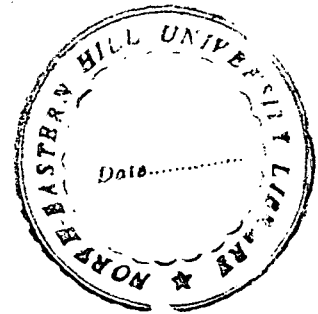


**EVALUATION OF AGRICULTURAL POLICIES
OF ASSAM : A POLITICO-GEOGRAPHICAL BASIS FOR
ECONOMIC LIBERALISATION**

KRISHNA SINHA



THESIS

**SUBMITTED IN FULFILLMENT OF REQUIREMENT FOR
THE DEGREE OF
DOCTOR OF PHILOSOPHY**

**TO
THE DEPARTMENT OF GEOGRAPHY
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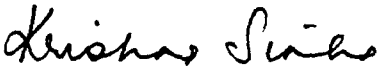
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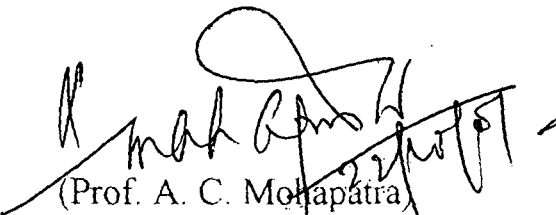
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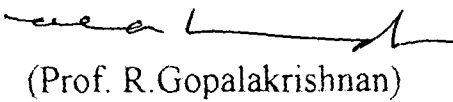
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I, Krishna Sinha, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form the basis of the award of my previous degree conferred to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/ Institute.

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Chapter I

Introduction

SECTION I.

1.1. The concept of liberalisation

Global transformation marks the world economy and trade in the post liberalisation period. The regime of liberalisation and globalisation defined by the World Trade Organisation (WTO) compels member nations to open up national economy and integrate it to the larger global economy and trade. The WTO defines liberalisation as – the recognition of rights of free economic activities and economic exchanges. Inherent to the concept are relaxation of stringent forms of national regulation in production, trade, market as also participation, and develop structures facilitating the global process. It further reduces the direct role of the national governments in production activities.¹ It also includes creation of infrastructure and conducive environment to facilitate globalisation of the economy.

Inherent to the concept of liberalisation is the increased role of foreign exchange (position) in the allocation of resources, and removal of restrictions on the movement of goods and services across national boundaries, thereby seeking to ensure a “freer and fairer” trade.² Not only does liberalisation opens

¹ McMichael, P. and Myhre, D. (1991): ‘Global Regulation and Nation-State: Agro food Restructuring and the New Politics of Capital’ in *Capital and Classes*, pp.83-84.

² The concept of liberalization – globalization took shape in 1947, in the wake of Bretton Woods Conference when 3 international agencies were set up, of which GATT was one. GATT was to ensure “a freer and fairer trade” through reduction of tariff and removal of trade barriers. But for long it remained a loose framework of rules which were violated in practice by member countries- most often by U.S.A.

up national markets for extensive private sector participation but also opens up the possibilities for acquiring better technologies and global sourcing. The impact can be perceived ideologically. The exchange of commodities, diffusion of technology which follows, and the increase in domestic savings as a consequence – represents the ideology of “benign neglect” emphasising that more the openness, more the benefit. Transmitting such benefits to the weak and poor, the “benign intent.” On the other extreme is the ideology of “malign neglect”. It holds that in the presence of sharp imbalance in the international economic power equation, such processes will contribute to truncate all avenues of growth of the weaker ones and relegate them to a secondary and inferior position. The ideology of “malign intent” considers such processes as designs of suppressing the poor.³

To introduce liberalisation in the agricultural sector, four conditions were identified by WTO. These are –

- Reduction in domestic support,
- Market access,
- Trade related intellectual properties right (patent rights in agriculture)
- Sanitary and phyto-sanitary provisions.⁴

Gupta, K R (Ed.) (1994): *GATT Accord: Result of Uruguay Round of Multitrade Trade Negotiations*. Atlanta Publishers & Distributors, New Delhi, pp. 2-5.

³ Bhattacharya, B. (1994): “Structural Adjustment in Trade Policies-A Theoretical Perspective in the Changing International Scenario” in Das, D.K. (ed.) *Structural Adjustment in the Indian Economy*, N. Delhi, p.43.

⁴ Inclusion of agriculture within the preview of World Trade Organization (WTO) was as a result of trade policies of the past, which had led to economic distortions and rising agricultural prices. A consensus in the need for reforms in agricultural trade policies finally led to the Punta del Este Ministerial declaration of the long-term objectives of Accord on Agriculture, which was “to establish a fair and market oriented agricultural trading system and that a reform process should be initiated.” Further, that “the objective is to provide substantial progressive reduction in agricultural support and protection sustained over an agreed period of time, resulting in correcting and preventing restrictions and distortions in the World agricultural markets”. See Gupta, K R (ed.), op. cited., pp. 61-63.

Thus applied to agricultural sector, the concept of liberalisation signifies relaxation of national regulation in production, trade and marketing of agricultural products and opening up trade in this sector to international players. It also signifies privatisation - of government agricultural institutions involved in research and technology development and dissemination, in the development of agricultural infrastructure facilities, and of foreign participation in these activities.

The objectives are therefore to re-regulate agricultural trade within the dynamics of WTO by dismantling national forms of agricultural regulation and creating a "level playing field" in agricultural trade, guarantee universal trading rights.⁵

There are two dimensions of such regulation – formal and substantive. While the formal dimensions of agricultural regulation seeks to remove the trade barriers and reduction in subsidies in agricultural production and trade, the substantive dimensions of global regulation in agriculture compels member nations to adopt Structural Adjustment Program.⁶

1.2. Liberalisation in Indian context

In the Indian context, this liberalisation signifies firstly- reduction of the support that the public sector provides to agriculture. This includes – (a)

⁵ McMichal, P. (1993): "World Food System: Restructuring under a GATT Regime" in *Political Geography*, Vol. 12, No. 3, May 1993. Pp 210-11.

⁶ Ulfkes, Frances M. (1993): "The Globalization of Agriculture", *Political Geography*, Vol. 12, No. 3, May 1993, pp. 196-197.

reduction in price support which is product specific, (b) input subsidisation which is non-product specific. Till the last decade the country was a state-subsidising welfare state, whose agricultural policies has been essentially subsidy oriented. Policies were designed to improve food grains production and limit our dependency. It has also been the long cherished objective to alleviate poverty and unemployment through equitable distribution of resources. With this end in mind the centralised units of management functioned to provide inputs and other requisites of production including credit; central regulation and control over production, allocation and distribution was considered necessary in the interest of optimum utilisation of resources. Secondly, with liberalisation it has to privatise its research and technology institutions in agriculture, its seed farms, and allows foreign players to enter this sector. Thirdly, facilitate foreign participation in input supply and in agriculture infrastructure development. All these, it is feared, will erode the institutions of national economies and political cohesion as well as erosion of the Welfare State.

India's economy opened to global capital since 1980, and underwent two phases of globalisation. The first phase saw the minimisation of state intervention in certain sectors of the economy so that market forces began to play a greater role.⁷ The second phase which started in the 1991- essentially a structural adjustment program (SAP)- also greatly affected the agricultural sector. This will have far reaching consequences for the Indian peasantry.

⁷ In Indian agriculture, for eg. foreign seeds companies like Cargill Seeds India Private Ltd., Sandoz, Hoechst, etc. already made their entry quite early.

In compliance to WTO, the ground has been prepared for corporate sector to enter the agricultural production in a big way. Direct Foreign Investment (FDI) is being inticed into agro- processing, land ceiling is being relaxed in various states to facilitate the large farmers to reap the benefits. As a result of import liberalisation and the mandatory conditions of minimum market access, the country, despite self –sufficiency in foodgrains and maintaining a buffer stock now has to import a certain percentage (3%) of the domestic consumption. This is the paradox of the country's agricultural policy whose aim had been to attain and maintain self- sufficiency.

Implications of liberalisation: two lines of argument have been pursued. One line of argument is that of growth of agricultural sector and of agricultural exports as a consequence of liberalisation. It is based on the assumption that reduced tariff barriers and non – tariff barriers to trade of WTO regime offers opportunities to Southern/developing nations to increase their export potentials. Commercialisation of agriculture geared to agro-industrial product, value addition to the products and targeting new products for export are considered ways by which tropical nations like India can capitalise on the situation.

