivation and underutilisation of cultivable lands.

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Agricultural land use is governed by a number of factors. Initially, there are technical factors which include the natural endowments associated with land in a region. These technical agro-climatic factors determine the production possibility frontiers within which there are several socio-economic factors that guide and govern the actual land use. These socio-economic factors can be viewed from different angles. First, there is the institutional angle, which refers to the land-man relationship. This views land as a social asset whose ownership and distribution pattern influences its use and conservation. Secondly, the commercial exploitation angle (which deals with the cropping and production pattern) views land as a productive resource whose disaggregate enterprisewise allocation determines the actual land use. Thirdly, the sectoral aggregate angle looks at land as a scarce and exhaustible resource whose sectoral allocation and utilisation determine the country's capability to fulfil the requirements of the present and future population. This paper attempts to investigate the regional agricultural land use in Assam from this angle.

Land-use statistics have been taken from the Statistical Handbook of Assam, published annually by the directorate of Economics and Statistics, Assam. The area now covered by 21 plains districts of Assam have been regrouped into seven broad regions¹ by taking into account geographical proximity and agro-climatic factors. The area covered by the two hill districts has not been included in the study as the mode of cultivation prevalent there (shifting cultivation) is different from that of the plains areas. Moreover, there is no firm estimate of area actually cultivated in a particular year under shifting cultivation. Compound growth rates in various agricultural land-use categories have been computed over the period from 1960-61

to 1997-98. Inter-group shift of area as per the ninefold classification of land use has also been analysed.

Sectoral Shares

The total land endowments in a region can be grouped into three broad sectors, based on a study by Pandey and Tewari (1987) as (1) ecological sector comprising forests, permanent pastures and grazing lands, miscellaneous tree crops, and barren and uncultivable land; (2) non-agricultural sector; and (3) agricultural sector, comprising net area sown, current fallows, other fallows and culturable wastes. The sectoral and sub-sectoral shares (Table 1) for 1997-98 are discussed below.

In the ecological sector, forests account for the largest share of 24.42 per cent of the reporting area at the state level, which is below the norms set in the national forest policy of 1952 according to which one-third of the geographical area should be under forest. Area under forest was 28 per cent of the reporting area during 1961-62. Areas under forests have increased in certain regions during the study period. In Cachar, it increased from 35.46 per cent of its reporting area to 37.86 per cent, in Goalpara, from 24 per cent to 29 per cent, and in Darrang, from 18.33 per cent to 20.77 per cent. However, area under forests has declined in other regions during the study period, the decline being maximum in Sibsagar (from 36.6 per cent in 1960-61 to 20.39 per cent in 1996-97). The sub-sector permanent pastures and miscellaneous tree crops together constitute only about 6 per cent of the total reporting area at the state level. Among the different regions, the total area under both these land-use classes as a percentage to reporting area ranges from 4 per cent in Goalpara to 8 per cent in Sibsagar. The area under this category has declined in all regions since 1961-62. The sub-sector barren and uncultivable land covers 7.47 per cent of

the total reporting area in the state. Sibsagar and Goalpara have the highest (10.98 and 9.95 per cent respectively) while Kamrup has the lowest of 4 per cent of reporting area as barren and uncultivable land. Area under this category has declined in all the regions since 1961-62, the decline being maximum in Goalpara where it declined from 25.24 per cent of its area under barren and uncultivable land in 1960-61 to 9.95 per cent in 1997-98.

The sector of land put to non-agricultural uses constitutes 16.5 per cent of the total reporting area at the all-Assam level. Sibsagar has experienced faster rate of growth in urbanisation and industrialisation as this region has the highest share (about 29 per cent) of its reporting area under non-agricultural sector, followed by Darrang which had 22 per cent of its reporting area under non-agricultural uses. The share of area under non-agricultural use in other regions ranged between 16.7 per cent in Lakhimpur and 9 per cent in Nagaon in 1996-97. Area under this land use category increased in all the regions during the study period, the increase being maximum in Sibsagar (from 15.51 per cent in 1960-61 to 25.88 per cent in 1996-97).