The other line of argument is that competition and reduction of government support will have grave consequences for the farmers. The argument against a strategy for industry-based agriculture is that the adoption of 'new agriculture' –conversion of food system into cash cropping systems mortgage the country's food security. Besides, the country finds difficulty to compete in the international market for two reasons- (a) the high level of subsidy in agriculture provided in the developed countries, (b) the sheer lack of organisation,

infrastructure and capital investment in agriculture.⁸ Protectionist barriers in developed countries have till date has been affecting India's export. It is inevitable that the barriers will become even subtler. The use of social clauses like child labour and human rights, sanitary and phyto-sanitary standards as restrictive trade barriers have affected Indian exports.

The question of subsidy reduction has grave consequences for the Indian peasants. They have sustained largely on the subsidy/ support program of the government. The objective of "reduction in agricultural support and protection ..." of the WTO necessitates reduction of total aggregate measurement of support (AMS).⁹ However if AMS is below 10% of the total value of production for developing countries such reduction is not required.

In India two types of subsidies are provided- product specific and non-product specific. The product specific subsidies are normally provided in the form of minimum support price (MSP) to specific crops and calculated with reference to international price for the commodity.¹⁰ The non-product specific subsidies are on fertilisers, irrigation, electricity, credit and seeds.

Though well within means, subsidies formed a substantial portion of the non-plan expenditure. The government has been under pressure to cut down or

⁸ Subsidies amounts to about 73% in Japan, nearly 400% in European countries and 26% in U.S.A. in 1994. *Mainstream*, Vol. xxxvii, No. 41, Oct. 2, 1999.

⁹ AMS is the sum of all domestic support in favour of agricultural products to the producers. It is to be calculated separately for each basic products taking into account all product specific support.

¹⁰ By such calculations Indian agriculture is taxed rather than subsidized as the market support for 17 out of the 20 crops for which MSP are fixed has been negative, i.e. only 12% of the total value of eligible annual production. Under WTO conditions 20% is permissible.

target them appropriately so as not to run down the resources meant for growth and development objectives. As part of the reforms agenda, food subsidies was cut down at 0.5% of GDP; central fertiliser subsidy which was zero till 1975-76 and had risen to 1% in 1989-90 has since then fallen to 0.6% by 1995-96.¹¹ Emerging out of the subsidy trap will expose the farmers to the uncertainty of market forces.

One of the most controversial issue, and a subject of much debate within and between countries is the Intellectual Property Right (IPR). It is feared that in future access to superior inputs like seeds will become difficult with the abolition of plant breeders' right and the right of farmers to retain patent seeds, every growing season patented seeds will have to be procured. Irrelevant will be the country's plant breeding programme to which much of the credit for attainment of self-sufficiency goes. Till date production and distribution of foundation & certified seeds in the country have been done mostly by government institutions and agencies and they were never patented. There is no system of protection of plant varieties in the country whereas the WTO text requires a sui generis system of protection of plant varieties. This damages the bargaining power of domestic firm and research & development laboratories.

The country, which is one of the 12 richest countries in the world in terms of bio-diversity having about 45000 plant varieties, is a potential goldmine for patent hunters. A system whereby the country can patent her entire bio-diversity like Australia has done will ensure the protection of the varieties as

The non-product specific subsidies for the country also works out to be lower than the WTO norms- the aggregate is below 6% of the value of our total agricultural product.

¹¹ Suryakumar, P.V.S. 'Subsidies: Some pertinent Issues' in *Yojana*, Vol. 41, No. 9, Sept. 1997.

also the breeders/farmers rights. A hindrance to this is the slow administrative-legislative machinery required to bring the required changes.

And so far as the distributive justice and social cost of structural adjustment process are concerned there is a general discontent that feasibility of the measures would adversely affect the great mass of cultivators who would be most severely affected. Free trade is not necessarily the best policy if domestic economy is characterised by imperfect market.

1.3. Liberalisation in the context of Assam

The process of globalisation is not altogether new to the state. 100- 150 years back the British had opened the state economy. The state economy opened to the processes of globalisation with the discovery of tea and commencement of plantation agriculture. Ever-expanding tea production and exports triggered a variety of investments with backward and forward linkages. The discovery of coal and oil in Upper Assam resulted in development of mining and forestry. Coal was utilised to fuel steam vessels plying on the Brahmaputra, and the railways. These brought heavy machinery needed in the tea industry, and in their return journey took back tea for export. Thus the development of each sector provided the stimulus to the other¹². Trading posts and markets were established. The region was a pioneer, an investment- leader, a moderniser. It attracted capital and entrepreneurs. The region was then a part of the main, an

¹² Verghese, B.G. (1996): "Development and Change" in *India's Northeast Resurgent: Ethnicity, Insurgency, Governance, Development*, New Delhi, p.336.

open economy well linked to markets at home and abroad by rivers and rail via Calcutta and Chittagong.

Independence and the division of the country on the basis of religion changed much of this. Transport and trade links were broken causing major setback to the economy. After independence, as an integral part of the state- subsidising welfare country, it adopted agricultural policies, which were essentially subsidy oriented. Agricultural policies till the mid 1990s were aimed, broadly speaking, towards land reforms, agricultural research and technology development, agricultural education and extension & input supply. These were formulated and implemented by phases. Policies were designed to improve food grains production. With this end in mind state units of management functioned to provide inputs and other requisites of production including credit. What was characteristic was the monopoly of the public sector in agricultural research and technology development, in agricultural extension, input supply, etc. Government assistance, control and regulation of production and distribution was characteristic of the development strategies in agriculture. From the 1990s, or rather more accurately, from mid nineties the policies aimed at reducing the monopoly of the public sector. Thus steps to privatise public sector facilities have already been initiated.

The anticipated impact of globalising to the present economy of the state is rather contradictory. While it is felt that the integration of the state economy to the economy at large will generate growth impulses within the state economy, apprehensions are expressed too that the removal of protection will result in greater disparity and poverty than the existing levels.

Reduction of government support has grave consequences for the peasants who have sustained largely on the government subsidy/support program. Subsidies - product specific and non-product specific were an integral part of the government's planned support programs. Product specific subsidies, which include support price to specified crops, had, within the state, been limited to support price for jute and tea only. There has been no support price for any other crop within the state. On the other hand, non-product specific subsidies provided are to a considerable extent. These subsidies are on fertilisers, irrigation, electricity, credit and seeds and form a substantial portion of the non-plan expenditure. Subsidy rates had ranged variously over the different years and plan periods, being around 50% in case of fertilisers (particularly to Scheduled Caste, Scheduled Tribes and small and marginal farmers) to even 100% for electricity consumption in agriculture. Subsidy on seeds had fluctuated from year to year, while 100% subsidy was provided to the farmers affected by floods. Subsidies have been provided on pesticides, and on hire/purchase of farm machines. It is a different matter altogether that such incentives failed to motivate the farmers of Assam to adopt better inputs or agronomic practices due to problems and constraints faced. The government, both union and state, are now under pressure to cut down or target these subsidies appropriately so as not to run down the resources meant for growth and development objectives. However, emerging out of the subsidy trap will expose the farmers to the uncertainty of market forces.

On the export front, the reduction of tariff barriers and non-tariff barriers have significance for the state commercial agricultural sector. The high demand for agro-industrial and high value food substitute originating from tropical countries have significance for the state which has a varied agro-

climatic conditions suitable for cultivation and a variety of tropical horticultural products. Much of horticultural products form bulk of North's (developed countries) agricultural imports. Therefore commercialisation of agriculture geared to agro-industrial product, value addition to the products and targeting new products for export are considered ways by which the state can capitalise on the situation. Advantageous too is its position in terms of biodiversity given the Patent provision. But the argument against such a strategy for agriculture is that the adoption of 'new agriculture' –conversion of food system into cash cropping systems will mortgage food security for one very obvious reason- the sheer lack of organisation, infrastructure and capital investment in agriculture within the state. Thus the state is in a very weak position to cash in on the business opportunities offered by the free market regime.