In the agricultural sector, the net area sown (NAS) accounts for the largest share of 50 per cent of the total reporting area at the all-Assam level. NAS has increased in all the regions with the maximum in Goalpara, where it increased from 27.96 per cent of its reporting area in 1961-62 to 39.22 per cent in 1996-97, followed closely by Nagaon (from 46.43 per cent to 57.29 per cent). The increase has been the least in Cachar (30.25 per cent to 32.37 per cent). In the other regions, net area sown ranged from 42 to 30 per cent. Current fallows and other fallows together account for about 3 per cent of the total reporting area in the state. Kamrup and Darrang have less than 2 per cent of their area under current and other fallows, whereas it is about 4 per cent in the other regions. The area under this category has declined in all regions during the study period. Area under cultivable waste accounts for about 1.3 per cent of the total reporting area in the state in 1996-97. Cachar, Kamrup, Nagaon and Darrang have less than 1 per cent area under cultivable wasteland whereas it is the highest (2.5 per cent) in Sibsagar. Area under this category has also declined in all the regions, the decrease being most prominent in Darrang (from 4 per cent to 0.9 per

cent), Nagaon (from 3 per cent to 0.8 per cent) and Lakhimpur (from 4.7 per cent to 1.7 per cent).

Agricultural Land Use

The three aspects of agricultural land use examined here relate to extensive cultivation, intensive cultivation and under-utilisation of cultivable lands. The compound growth rates obtained from the estimated trend equations are used to examine these three aspects.

Extensive Cultivation: NAS remained almost constant in all the regions of Assam during the study period. This indicates that extensive cultivation had played a minor role in raising agricultural production.

Intensive Cultivation: Intensive cultivation depends upon the availability of irrigation. Therefore, along with the growth

rate in gross area sown (GAS), growth rate of gross area irrigated (GAI) is also calculated. The compound growth rates in GAS shows that each region, and Assam as a whole, have achieved positive growth, with growth rates being almost negligible in Cachar and Sibsagar. NAS has remained constant in Cachar and Sibsagar; in the

other regions too, growth rates, though positive, have been almost constant. GAI is negative in all the regions of Assam. Area under irrigation had increased in the 1980s but decreased intriguingly in the 1990s. This indicates continued negligence in making proper use of cultivable land in the state. Thus there is the potential to

Table 2 : Estimated Compound Growth Rates of Change in Different Land-Use Classes in the Agricultural Sector (1961-62 to 1997-98)

Class	Net Area Sown	Gross Area Sown	Gross Area Irrigated	Current Fallow	Other Fallow	Culturable Wasteland
Assam	0.01	0.02	-0.07	-0.02	-0.03	0.02
Cachar	0.00	0.01	-0.23	-0.03	-0.02	-0.02
Goalpara	0.01	0.02	-0.10	0.05	-0.03	-0.02
Kamrup	0.01	0.02	-0.05	-0.06	-0.06	-0.03
Darrang	0.01	0.02	-0.06	-0.02	-0.06	na
Nagaon	0.01	0.02	-0.09	-0.06	-0.08	-0.07
Lakhimpur	0.02	0.03	-0.16	-0.02	-0.05	-0.04
Sibsagar	0.00	-0.01	-0.14	-0.01	-0.06	-0.05

Table 1 : Area under Various Land Use Classes ('000 hectares)

Classes	Total Reporting Area			Forests			Land Put to Non-Agri Use			Barren and Uncultivable Land			Permanent Pastures and other Grazing Land			Land under misc Tree Crops and Groves		
	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98
Assam	6244	6226	6328	1745	1679	1545	742	851	1045	687	570	473	240	261	169	257	235	244
Cachar	691	694	692	27.95	26.97	24.42	11.88	13.67	16.51	11.00	9.16	7.47	3.84	4.19	2.67	4.12	3.77	3.86
Goalpara	1030	931	1025	245	268	262	56	50	73	79	75	60	7	7	6	33	32	34
Kamrup	989	996	999	35.46	38.62	37.86	8.10	7.20	10.55	11.43	10.81	8.67	1.01	1.01	0.87	4.78	4.61	4.91
Darrang	862	871	881	248	243	297	116	121	136	260	151	102	35	34	27	24	13	17
Nagaon	560	568	569	24.08	26.10	28.98	11.26	13.00	13.27	25.24	16.22	9.95	3.40	3.65	2.63	2.33	1.40	1.66
Lakhimpur	885	899	900	287	249	221	61	69	109	77	77	42	37	78	45	30	28	31
Sibsagar	1257	1267	1275	29.02	25.00	22.12	6.17	6.93	10.91	7.79	7.73	4.20	3.74	7.83	4.50	3.03	2.81	3.10
				158	193	183	157	164	194	74	69	58	44	34	20	33	30	24
				18.33	22.16	20.77	18.21	18.83	22.02	8.58	7.92	6.58	5.10	3.90	2.27	3.83	3.44	2.72
				111	113	108	53	55	52	38	38	28	31	30	21	23	23	18
				19.82	19.89	18.98	9.46	9.68	9.14	6.79	6.69	4.92	5.54	5.28	3.69	4.11	4.05	3.16
				236	231	214	104	113	151	42	43	43	34	32	20	55	58	44
				26.67	25.70	23.78	11.75	12.57	16.78	4.75	4.78	4.78	3.84	3.56	2.22	6.21	6.45	4.89
				460	382	260	195	279	330	117	117	140	52	46	30	59	51	76
				36.60	30.15	20.39	15.51	22.02	25.88	9.31	9.23	10.98	4.14	3.63	2.35	4.69	4.03	5.96

Table 1 (contd)

Classes	Culturable Waste Land			Current Fallow			Other Fallows			Net Area Sown		
	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98	1961-62	1970-71	1997-98
Assam	197	179	86	153	122	108	170	164	67	2053	2165	2591
Cachar	3.16	2.88	1.36	2.45	1.96	1.71	2.72	2.63	1.06	32.88	34.77	40.95
Goalpara	5	11	4	25	23	15	32	30	14	209	198	224
Kamrup	0.72	1.59	0.58	3.62	3.31	2.17	4.63	4.32	2.02	30.25	28.53	32.37
Darrang	21	16	13	14	5	18	24	10	13	288	338	402
Nagaon	2.04	1.72	1.27	1.36	0.54	1.76	2.33	1.07	1.27	27.96	38.31	39.22
Lakhimpur	18	17	8	24	19	13	28	25	8	427	434	509
Sibsagar	1.82	1.71	0.80	2.43	1.91	1.30	2.83	2.51	0.80	43.17	43.57	50.95
	35	22	8	27	24	11	28	20	7	306	315	376
	4.06	2.53	0.91	3.13	2.76	1.25	3.25	2.30	0.79	35.50	36.17	42.68
	17	25	5	15	13	8	12	15	3	260	256	328
	3.04	4.40	0.88	2.68	2.29	1.41	2.14	2.64	0.53	46.43	45.07	57.29
	42	37	16	25	21	20	40	38	14	307	326	378
	4.75	4.12	1.78	2.82	2.34	2.22	4.52	4.23	1.56	34.69	36.28	42.00
	59	51	32	23	17	23	36	26	8	256	298	376
	4.69	4.03	2.51	1.83	1.34	1.80	2.86	2.05	0.63	20.37	235.52	29.49

Note: Figures in italics represent the percentage of the figures above it wrt. the corresponding total reporting area.

increase agricultural production by bringing more area under irrigation. Multiple cropping using high-yielding variety (HYV) seeds is also possible only with proper irrigation facilities.

Underutilisation of Land: By definition, current fallows (CF), other fallows (OF) and culturable wastelands (CW), are the lands once cultivated. CF is the one left fallow during the current reporting area, OF is the land lying fallow for the past one to five years, and CW is the land lying fallow over the past five years in succession. The lands under these categories (CF, OF and CW) are called underutilised land as they are potentially cultivable though not having been put to cultivation for one year or more in succession.

NAS can be increased by bringing CF under it. CF can be brought back to NAS; otherwise it moves into CW after five years. CW can be brought back into NAS but only after its reclamation. This describes the possibility of land use dynamics within the agricultural sector. The land under miscellaneous trees, though defined as cultivable land, can be considered to be outside the agricultural sector, being a part of the local village ecology. There may be land flows from area under miscellaneous trees to NAS, but the reverse flow directly from NAS generally does not take place. However, land flows from CW to miscellaneous trees can occur. Additions to NAS from outside the agricultural sector are possible from forests through shifting cultivation. On the other hand, the land outflows from NAS to the non-agricultural sector take place either directly or through CF, OF or CW.

Based on this discussion of land use dynamics, growth in underutilised lands is discussed in Table 2.

During the period under consideration, CF, OF and CW have all shown negative growth in all the regions. This shows the increasing pressure operating upon the land through growth in population, urbanisation and industrialisation. The negative growth in all these sectors has been the highest in Nagaon.