The argument that farmers can benefit by adopting cash crop cultivation also does not find much support due to the fact that much of the agricultural landholdings are tiny, and are therefore economically non-viable and non-sustaining. For the large peasantry, foodgrains cultivation is the only choice. Further, it is feared that with relaxation of ceiling on land holding to facilitate corporate farming these marginal farmers will lose their farmlands accentuating the disparity. Consequent of such displacement will inevitably be social and political disintegration. Widespread apprehension is expressed too of further marginalisation of these farmers with the reduction of state assistance in input availability, credit, infrastructure, etc. However, the other side of argument is that state assistance package for the small farmers did not really reach all the intended beneficiaries in the past and that the benefits of such

packages in any case was appropriated by large farmers, middlemen and government officials.

Intellectual Property Right (IPR) carry grave implications for the cultivators. It is feared that in future access to superior inputs like seeds will become difficult with the abolition of plant breeders' right and the right of farmers to retain patent seeds. Every growing season patented seeds will have to be procured. Irrelevant will be the state's (just as that of the country's) plant breeding program. Till date production and mostly government did distribution of foundation & certified seeds in the state institutions and agencies and they were never patented. There is no system of protection of plant varieties in the state or for that matter, within the country whereas the WTO text requires a sui generis system of protection of plant varieties. Within the state the slow administrative-legislative machinery required to bring the changes has and will always be a hindrance to the state patenting her entire bio-diversity. This would have ensured the protection of the varieties as also the breeders/farmers rights. Besides, the state is a potential goldmine for patent hunters. The other side of the coin is that with appropriate measures taken at the right time to patent the indigenous species, the state will gain considerably. Because the state, along with the rest of the North Eastern states, has been found to be one of the richest reservoir for genetic variability of large number of crops.

Prospects of privatisation of Agriculture Research and Development institutes- the Assam Agriculture University and the Regional Research stations linked to it evoke similar responses. On the one hand is the apprehension that with privatisation quality planting materials will cost more and hence be rendered out of reach of the small farmers. On the other hand is the conviction that

private breeders/seed farms, in an effort for maximising benefit will ensure timely supply of quality seeds, in required quantities, unlike is the case with the supply of planting materials by the government agencies. So far these government agencies had enjoyed monopoly in this area. These government agencies have in the past failed to supply adequate and quality planting materials in time to the farmers. Also the quality of research in these government laboratories have suffered due to frequent transfers of officials and hence lack of qualified and experienced personals. Privatisation, it is hoped, would bring efficiency in the functioning of these government/government-aided institutions

Internal liberalisation, reforms and restructuring of the sectors of the state economy, in a conducive environment to development could bring benefits of economic globalisation. This has possibility of reversing the trend to regain back the economic position of 100-150 Revival of the links under the liberalisation regime will definitely bring back some semblance of the early economy, provided a stable economic environment is created.

However, free trade is not necessarily the best policy if domestic economy is characterised by imperfect market, and internal instability. These are not conducive to development. Within the state, imperfect market conditions for agricultural products are due to

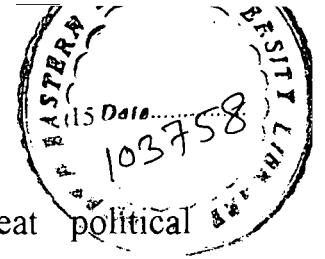
- middlemen, who appropriate much of the benefits of trade,
- farmers indebted to these middlemen are compelled to sale the bulk or the whole of their produce to them.

- inadequacy or non-existence of storage facilities for the products which leaves the farmer with no alternative but to sell the products immediately instead of waiting for a remunerative price.

Thus under such imperfect market conditions, the mechanism of free market is hardly expected to work. Therefore, social and political implications cannot be overlooked. Given the socio-economic situation, social fallout of increased hardships due to competition, possible loss of farmlands, etc. and altogether increasing gap between the small and large farmers is inevitable. And so far as the distributive justice and social cost of adjustment process is concerned, discontentment that SAP programs would adversely affect the masses who are severely affected by increases in unemployment and reduction in food subsidies, and real wages.

1.4. The Politico- geographical Basis

Significance of politico-geographical factors in developmental policies cannot be overemphasised. From the locational point of view, its location at the tri-junction of South, South Eastern and East Asian region has politico-geographical significance. Considered as a frontier by the mainstream (and hence under potential threat of annexation by China), development policies advocated in the past were governed to a large extent by this geopolitical consideration. In the present context (of a friendlier atmosphere and of openness of national economies) this locational advantage calls for appropriate development policies. ✓



Evidently government policies of development are of great political significance, and likewise, the political factors have immense bearing on the policies of development. The difference in economic development of the Brahmaputra valley, the Barak valley and the hills/tribal dominated areas were due to this interplay of a combination of politico-geographical factors and development policies. Politico-geographical factors within each stem from the incompatible socio-cultural structures, beliefs, and value patterns of a plural and vastly complicated human mosaic and their co-existence. Further, their distribution over particular geographical space lends complexity to the mosaic. This further complicates development efforts by the state.

Consolidation, change and commercialisation of activities shaped the political and economic position of the state in the past. But these processes were confined to the Brahmaputra valley, and to a lesser extent in the Barak valley. Hence the Brahmaputra valley emerged as the political and economic power within the region. In comparison, there was relative isolation of the other population elements existing in the periphery of the main. This isolation was reinforced firstly with the strengthening of the political and economic positions of the valley. Secondly, isolation was on account of not only their divergent traditions and backgrounds, but more so due to change in their perception, priorities and interests as a result of exposure to missionaries, and later due to policies of the state administrators. This situation of complicated priorities, interests and perception of a heterogeneous and fragmented society, presents dilemma to policy makers. Particularly as they occupy strategic geographical locations with regard to resources and transit routes to and from the region. Perception of change and development differ amongst these different societies. What is acceptable as development or the process to development is not

acceptable to the other. The emerging pressure politics are evidence of such conflicting interests and perceptions. Demands of the pressure groups range from demand for more favourable economic/employment opportunities, political self-determination and economic decentralisation (by the minorities within the state), safeguarding indigenous resources, elimination of outside competition against the indigenous population, to demand for increased funds from the union government for developmental purposes, etc. Therefor the different perspectives of development further complicate the process of policy decisions and of development.

Nationalist/separatist movement can be seen as manifestations of such conflicting interests, priorities and of economic, social and political deprivation (discussed in the subsequent sections). The state is also, using Myrdal's terminology, a 'soft state', incapable of insulating economic management from the political processes of distributive demands, rent-seeking and patronage disbursement. This situation arising out of the plurality of contending interests presents a very weak basis for economic reforms required for the liberalisation process.

The present study is an attempt to analyse the past policies of development in agriculture as the basis for future development policies against the prevailing situation in the state.

Objectives of the study

The objective of this study is to:

1. Examine the state policies towards agriculture- farm sector as well as plantation sector.
2. Examine the pattern of agriculture in respect of crop coverage and productivity
3. Examine the potential in agriculture (and its land use) in the form of extension in area of commercially viable crops, adoption of new/ better techniques etc.
4. Examine the impact of socio- political issues on the policies of agriculture.
5. Examine the regional pattern of liberalisation and its impact.

Hypotheses

1. Geographical factors can have profound influence on policy decision. Likewise, operation of policies can impact considerable changes to geography of a region.
2. Small farmers in the state form majority of the farming population. They have gained little from government assistance packages. Thus agricultural restructuring could have small impact on the overall situation of the farmers.

3. Intra-state differences in agricultural performance reflect the spatial and temporal differences in utilisation of agricultural infrastructure facilities. This also reflects the differences and irregularity in implementation of policies or strategies.
4. Given the condition whereby the struggle for survival eclipses all other concerns for the peasants, adoption of 'new agriculture'- geared to agro-industries and high value foods will not be able to replace traditional agriculture in a big way.
5. Market economy tends to intensifies economic disparity amongst small/marginal farmers and large farmers. This could result in intensification of social and political tensions within the state.
6. Discontentment and internal conflict –the result of imbalance in development between ethnic population groups, is in turn the result of development strategy in disregard of geo-cultural characteristics. Issues and pressures for redress of the demands, could affect policy decisions and their operation.

Database and Methodology

The present study is primarily based on secondary data. In the collection of data the following variables were the prime consideration-

- agricultural land use,
- irrigated area,

- land use and land holding pattern,
- area, production and yield,
- use of agricultural inputs,
- population density per cultivated area.