In absolute terms, the area under CF, OF and CW still occupies a considerable share of the total reporting area. Sibsagar has the largest area as CW amongst all the regions; CW occupies 32,000 ha, which is about 2.5 per cent of the reporting area of this region. Lakhimpur has 20,000 ha (2.2 per cent) of its reporting area under CF followed closely by Cachar, which has about 2.1 per cent of its area as CF. In case of

OF, the regions of Lakhimpur and Cachar have about 2 per cent (14 million ha and 13 million ha respectively) of its reporting area under them.

If these underutilised lands are brought under region-specific crops, foodgrain production will increase considerably. Proper utilisation of these lands will also reduce the pressure on agricultural lands and may even release some land to forest and non-agricultural sectors. Fallow lands can also be put under agro-forestry, which will lead to improvement of the local ecology.

Policy Approach

The above discussion shows that in order to increase agricultural production, extensive cultivation through land shifts from outside the agricultural sector is neither feasible nor possible. This can be best done through (1) bringing most of the area cultivated under irrigation, and (2) bringing all fallow lands under cultivation of region-specific remunerative crops.

For bringing cultivable waste into cultivated land, heavy investments would be required on its reclamation. Thus it would be wiser to ensure optimal utilisation of fallow lands and reap the benefit of increased production.

Punjab was a foodgrain deficit state at the time of independence. But it started producing a bumper harvest of wheat every year within the next two decades due to the effects of the green revolution. Such a revolution would not have been possible without high-yielding variety seeds and the creation of abundant irrigation and power facilities. It is only with the application of irrigation water that diversification of crop pattern and mechanisation of farming are possible, which in turn helps in increasing cropping intensity leading to boosting agricultural production.

Assam is rich in total water resources. But only 12 per cent of groundwater in Assam is used (and as much as 49 per cent of groundwater resource of the NE region remains unutilised). Thus out of the net cropped area of 2.5 million ha in Assam, only 0.3 million ha is covered by irrigation facilities. The department of agriculture, government of Assam, has taken up an ambitious plan to provide shallow tube wells (STW) to farmers under the 'Samridha Krishak Yojana' mainly to increase the rabi rice cropped area. Under the ARIASP programme, installation of 5,750 STW in 1997-98, 11,500 in

1998-99 and 15,000 in 1999-2000 has already been completed. Another massive programme of installation of STWs was taken up by Nabard, which led to the installation of 30,000 STWs during 1999-2000.

The availability of assured groundwater supply has led to increased production in the state. Rice production has gone up to 60 quintals per hectare. The World Bank team which visited Assam from August 26 to 31, 2000 has announced that the combined World Bank-Nabard programme for shallow tube-wells has ushered in a 'green revolution' in the state.

Thus the impressive performance by agriculturists in transforming the low yielding single-crop economy into a high yielding multi-crop economy through installation of STWs highlights the fact that proper utilisation of the state's natural resources, particularly water, can substantially improve agricultural production thereby transforming a foodgrain deficit state to a surplus one. [2]

Note

1 The present administrative units (districts/sub-divisions) included in each of the seven broad categories are given below

Region	Administrative Units Included
(I)	Cachar, Hailakandi, Karimganj
(II)	Dhubri, Goalpara, Kokrajhar, Bongaigaon.
(III)	Kamrup, Nalbari, Barpeta.
(IV)	Sonitpur, Darrang.
(V)	Nagaon, Morigaon.
(VI)	Sibsagar, Jorhat, Golaghat.
(VII)	Lakhimpur, Dhemaji, Dibrugarh, Tinsukia.

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Land Use and Environment: A Study

By Chandrama Goswami*

There is a symbiotic relationship between land, water, plants, animals and human beings, which together constitutes an integrated system; i.e. environment. Environment including natural resources and economy are interdependent. This interdependence was however not taken into cognizance by economists and policy makers till recent times. But a disturbance in any of the components of environment adversely affects the delicate

It is now increasingly being realised that economic activities pursued ignoring the interdependence among various components of environment are counter productive of economic development in the long run. For ensuring sustainable growth and development, restoration and preservation of the balance has now received the attention of social scientists and policy makers.

Economic growth can be defined as a steady increase in per capita real Gross National Product (GNP) at a rate higher than the growth of population. Increase in GNP means an increase in the production of marketable goods and services. While no production process is possible without the necessary inputs provided by nature, the production process itself generates waste products detrimental to environment.

Not paying due attention to the latter has been responsible for various types of environmental degradation — soil degradation, depletion of ground water level, deforestation, soil erosion, floods, water logging, soil salinity, etc. — is the negative outcome of the chimerical notion of maximising the economic growth at the cost of the environment.

Land comprising of soil, water and associated flora and fauna is the most

precious resource providing sustenance and survival of human beings. It is the basic pre-requisite for all productive activities. The essential requirements of food, shelter, clothing and energy are met by utilising the land resources.

The overall supply of land is perfectly inelastic. The rapidly increasing human and livestock population has been putting pressure on land resources for

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food, fibre, firewood, and other uses, including industrial uses. This has resulted in largescale degradation of land (Over the past 50 or so years, 1.2B billion ha of land in the world — an area larger than that of China and India taken together — has been degraded and its productivity reduced. Soil degradation is widespread in India.

It is estimated that of the country's total geographical area of nearly 329 million ha, about 188 million ha or 57 per cent is degraded due to various reasons, such as wind and water erosion, waterlogging, salinity, and desertification whereas in 1947, the

area affected by soil degradation was about 110 million ha) endangering the ecosystem seriously. Land degradation not only adversely affects agricultural productivity and the industrial sector depending on agriculture, the entire environment gets

disturbed, which upsets the water regime causing flood, siting of rivers and ports.

Land degradation may take place due to natural factors without human interference. But human interference plays a far more important role. Poor management of land resources resulting from various factors such as ignorance, willful neglect, pressure of immediate economic necessity is responsible for the present severe problems of land degradation faced presently.

But the neglect of land management and land use will jeopardise the process of sustainable growth. The importance of land resources (for the survival and welfare of the people) has been recognised by international bodies like FAO, which has adopted the World Soil Charter in 1982. The Charter declared, "Decisions about the use and management of land and its resources should favour the long term advantage rather than the short term experience that may lead to exploitation, degradation and possible destruction of soil resources." The Charter enunciated the principles that should govern the use of land resources and laid down the guidelines for action by international organisations and governments.

The pressure on land is constantly increasing for providing food, fuel, fodder, wood to the fast growing population (human and livestock) and industries. The per capita availability of cultivable land has been more rapid from 0.48 ha in 1951 to 0.20 ha in 1991.

Livestock density is also relatively higher in India (1.5 per ha of reported area, 3.1 per ha of net cultivated area and 4.7 per ha of grazing land). With the increase in human population, the consumption of fuel wood (mainly used by the poor) has also increased. In addition, the process of economic

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development has been putting an increasing demand on land for irrigation projects, transport and communication, residential and commercial uses also. Between 1951 and 1991 about 12 million ha have been diverted from other uses to non-agricultural uses.

Reconciling these competing demands for land use in a judicious and environmentally sound manner is a formidable challenge before the nation. What is needed is an integrated approach to the scientific management, conservation and development of land resources of the country. With the increasing biotic pressure and the various competing claims for agricultural and non-agricultural uses, a perspective plan is required for ensuring an optimum land use.

The concept of optimum land use has two dimensions - economic and environmental. Consideration of economic efficiency implies that land use is governed by the objective of maximisation of the net returns to the society as a whole, whereas environmental considerations put emphasis on the questions of ecological balance and sustainability. Thus, an optimum land use plan has to maximise output while at the same time preserving the environmental balance and ensuring sustainable development.

During the first two decades of planning, an integrated approach to management of land resources was absent among the policy makers. The first step was taken in 1974, when the States were directed to set up State Land Use Boards (SLUB) for providing policy directions and coordinating the activities of different departments dealing with soil and land resources.

Although most of the States established SLUBs, these Boards could not discharge their responsibilities during the initial stage. A Study Group recommended that SLUBs should act as the apex body to provide policy decisions and coordinate all concerned departments and agencies in matters relating to scientific use of land resources.

At the national level, the National Land Resource Conservation and Development Commission, and National Land Use Board (reconstituted as

National Land Use and Wasteland Council in 1985) was set up in 1983. Simultaneously, two other bodies were set up - National Land Use and Conservation Board (NLCB) in the Ministry of Agriculture and the National Wasteland Development Board (NWDB).

The National Land Use Policy (1986) was a major step towards scientific and integrated land use planning. The policy put emphasis on optimal management of land resources in a manner so that "the most effective use of the resources will be determined on the basis of surveys relating to land capability and technology of production and the policy framework will be so organised that land is, in fact, used for the purpose for which it is most suitable on the basis of efficiency of production".