Books, journals and periodicals formed the preliminary source of data, which helped to build theoretical background of the study. Numerous reports published by Government of India, and by Government of Assam formed the main source of data. Census reports of Assam, statistical handbooks of Assam, Economic Survey Reports were consulted/used to get a general picture of the economic, socio-economic and demographic situation of the state. Various reports and publications of the Directorate of agriculture, of the various departments of Krishi Bhavan, Guwahati, and of Planning and Development, Assam, were drawn upon extensively and intensively to examine state agricultural situation. Draft five year plans, and assessment reports of the plan periods were consulted in the analyses of the state agricultural plans. Data on districtwise area, production and yield of different crops were obtained from the Directorate of Statistics and Economics, Guwahati. Land use/Land Cover Maps of Assam (districtwise) was obtained from the Assam Remote Sensing Application Centre, Guwahati. Report of The Assam Land Reform Commissions, 1981 was obtained from the office Land Revenue, Government of Assam, Assam Secretariat. Annual Reports of Regional Agricultural Research Station, Titabar, Diphu, Shillongani, and Scientific Reports of Toklai Tea Research Station, were consulted for the studying the Research and technology developments in specific crops. Annual Reports of Directorate of Extension Education, AAU, Jorhat were consulted to understand the processes of technology dissemination within the state. Reports of the Agro-Economic Research Centre gave a picture of the extent of dissemination and the

constraints faced. To systematically analyse the extent of gains of research and technology development, or lack of it across the state, performance reports of beneficiary and non-beneficiary farmers as published by the Regional Research Stations have been utilised.

Relevant data on tea have been obtained from Tea board, Guwahati, and the Assam Branch of Indian Tea Association (ABITA). Besides data have also been obtained from Assam Industrial Development Corporation-AIDC, on jute development aspects.

Methodology- The nature of the study being analytical then empirical, there is fewer application of statistical methods. However in the process of analyses of patterns and processes, some quantitative methods have been applied. In the analyses of the agricultural patterns quantitative comparison of districtwise/agro-climatic sub zone wise in terms of

- area under different crops,
- area under high yielding varieties (HYV),
- area under irrigation,
- cropping intensity,
- extent of fertiliser consumption, have been carried out to get a picture of the intra-regional disparity within the state.

Similarly to examine the extent of change or lack of it in these aspects of agriculture,

- districtwise percentage change in fertiliser application,
- districtwise increase in area under HYV paddy,
- districtwise creation and utilization of irrigation facilities,

-districtwise change in cropping intensity, has been carried out. The result of such comparisons and analyses are cartographically represented with the help of maps and graphs.

To understand the comparative position of agriculture in relation to other sectors of the economy the priority given to it during the different plan periods, comparative study of planwise fund allocation to different sectors of the state economy is attempted. Wherever data has been available, a comparative study of the pattern of priorities with that of the nation has been done. This gives an understanding of the unequal development of the different sectors.

With the Base year as 1989-90, Index number of area, production and yield of major crops- rice, jute and oilseeds, for the years 1995-96 and 1998-99- districtwise, have been obtained. This gives us a picture of the performance of agriculture in the districts over time with regard to these crops.

To understand the extent of change in land holding and land tenure system consequent of Land Reforms of the 1970s, percentage changes in land holding by categories-General, Schedule Tribe, and Schedule Caste is examined during 1980-81 to 1990-91. Similarly, districtwise extent of tenancy by tenancy status have been examined. In regard to production policy within the state, appraisal of the performance of agriculture in terms of crop production has been undertaken, This has been done by comparing the production achievement of major crops against target for production for different points of time. This has brought into focus the increasing gap between the two. In considering agricultural credit, an important prerequisite for agricultural advancement, available data on credit advancement by commercial banks and Regional Rural

Banks have been processed. Analyses of the extent of loan advancement and rate of recovery by different categories in the form of crop loans as well as term loans has been carried out.

The salient observations made in the chapters III to VI are considered in the search for policy alternatives to agricultural development in new economic environments suggested in chapter VII.

Organisation of Chapters

The contents of the present study are organised into eight chapters. The contents of the present study are organised into eight chapters.

In chapter I, Economic liberalisation as a concept has been introduced. Its need and applicability in Assam's context have been stressed. Besides, objectives of the study, hypothesis to be tested, database and methodology have also been stated. A review of relevant and available literature has been carried out.

In Chapter II, geographical attributes of the state with reference to its resources are discussed. It analyses physiographic, socio-economic and demographic aspects. The nature of economy as developed during the colonial and postcolonial period has been stated in relation to the theme of the thesis. These are reinforced by direct reference to the impact of locational compulsions on the economy. The chapter also gives an account of the resource potential of the state development and utilization of which will result in income generation and economic advancement within a liberalised environment.

In Chapter III, evaluation of the agricultural policies of Assam from 1947 upto 1990-91 has been carried out. This is done separately for the unorganised farm sector and the plantation sector. Two broad phases of policy initiatives marked this period. Policies concerning food grains and policies concerning non-food grains production. Besides policies in the development of infrastructure particularly irrigation, input supply system, its policy on agricultural research and technology dissemination constitute part of the chapter. Policies towards protection of the tea sector against foreign companies and the consequences of such policies have been analysed. Drawbacks, inadequacies and constraints have been examined. The extent of government role has been examined.

In chapter IV, Agricultural patterns of Assam as the result of these policies are discussed. The resultant land-utilization pattern, production and productivity patterns, input consumption-type and patterns, are examined. This has also brought to light the extent of inefficiency in resource utilization both by the farmers and the government agencies. The chapter deals separately with the farm sector and the plantation sector.

In chapter V, policies since 1990-91 are evaluated. Economic reforms and the structural adjustment programs undertaken in the country and in Assam, with emphasis on tea, jute, oilseeds and horticultural crops, from mid 1990s are discussed. The likely implications of such reforms in both the sectors-farm and plantation analysed.

In chapter VI, the socio-economic and socio-political issues, which have for long actively influenced the pattern of resource allocation and all development activities, are discussed.

In chapter VII, the geographical basis for policy reforms and accordingly, restructuring of the state agrarian economy is discussed.

The concluding chapter major findings and observations are stated, and on these basis recommendations are made. The concluding chapter also tests the hypothesis on the basis of the analyses and observations made.

SECTION II

Review of relevant literature.

Review of the available literature is carried out in three sections. The first section examines the available literature on the theoretical and conceptual aspects of free market economy. The second section reviews the available literature on the regional scale including those on India. The third section is a review of the available literature on agricultural development and policies on agricultural development within the state.

The processes by which economies, societies and cultures become transformed has interested scholars from all disciplines. Such transformation dates back to the nineteenth century rise of capitalism and annihilation of space by time- a new situation established by the railroad. Writers like Marx articulated the idea of annihilation of space by time. This idea later surfaced in geography literature during the 1920s and 1930s, and then again during 1960s and 1970s as "time-space convergence". The idea of time- space compression nowadays is usually associated with the work of DAVID HARVEY (1989). Harvey uses the idea in two ways-first, to express a marked increase in the pace of life brought about by innovations like modern telecommunications and the effects this has on human communication systems-a seeming collapse of space and time. Secondly, to signal the subsequent upheaval in our experience. The form of capitalism, which Harvey perceives, involves accelerated internationalisation of economic processes, a frenzied international financial

system, use of new information technologies, new kinds of production and different modes of state intervention.¹

There has also been a proliferation of literature on the various aspects of free market economy following debates in political and economic fora by Developing Countries (DC) and Less Developed Countries (LDC) on the extent and nature of globalisation, liberalisation and privatisation of national/state economy. Perhaps the most comprehensive treatment of global change in this context has come from contemporary American geographers. The issues concerning political, social, cultural and environmental change and geographical dimensions of such changes have been addressed contemporary geographers such as R. J. JOHNSTON, PETER J. TAYLOR and MICHAEL J. WATTS. These geographers critically reviewed the changes in late 20th century.² They brought into focus mobility of labour, capital and the search for profits as marking the change and transforming the world. The transformation is traced back to 1970's flow of foreign direct investment. PETER DICKEN'S quest of what exactly causes the transformation of a formerly state-centred economic system to a global economic system leads him to explore the surface manifestations of changes in the organisation of global economy and the major underlying processes of change.³ In doing so he recognises two dimensions which were key to such change-one is the geographically dispersed production functions of the last few decades; the second- the organisational form-the pre

¹ Harvey, D. W. (1990). "Between Space and Time. Reflections on the Geographical Imagination", in *Annals of the Association of American Geographers*. 80, pp.418-434.