The National Land Use Policy is an important statement towards an optimum land use policy in the country. But actions based on this policy are grossly inadequate. Till now a detailed inventory of land resources has not been prepared. Nor an institutional and legal framework capable of ensuring the use of land according to its capability has been set up. There is an inadequate co-operation between various concerned departments dealing with land use. The inadequate co-operation between various concerned departments dealing with land use. The inability to enforce the National Land Use Policy has caused enormous damage to the productive capacity of land in our country leading to over-stressing of the carrying capacity of land.

The situation in Assam is also not different. Out of Assam's total geographical area of 78,520 sq. km., about 63,300 sq. km. are plains and 15,220 sq. km. hills. Only about 53 per cent of the land available in the state can be put to various uses. Rest of the land is either not available or physically unsuitable for any use or covered under essential forests.

Population growth is very high in the state because of the effect of both natural growth rate of population and large scale migration (from neighbouring countries) into the state. Till 1991, population has grown by about 177 per cent since 1951. The high growth of

population has also led to a sharp decline in per capita availability of cultivable land. As mentioned earlier, a large area of the state is covered by hills where cultivation is not possible except in some areas where shifting cultivation is carried out.

To accommodate the pressure of rapid increase in population there has been large scale deforestation (area under forests has decreased from 38.52 per cent of total geographical area in 1951-52 to 24.47 per cent in 1997-98). This has led to massive soil erosion, washing away the top soil and depositing it on the bed of the river Brahmaputra - the major river of the state. This has raised the bed of the river reducing its water carrying capacity.

So the incidence and extent of flood damage has increased causing heavy destruction of life and property. In one of the districts of Assam, Dhemaj, floods have caused siltation to the extent of 7 ft. on land which was under cultivation earlier. This heavy siltation has rendered the cultivable land unfit for cultivation. There is now a famine-like situation in the district where the people are mostly farmers, the secondary sector being almost nonexistent.

This environmental disaster needs to be checked immediately and remedial measures undertaken by the government and policy makers to improve the socio-economic conditions of the people of the state. To prevent further deterioration in the situation, a survey can be done in which district-level mapping and classification of is carried out.

After proper classification of soil, consultation with agronomists will indicate what crops can be grown in each district keeping the environmental in view. Productivity of crops have to be increased to feed the increasing population as the limit to extensive cultivation has been reached. It might be possible to grow certain varieties of crops even in areas where there is heavy siltation. But all these will be possible only with the proper will and determination of the government along with the active participation of the people of the state. □

NATURAL RESOURCE MANAGEMENT, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

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" God has lent us this earth for our life; it is a great entail. It belongs as much to those who come after us, and those whose names are already written in the book of creation, as to us; and we have no right, by anything that we do or neglect, to involve them in unnecessary penalties, or to deprive them of benefits which is in our power to bequeath. "

John Ruskin

The history of human civilization is the history of utilizing the free gifts of nature to satisfy human wants. In fact, these gifts of nature become resources when they began to be utilized for producing various goods and services capable of satisfying human wants.

Initially the relationship between man and nature was not conflicting. The number of human beings inhabiting the earth as well as the number of human wants was limited. Moreover, the societal arrangement for the utilization of 'natural resources' was more or less egalitarian, in the sense that access to resources was not limited to the privileged few.

During the last two centuries, the world's population has increased several folds. This has also been accompanied by a quantum jump in the number of human wants, particularly with the advent of and subsequent spread of the industrial revolution. This put a strain on the delicate balance between man and nature. Initially, scant attention was paid to the conservation of natural resources. The sole emphasis was on the exploitation of these resources for accelerating the pace of 'development', measured in terms of per capita income in real terms. Policy makers as well as policy advisors were obsessed with the increase in the rate of development, discounting very heavily, if not ignoring altogether, future development possibilities.

That such a blind and reckless exploitation of natural resources is not sustainable began to dawn upon social thinkers and policy makers from the late 1970s. For the first time issues like ecological balance, importance of preserving bio diversity, the importance of linking the environment with development and questioning the continuance of the current pattern of development came to be raised in various national and international forums.

Meanwhile, the initial societal arrangements for utilizing natural resources, with a strong bias in favour of community ownership and satisfaction of basic needs, got replaced by an arrangement favouring

a few persons/nations at the expense of the majority. The market forces were placed on a pedestal. An all out effort was made to strengthen the market forces at the national and international levels. This facilitated the access of multinational and transnational companies to natural resources in any part of the globe. International organizations like the International Monetary Fund (IMF), the World Bank (WB) and the World Trade Organization (WTO) succeeded in converting the world into a more or less global economic unit with 'shared' economic sovereignty of different countries. This has made the pursuit of independent national policies for the conservation of natural resources extremely difficult and 'sustainable development' an illusionary goal.