² Johnston, R. J., et al. (1993). "Reconfiguration of Late Twentieth-Century Capitalism" in Johnston, R. J. (ed.) *Geographies of Global Change: Remapping the World in the Late Twentieth Century*. Oxford; Blackwell, pp.13-17.

³ Dickens, Peter. (1993). "The Changing Organisation of the Global Economy", in *The Challenge for Geography; A Changing World, A Changing Discipline*. Oxford; Blackwell, pp.31-47.

eminent form identified as Trans National Corporations- the TNCs. Three major points of change recognised are production, trade, and international direct investment. The changes are related to specific development in product and process technology as well as information technology. Significant to the process of transformation ascribed are-

- increasing information intensity in production process
- much enhanced flexibility of production breaking down the traditional economies-of-scale relationships, and
- reduction in the volume of labour together with skill changes.

He notes the role of the TNCs in the geographical dispersion of production, trade and international direct investment. A fundamental conflict of interest is observed between states and TNCs. The TNCs seeks to maximise its freedom by to locating its functions in the most advantageous locations, while the state is unwilling to give up its economic autonomy or bring major changes in policies which will reduce its dominant role as an economic institution. He is critical of the assertion by some that such rivalry will lead to the demise of the state as an important force in the world economy. According to him national/state governments will continue to play significant role, encouraging or inhibiting the policies of the TNCs.

Corporate agro- food capital is bringing about transformation in agriculture in ways more than one. SARAH WHATMORE (1995) notes that the direct involvement of these corporate capital in farm production sector is only to a limited sector while indirectly they exert tremendous influence. Tremendous influence is exerted through network of marketing contacts, technical services and credit arrangements. She points out that under their influence much of the

food production capacity of developing countries are reoriented away from staple food crops. The result is that agriculture in these countries have become increasingly tied to the Western markets for unseasonal or luxury primary foods. Also, biological time-space rhythms like crop gestation, seasonality and regional specialisation have been disrupted. A growing differentiation is noted- on the one hand a rapid concentration of industrial farming method on to a much smaller number of much larger agro-food sector and which are bound to the corporate. On the other hand, the family farms which are linked more closely by their struggles over the cultural and material resources of the rural environment. Thus the result is an uneven and unstable agro-food system, characterised by overlapping crises. Identified first is the crises of production faced with escalating cost of production and declining product prices. The second is a crises of regulation, resulting from the growing political and institutional tensions in a policy apparatus which regulates global agro-food trade on the one hand, and national farm incomes on the other. The third is a crises of legitimisation, which centres on the politicisation of concerns about the consequences of industrial agriculture for food security at national and local levels.⁴

The dismantling of national forms of agricultural regulation following capitalist restructuring not only bring crises at regional, national and international levels. It also facilitates global accumulation and globalisation of agriculture. ULFKENS (1993) articulates this opinion. He relates globalisation of agriculture to changing forms of global agricultural regulation that

⁴ Whatmore, Sarah. (1995). "From Farming to Agribusiness; the Global Agro-food System" in Johnston, R. J. (ed.) *Geographies of Global Change: Remapping the World in the Late Twentieth Century*. Oxford, Blackwell, pp.36-49.

reconstruct flow of international (agriculture) commodity exchange, alterations in central and local state-society relations, change in structure of agricultural food capital that integrates systems of food production and consumption transnationally. Also it is related to the evolving power dynamics within the multi-state system. Multi sourcing and emergence of 'new world agriculture areas' and non traditional crops as a result of structuring and restructuring of agriculture sector brought about by TN agro food capital are seen as essential features of agricultural globalisation. Thus he perceives a radical transformation of the traditional agricultural areas, and that TN capital will be a major force shaping regional agriculture via linkage to the complex and variegated patterns of world food consumption.⁵

MICHAEL deals directly with the re-regulation of agricultural trade within the dynamics of GATT / WTO. He finds two regulatory dimensions in global agriculture trade- namely, formal & substantive. The formal issues comprise interstate negotiations over trade barriers and farm subsidies and other farm policies. Dismantling trade barriers, and subsidy reduction as an essential part of restructuring is seen to stabilise international trade. The substantive dimension concerns the structural consequences of such inter state formalities and are considered to have far reaching. Privatisation, wage reduction, lowered social and infrastructural expenditures- in short, overall reduction in government is perceived as eroding the institutions of national economic and political coherence. But at the same time new economic relations are expected to emerge which will embody a 'complex web of economic alliances and production sharing among differing nationalities and national governments'.

⁵ Ulfkes, Frances M. (1993): "The Globalisation of Agriculture" in *Political Geography*, Vol. 12, No. 3, May 1993, pp. 194-197.

One such alliance Mc Michael terms North-South relation which will combine a residual south (less developed/tropical countries) food dependency with an emerging pattern of south exporting speciality food to the North (developed/temperate countries). The UN Council for Trade and Development, 1990, sees this alliance as unbalanced and in favour of North countries due to the rising prices of basic foodstuff imported by the LDCs and low prices of tropical crops and natural resources based products imported by the North countries.⁶

On the subject of protection to domestic sectors of the economy, DAVID WALL noted that almost all developed countries afford protection to their agricultural sector, using a wide range of devices such as Tariffs, quotas, price supports, subsidies and income deficiency payments. This is found to restrict export from the developing countries in 2 ways. Firstly, increased prices reduces total domestic consumption, and secondly, domestic consumption is substituted by imports.⁷ The consequence of subsidising agriculture by the developed countries is large-scale surplus production. This is seen to have detrimental effect on the developing countries. The surplus sent as food aid etc. interferes with the food price mechanism of the recipient countries. Consequent lowering of prices discourages efficient development of agriculture in the developing countries.

The interests of LDCs in a liberalised economic environment are a cause of much concern and have attracted attention from economists, politicians and

⁶ Michael P. Mc. (1993): "World Food System Restructuring Under a GATT Regime" in *Political Geography*, Vol. 12, No. 3, May 1993, pp.198-214.

academicians alike. BALASSA, B. (1988) expresses this concern.⁸ She examines the experience of seven major developing countries with trade orientations during 1973-84 and its effects on trade performance. Favourable effects of export expansion on economic growth was supported by statistical analyses of the results obtained for these countries. A high correlation between growth of exports and that of production in agriculture, manufacturing and in national economy was observed. Three countries- Korea, Singapore and Taiwan pursuing outward oriented policies continued to gain export market shares. Three Latin American countries-Argentina, Brazil and Mexico where reform measures were partly undone, could not continue to gain after 1973. In case of India, the lack of practical policy reforms was held responsible for the least export growth. However the study omits the effects of other economic variables.

In LDCs. inherent institutional & structural constraints have hindered development of free market economy. KHUSRO, A. M. examines the policies and objectives of planned development in the 40 years since 1951. In doing so, he attempts to examine the constraints and their detrimental effects on the development efforts of the country. He finds that progress as well as regress and failures mark the period of 40 years since 1951. He considers this period an epoch in itself. According to him the set of policies pursued basically pronounced a dominant role for public sector to undertake major infrastructural development.⁹ But while overstressing the role of the public sector, he pays

⁷ Wall, David. - : "Factors Against Developing Countries" in Johnson, Harry G. (ed.) *Trade Strategy for Rich & Poor Nations*

⁸ Balassa, B. (1988) : "Interests of Developing Countries in the Uruguay Round" in Singer, Hans, Hatti, N. and Tandon, R. (co ed.) *New Protectionism & Restructuring*, Ashish Publishing House New Delhi. pp. 451-469.

⁹ Khusro, A. M. (1994): "Old Order Changeth Yielding Place to New" in Das, Debendra K. (ed.) *Structural Adjustment in the Indian Economy: Basic Issues and New Policy Initiatives*, (1994), New Delhi, pp. 13-28.

inadequate attention to the need of private sector participation in infrastructural development. For, it is the private sector participation, which is sure to bring more efficiency and perhaps speedier development. The articles also discuss the structural reforms & adjustments by developing countries, focussing particularly on situation in India. There is general concern expressed by many that adjustment programs will adversely affect a large majority of people by increases in unemployment, reduction in food subsidies and real wages. Thus the real cause of concern is the extent, pace and sequence of adjustment package. In an examination of the structural reforms package more particularly the fiscal reforms, JAYARAJ (1994) holds unsustainable public expenditures responsible for the fiscal crises faced by the country.¹⁰ Most of the government expenditures are found to be on subsidies, wages and salaries. The opinion expressed is that if specific cuts are made the cost of adjustment will be borne by the beneficiaries of subsidy program who are generally the poor. However he expresses optimism that reduction in subsidies would in fact favour the poor by providing higher agricultural prices. However this can only happen when the benefits of price rise reaches the farmers, which often does not happen given the existence of middlemen.

Attempts have been made in recent years to study the implication of market economy on the economy of the North Eastern region of the country. The attempts are to find answers to three basic issues- what would be the likely impact of the world capitalism development upon the NorthEast? Why does the region fail to accrue of any benefit out the liberalisation process inspite of

¹⁰ Jayaraj, S. (1994): "Structural Adjustment in the Indian Economy: Present trends and Future Challenges" in Das, Debendra K. (ed.) *Structural Adjustment in the Indian Economy: Basic Issues and New Policy Initiatives*, (1994), New Delhi, pp. 168-183.

being rich in natural resources? What will happen to the critical ethnic situation within the region? Two approaches have been adopted in the search for answers- a broad perspective based on world capitalist development experiences, and another based on local socio-economic structures. Against an environment of intense competition, ABHIJIT CHOUDHURY raises two questions related to the region – should the region participate in the ongoing process of restructuring? And what will be the future of the region in the prevailing situation of recurrent ethnic assertions? While he expresses the feeling that the logic of contemporary historical compulsion will leave the region with no alternative but to open its economy, the operation of ‘economic Darwinism’ will bring adverse effect to the region’s economy. He uses this expression in defining the process liberalisation, where competition is the last word. In such an emerging trend –of survival of the fittest in an international economic relationship, not only will the economy of the region regress, but the inter-ethnic and intra- ethnic suspicion, fear and conflict will aggravate.¹¹ He therefore endorses Amartya Sen’s economic philosophy of a humanised economy- a uniformly developed global economy to avoid regional disparity. And therefore endorses increased role of the government in delivering goods like social infrastructure, infrastructure in rural areas, etc.

BHATTACHARJEE (1998) attempts to look at the challenge for the North East from the point of view of the theory of Comparative Advantage (of Michael E Porter).¹² Porter defines competitive advantage as the ability of

¹¹ Choudhury, Abhijit 1998 : “Future of the Present of a Frontier : India’s North East in the Age of Libertarian Market” in Das, Gurudas and Purkayastha, R. K. (co ed.) *Liberalisation and India’s North East*, Commonwealth Publishers, New Delhi, pp. 105-122.

enterprises to sell their products profitably in & outside the country of their origin. He enunciates the concept of national competitiveness which depends on efficiency of production and productivity.¹³ Bhattacharjee applies Porter's theory to the country's North East to assess the region's competitiveness vis-à-vis other regions, and vis-à-vis the rest of the world. He applied the diamond of competitive advantage i.e.- factor condition, demand condition, related and supporting industries and firm strategy and rivalry. He finds the highly specialised factors conditions like scientific institutions and venture capital deplorable. Just as poor are the demand conditions- linking or supporting industries/enterprises are absent or limited which would have generated demand. Monopoly of the public sector enterprises within the region cancels out rivalry and reduces competitiveness. The author therefor is not very optimistic of the region's ability to find a place in the globalised economy.

DAS, G. (1998) looks at the implication of the liberalisation process for the region from the perspective of the peripheral syndrome.¹⁴ He begins by an examination of the historical development of state capitalism which had continued to operate even after the colonial period of the British in the form of internal colonialism. The transition from state capitalism to market capitalism is seen to carry pitfall consequences. This is because the problem of uneven development between the core and the periphery will not only continue to

¹² Bhattacharjee, P. R. 1998: "The Theory of Competitive Advantage : Its Implications for the North East Region" in Das, Gurudas and Purkayastha, R. K. (co ed.) *Liberalisation and India's North East*, Commonwealth Publishers, New Delhi, pp. 131-139.

¹³ Porter, Michael E. 1990 : "The Competitive Advantage of Nations" *Havard Business Review*, March -April.

¹⁴ Das, Gurudas. 1998: "Liberalisation and Internal Periphery: Understanding the Implication for India's North East" in Das, Gurudas and Purkayastha, R.K. (co ed.) *Liberalisation and India's North East*, Commonwealth Publishers, New Delhi, pp.140-155.

persist but attain an altogether new dimensions. He gives a comprehensive and critical treatment to the colonial and post colonial economic situation within the north eastern region of India. A clear perception of the role of administrators in alienating the region is evident from his writings.

Review of literature on policies of development

Economic advancement depends to a considerable extent on the development policies pursued by a nation. MYRDAL (1957) emphasised the role of agricultural policies pursued on the economic advancement. In his theory of development he observed that economic development in a country normally results in a circular causation process by which the richer sections are awarded greater favours and the efforts of poorer sections are thwarted. He applied two notions – the ‘backwash effects’ and the ‘spread effects’, to understand this process of inequalities in development. The ‘backwash effects’ are “all relevant adverse changes ... of economic expansion in a locality...caused outside that locality...effect viz. migration, capital movements and trade as well as the total cumulative effects resulting from the process of circular causation between all factors, ‘non-economic’ as well as ‘economic’.” The spread effects refer to “certain centrifugal ‘spread effects’ of expansionary momentum from the centre of economic expansion to other regions”. The strong backwash effects and weak spread effects in developing countries leads to accentuation of inequalities. Guided by profit motive the process of regional inequalities is common in a capitalist system. He was of the opinion that “if things were left to market forces unhampered by any policy preference...” inequalities will

accentuate.¹⁵ Myrdal's notions and ideas have found widely applicable to developing economies. They therefore provide basis for many of the later studies on world and regional economies.

The role of geography in policy decisions has been just as important. PRESCOTT holds geographic factors important considerations in policy decision and in policy operation.¹⁶ He laments the paucity of work by geographers on role of geographical factors on policy decision, and the influence which operation of the policies have on the cultural landscape. He identifies three aspects of government policies, which a geographer must consider in an attempt to understand the role of geography in policy decision.

These are-

- the extent to which geographic factors are considered in making any policy decision,
- the influence which geographical factors have on operation of the policies,
- the influence which the operation of these policies have on the cultural landscape.

But often, geography, according to him plays little role in the initiation of economic policies. He illustrates the example of South Africa to stress this point. The series of policy decisions in South Africa were made largely from political considerations. The country was faced with a crises of steady decline in foreign exchange reserves & increasing unemployment during the period 1961-66. Though governed by political considerations, the significance of geographical factors in these policy decisions became apparent as the cycle

¹⁵ Myrdal, G. 1957: *Economic Theory and Underdeveloped Regions*, pp. 26-28.

¹⁶ Prescott, J. R. V. 1968: *The Geography of State Policies*, Hutchinson & Co Ltd, London.

progressed. At the same time, the geographical effects of these policies were considerable. Establishment of new industries, new trade relations, and the emergence of differences in regional prosperity as a result of implementation of these policies changed much the geographical configuration of the country.

National policies in the past has been the focus of much literary attention and much studies has been done in retrospection. Prof. SCHULTZ traces the root cause of the poor performance of agriculture in so many poor countries to policy preference for industrialisation. To cap the issue, he wrote-“when countries like Nigeria, Chile and India want to keep their product prices low, the investment incentives for increasing the capacity of agriculture is thereby reduced”.¹⁷ MASON (1966) endorsed Schultz’s criticism. He noted that both countries- India & Pakistan, despite appropriately worded paragraphs in their Five Year Plans assigning high priority to agriculture, neglected this overwhelmingly important sector. Declining incentives to farm output in these two countries characterised agricultural development during the early period as the international terms of trade moved against agricultural production.¹⁸ Similar views are shared by LIPTON (1980) who claimed that “urban bias “ in Indian planning which was responsible for the persistence of rural poverty.¹⁹ For MALLOR (1976) the strategy of giving agriculture the primacy in any development planning is of significance. He is of the opinion that through technology changes in this sector, it could play a dynamic role in the economy.