Within the limitations mentioned above, 'sustainable development' is thus to be understood in a restricted sense. The term 'sustainable development' first came into prominence in the 'World Conservation Strategy', published by the World Conservation Union in 1980. It achieved a new status with the publication of 'Our Common Future', the Brundtland Report, in 1987 and gained even more attention since the UN Conference on Environment and Development held in Rio de Janeiro in June 1992. Now the concept engages Governments and Non government Organisations (NGOs) Civil Servants and environmental activists, local government officials and community groups, development agencies and grass root level organisations, planners, commercial developers, industrialists and environmental agencies, established bureaucracies and ad-hoc networks as well as a host of academics representing a wide range of field from atmospheric science through political economy to gender studies.

The term 'sustainable development' has been variously defined. We feel that Brundtland's definition, though not free from ambiguity, best helps us to grasp its essence. Brundtland defines sustainable development as 'Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs'.

Obviously sustainable development necessitates assigning due importance to environment conservation, as absence of concern for environmental preservation will amount to compromising the ability of the future generations to meet their own needs.

We have observed above that the pursuit of independent national policies for the conservation of natural resources and sustainable development has become illusory and unattainable to a great extent with the emergence of the new economic order, particularly at the macro level. Therefore it is inevitable to strengthen the forces of civil society at the grass-root level, if the onslaught of the MNCs and international organisations is to be effectively checked for meeting people's most fundamental needs of food and drinking water. Thus safeguarding and strengthening the ecological foundation of sustainable food, water and livelihood security should receive the priority it deserves.

As very rightly suggested by Professor M. S. Swaminathan, this involves a four point action plan:

- (1) Integrated Natural Resources Management (INRM) through local level socio-demographic charters
- (2) Integrated gene management
- (3) Community food and water security system
- (4) Restructuring global institutions

INTEGRATED NATURAL RESOURCES MANAGEMENT (INRM): Preparing socio-demographic charters, as planning and priority setting tools at the grass-root levels should constitute the first component of INRM. In the context of rural India, such charters are to be co-ordinated later with the Goan Panchayat, Anchalik Parishad and Zilla Parishad levels charters'. Similarly for the urban areas, appropriate micro level unit can be identified. It is essential for the grass-roots constitutional bodies to act in a spirit of equality and co-operation with the local NGOs and voluntary organisations. They should be prepared by the people themselves belonging to all social groups and drawn from both sexes to better reflect their aspirations and felt needs. A hierarchy of unmet needs can thus be spelt out starting from the most pressing need. Plan implementation and finances can then concentrate on meeting the hierarchical needs in a phased manner. Obviously the charters prepared by the local community, besides conferring them with self-esteem and promoting a community spirit in planning and problem solving will sensitize them on the population supporting capacity of the ecosystem. The major components of the grass-root's socio-graphic charters should include the following:

- (1) Environment management,
- (2) Hygiene and housing,
- (3) Health security,
- (4) Education,
- (5) Nutritional security,
- (6) Gender code.

Environment management: Environment protection and conservation, sustainable and equitable use of common property resources are areas that are more amenable to local control. In the north-eastern region, more particularly in the hill areas, the community's wisdom in land-use, water management and management of forests is still very much evident. It is sad that environment degradation in villages, towns and cities is now seriously threatening both food and drinking water security. Grass-root bodies have to incorporate in their charters/plans traditional as well as non-traditional mechanisms to prevent loss of top soil, depletion of ground water, pollution of natural water bodies, deforestation, loss of grazing lands, conversion of forests into agricultural land and air pollution. Top priority should be assigned to water harvesting, watershed management and efficient as well as economic use of water.

Houses should be designed both in rural and urban areas in a manner that they help in harvesting and conserving rain water. Promotion of renewable energy sources should receive due attention. The local bodies will also be required to adopt appropriate steps for managing common property resources of the area in an equitable and sustainable manner. It is essential for the local body/community to maintain biodiversity registers and monitor the impact of development on biodiversity as well as to safeguard their intellectual property rights.

Hygiene and Housing: This should include mechanisms for safe disposal and recycling of garbage, sewage and human waste. Water storage tanks and ponds should be disinfected to prevent breeding of mosquitoes.

Housing designs should have in-built mechanism for harvesting sun rays and rain water.

Health security: This should include reproductive health issues like maternal and child health care services, reproductive health education, tuberculosis, AIDS and sexually transmitted diseases. It should also include provision of safe and affordable contraceptives. Emphasis should be given to prevention of infant mortality and morbidity by ensuring deliveries supervised by trained personnel.

Education: This should ensure hundred percent enrolment of children aged six in primary schools. Reducing drop-outs, more particularly by the girls, because of non availability of some elementary needs like girls' toilet should be ensured through appropriate measures. Special attention should be paid to non-formal education, adult literacy, continuing education and computer education.

Nutritional security: This component of the charter should aim at enabling access to balanced diets and safe drinking water. Special emphasis needs to be given to nutritional supplementation of pregnant women and children under five. The charter should also focus on gender disparities with regard to nutritional intake.

Gender code: The charter should delineate steps to all forms of gender inequity and discrimination. The role of women in the conservation and improvement of agrobio-diversity should be given recognition.

In the words of Swaminathan, "a local level socio-demographic charter will be a tool which helps rural and urban communities to understand the population supporting capacity of their local ecosystem and to promote an improvement in the quality of life through the sustainable and equitable use of natural resources, particularly land, water and biodiversity."

INTEGRATED GENE MANAGEMENT: After describing the importance of the on-going gene revolution in promoting productivity, profitability, stability and sustainability of major farming systems, Swaminathan states that every nation needs to develop an integrated gene management strategy based on all available methods of conservation.

COMMUNITY FOOD AND WATER SECURITY SYSTEM: There is an urgent need for a decentralized community centered food security system embracing the entire conservation-cultivation-consumption chain. Such a system should have the following four components:

- (1) Field Gene Bank
- (2) Village Seed Bank
- (3) Village Water Bank
- (4) Block Grain Bank

Field gene bank: This involves conservation of local varieties of crops through revitalization of conservation traditions of rural and tribal families.

Village seed bank: To prevent loss of seed stocks due to draught, flood and other natural calamities, each village should have a community seed bank established through a seed security self-help group.

Village water bank: Conservation of rain water, sustainable management of groundwater and the conjunctive use of surface, ground and recycled water are important components of the village water bank.

Block grain bank: To meet emergencies like draught and natural calamities, it is necessary to maintain grain reserves of local staples. For this purpose, a community grain bank should be established at a suitable location.

Thus the community food and water security system will foster a sustainable people-centered and people-controlled method of ending food and drinking water insecurity at the level of each individual. It will help to ensure both food security and bio-diversity conservation.

RESTRUCTURING GLOBAL INSTITUTIONS: Prof. Swaminathan also calls for the restructuring of global institutions such as the World Trade Agreement (WTA), World Intellectual Property Rights Organisation (WIPO) and the Union for the Protection of New Varieties of Crop (UPOV).

World Trade Agreement (WTA): Trade Related Intellectual Property Rights (TRIPS) should be more equitable. Also sui generis legislation relating to plant variety protection in industrialized countries should make provision for recognizing and rewarding primary conservers of bio-diversity and holders of traditional knowledge, mostly found in developing countries.

World Intellectual Property Rights Organisations (WIPO): WIPO is already examining methods of conferring Intellectual Property Rights (IPRs) on indigenous knowledge and technologies. This process should be completed soon, so that both individual and community innovations can be recognised under global and national IPR systems.

Union for the Protection of New Varieties of Crop (UPOV): UPOV should be restructured in the form of an organisation responsible for both breeders' and farmers' rights. Breeders and farmers are allies in the quest for sustainable food security; hence, their rights must be mutually reinforcing and should not be projected as being antagonistic. UPOV could thus become a Union for the Protection of Breeders' and farmers' Rights.

It can be concluded from the above discussion that without a community led ecological and food security programme as outlined above, hunger and malnutrition will continue to prevail, threatening both ecology and environment.

This write-up draws heavily on the following two contributions in particular :

- A) *Ecological Access to Food and Water : A Major Environmental Challenge*
 - M.S. Swaminathan, published in *The Hindu*, June 04th, 2000.
- B) *Paper entitled "Natural Resource Management and Sustainable Development"*,
 - Prof. A Goswami, presented at a National Seminar held at Guwahati from Nov 21st to 23rd, 2000

This paper, authored by the scholar of this thesis, was submitted at the Faculty Upgradation Programme in "Environmental Economics", held at the Dept. of Economics, Jadaupur University, Kolkata, from 02nd to 28th of December, 2002.

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