¹⁷ Schultz, T.W. 1964: *Economic Crises in World Agriculture*, The University of Michigan Press, Ann Arbor, U.S.A.

¹⁸ Mason, Edward. 1966: *Economic Development of India and Pakistan*, Havard University Press, Cambridge

¹⁹ Lipton, M. 1968: “The Strategy for Agriculture: Urban Bias and Rural Planning” in Lipton, M and Streeten, P. (co ed.) *The Crises of Indian Planning in the 1960s*, Oxford University Press, London.

With its backward linkages with industry in production and consumption, it could induce and encourage growth in the rural non –farm sector and the urban industrial sector. Thus for him a rural –led strategy was likely to produce high rates of returns to investment in agriculture. Mellor cited Taiwan as a case in point where this sequence has been followed successfully.²⁰

GUPTA, et al has been somewhat magnanimous towards Indian development efforts in agriculture. They analysed India's development strategy and performance planwise and observed the transformation of a traditional economy into an industrial economy. The success story of the Green Revolution ascribed among others, to the relatively high quality of agricultural research and considerable infrastructural development in agriculture essential for the high yielding varieties- H.Y.V., was marked by great regional disparity. The lack of infrastructural development in many parts of the country emerges as the major factor for unequal development - it was availability of assured irrigation in North West India, which brought progress in agriculture to this part of the country. Acceptability of the H.Y.V. package by farmers depended on this support. He notes that N. W. part of the country have reached the saturation point in agricultural production and the focus should now shift to the rainfed parts of East and north East India. In all these efforts of the post Green revolution period the larger than life role of the government is recognised. Explicit is the continued role of the government particularly in agricultural infrastructural development. He notes that no policy on foodgrains export was evolved, in fact no clear-cut policy on agricultural exports.²¹

²⁰ Mellor, J W. 1976: *The New Economics of Growth: A Strategy for India and the Developing World*, Cornell University Press, Ithaca, New York.

²¹ Gupta, S.P. et. al., 1992: 'National Perspective of India', in Gupta, S.P. & Tambunlertchai, (co ed.) : *The Asia Pacific Economies: A Challenge to South Asia*, Macmillian India Limited, Delhi. pp. 299-353.

The basis of India's agricultural policies, according to GILBERT has been land reforms, community projects, panchayat raj, co-operatives, and package programs. Analysing critically, Gilbert points out that community projects had 3 fold aims- (a) increased production, (b) improving techniques and encouraging peasants to change their traditional static attitude into one that is scientific and dynamic, (c) developing the community spirit and strengthening the co-operatives and panchayats.²² The basic principals at all levels were to help farmers to help themselves. But a trend to give more emphasis to social programs slowed down agricultural development. Also the package programs was in conflict with the ideals of Indian planning, since the program was essentially to increase efficiency and production in the most favourable conditions. This increases regional disparity. Somewhat different trend of thought is expressed by SWAMINATHAN who sees considerable progress in Indian agriculture. Ascribing the progress to 3 broad areas-in research and education infrastructure; a reasonably efficient input production and distribution system and credit supply; and gradual evolving of policies for stimulating higher production by smaller farmers, he sees progress in agrarian reforms, rural infrastructure, input & output pricing and marketing arrangement.²³ However his views are skewed since progress made are basically in few agriculturally advanced states. He misses the situation in many other states where input delivery system is highly inefficient, output pricing system or marketing arrangement are non-existent, or credit availability inadequate.

²² Etienne, Gilbert, - "Basis of Agricultural Policy" chapter in *Studies in Indian Agriculture: Art of The Possible*, pp. 29-32.

²³ Swaminathan, M. S. 1991: "Agriculture for the Twentyfirst Century: New Thinking Needed" in *Agriculture and Industries Survey*, 1990-91, Vadamalai Media (P) Ltd. Bangalore.

PATEL (1994), while examining the past policies in retrospection attempts to understand the rationale of the new reforms. He finds that much of what is now considered 'new' policies were always there in conventional wisdom and lacked implementation.²⁴ Some of the policies in the initial stages were imperative to strengthen the economic base. He feels they were played out for too long such as the import substitution policy. Financial excesses such as unbridled increases in subsidies, among others, have been a drain on public resources. Thus past policies overlooked the importance of efficient use of existing resources in the zeal for distributive justice. He finds the country's past distribution policies to be greatly flawed too. They often amounted to what the author terms as mere tokenism, and the fact that the benefit of such token measures were appropriated by the un-deserving. The policy of financial hand-outs to panchayats is also criticised for the same reason. The policies of preferences, reservations and subsidies are criticised since they do not encourage efficiency.

BARDHAN (1985) holds similar views regarding resource allocation. He enquires into the politics of development in Indian economy and identifies various features of the processes of resource allocation which have political origin. Firstly, in the process of resource allocation he recognises the play of politics in the form of divergent pull of the different pressure groups with divergent political interests and the distributive demand of resources, patronage etc. The outcome is the proliferation of subsidies and grants to placate the different groups/proprietary classes that exert influence. Thus huge subsidies

²⁴ Patel, I.G. 1994: "New Economic Policies: A Historical Perspective", in Das, Debendra K. (ed.) *Structural Adjustment in the Indian Economy*, Vol. I: *Basic Issues and New Policy Initiatives*, Deep & Deep Publications, New Delhi, pp.113-133.

from government budget every year to maintain support prices for farm products, maintain low prices of fertilisers, irrigation water, power etc. for the rich farmers. The government is also obliged to supply subsidised credit through public lending for private agricultural and industrial finance. The Indian public economy has become an elaborate network of patronage and subsidies.²⁵ Much investible public surplus thus frittered away resulting in 'fiscal crisis' - blocking the necessary accumulation function of the state.

Secondly he recognised the all too important role of the plurality of proprietary classes (pressure groups) in policy implementation. The lack of political insulation from conflicting interests is seen as keeping the Indian state largely confined to regulatory functions, avoiding the hard choices and politically unpleasant decisions in agenda setting and policy execution crucial for more active development functions. Thus the state's role as the executor of national economic aspirations is constraint by the inspirations of the proprietary classes.

Perhaps the singlemost important factor responsible for the slow growth of agriculture the Government's policy of on land reforms. This aspect of Indian agrarian reforms have economic, social and political dimensions. KHUSRO brings out the fact that the phenomena of low agricultural productivity and all other related phenomena including land hunger and agrarian unrest steam from one basic problem-the tenurial relations and the decay of the same.²⁶ He finds the two factors complimentary to each other. The agrarian unrest, as he sees it finally leads to militant activities against the state. BOSE (1994) holds the

²⁵ Bardhan, Pranab. 1985: *The Political Economy of Development in India*, Oxford University Press, Delhi.

²⁶ Khusro, A. M. (1973): *The Economy of Land Reforms and Farm Size in India*, Institute of Economic Growth, Delhi, MacMillan India.

opinion that agriculture in India failed to progress due the approaches to the agrarian. He observes that agrarian reforms were not successful in changing the agrarian structure by reducing concentration of landownership and agrarian relations. The actual tiller remained an informal share cropper who does not gain much from the improvement in production.²⁷

Studies in land relations and the policy of land reforms in Assam have perhaps been the most popular, when one considers the studies carried out on the past (agricultural) policy perspectives of the state. The political dimensions of land reforms in Assam forms the focus of much attention. Related to this are studies on land holding structure in Assam. Characterised by a preponderance of submarginal, marginal and smallholdings, this holding structure is a problem in peasant agriculture in Assam. DAS, M.M. (1995) holds raiyatwari system of land tenure responsible for the alienation of agricultural land from the small and marginal peasants, and the cause of emergence of three distinct classes in Assam-the absentee landowners, small peasants, and the agricultural labourers. The author, through an intensive investigation of representative villages from different districts, makes observations that agricultural efficiency is highest in the indigenous non tribal cultivators who also happen to possess relatively larger holdings.²⁸ However, the study fails to examine whether this difference in efficiency level, is due to the size of holding and tenurial type which could be ascribed to higher or lower land improvement and agricultural investment consequent of higher income. In an earlier study in 1984 Das held small and

²⁷ Bose, S.K. 1994 : "Structural Reforms: Some Observations" in Das, Debendra K. (ed.) *Structural Adjustment in the Indian Economy*, Vol. 1 : *Basic Issues and New Policy Initiatives*, Deep & Deep Publications, New Delhi, pp.134-143.

²⁸ Das, M.M. 1995 : *Land Holding Structure- A Study in Peasant Agriculture in Assam*, Konark Publishers Pvt Ltd., New Delhi.

fragmented nature of the holdings responsible for low efficiency and thereby of slow agricultural growth. Using quantitative methods, he identified regions of crop combination, crop concentration, crop diversification and cropping intensity in Assam's peasant agriculture. The need for land reforms is expressed which would remove the constraints put by small size of holdings.²⁹ Sharing somewhat the same views on agrarian structures, BHAGABATI (1990) also stresses on the need for consolidation of the scattered small holdings. This, it is felt, will facilitate practice of improved agriculture.³⁰

A number of scholars have contributed profusely to the studies in agricultural growth and development, on agricultural land classification and utilisation patterns, cropping patterns and intensity, regionalisation, etc. GOSWAMI'S (1989) work on economic development, and particularly on growth of agriculture provides the latter scholars with much groundwork and direction for studies in agricultural geography of Assam. He attempted an exhaustive study on the growth of agriculture in Assam. The agrarian structures in Assam is held responsible for the most part for the near stagnation of the agricultural sector. Small and fragmented landholding, rural indebtedness and lack of institutional credit, are some of the serious socio-economic problems hampering development. Much effort has also gone into the examining of other problems and constraints to agricultural development. He recognises that the economy depends to a dangerous extent on the well-established Tea (and oil industry) and little has been done to diversify it. He laments that little attention has been

²⁹ Das, M. M. 1984: *Peasant Agriculture in Assam*, Inter India Publication, New delhi.

³⁰ Bhagabati, A. K. 1990: "Social Structure and Agricultural Performance in Dolabari Irrigated Area of Sonitpur District, Assam, in *Geographical Review of India*, Vol. 52, No. 4, pp. 71-79.

given to rural development and observes that development policies did not take effect due mainly to weak administration.³¹ In yet another study by him on patterns of land utilization in the plains and hills in Assam, he notes the condition of land utilization pattern in the plains as permitting technological reforms and investment, while in the hills the conditions deter the same. The economic implication of such patterns are analysed.³² His works provides much of the base for later works. GOSWAMI, D.C. (1989) considers floods and soil erosion as the two greatest physical obstacles to the development of agriculture in the state. He advocates reorganisation of the cropping pattern and crop rotation according to the flood situation to ensure sustainable development of agriculture.³³

The work by TAHER can be considered pioneering in attempting a regional basis for agricultural planning in the Brahmaputra Valley in as early as 1975. He found close correlation between the cropping pattern and ecological attributes of the valley.³⁴ GOSWAMI made an attempt to formulate planning strategy for agricultural development at micro –spatial level.³⁵ The study was

³¹ Goswami, P. C. 1994 (Third revised ed.): *The Economic Development of Assam*, Kalyani Publishers, Calcutta.

³² Goswami, P.C. 1988: "Land Utilisation and Its Economic Implication-With Special Reference to Assam" in Pankaj Thakur (ed.) : *Profile of a Development Strategy for India's North East*, Span Publication Pvt. Ltd., Calcutta.

³³ Goswami, D.C. 1989 : "Floods and Their Impact on Agriculture of Assam", in P.C. Goswami (ed.) *Agriculture in Assam*, Institute of Development Studies, Guwahati. pp. 62-67.

³⁴ Taher, M. 1975: "Regional Basis of Agricultural Planning in the Brahmaputra Valley" in *North-Eastern Geographer*, Vol. 7, No. 1 &2, pp. 9-18.

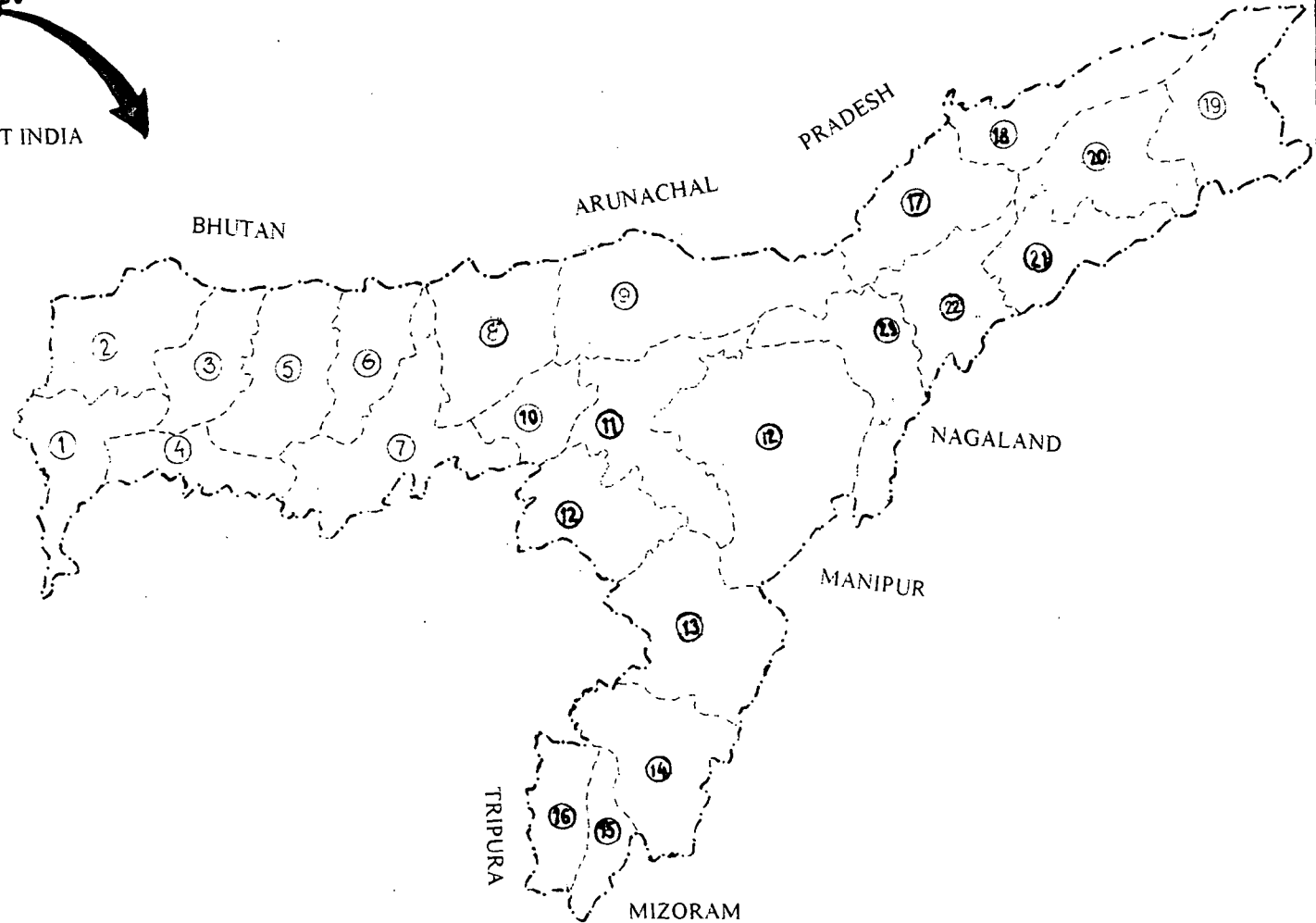
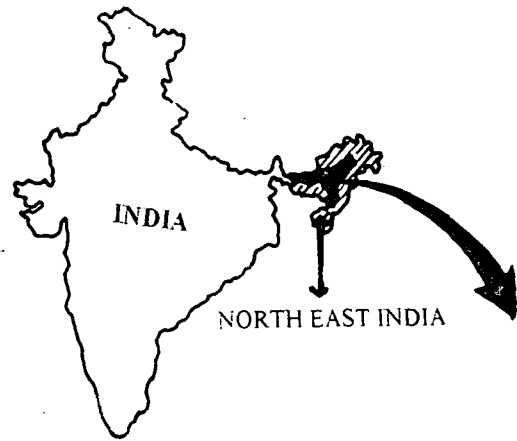
³⁵ Goawami, B. 1987: *Agricultural Planning : A Case Study of Hajo Block of Kamrup District*, Unpublished M. Phil. Derssertation, North-Eastern Hill University, Shillong.

based on Hajo Block of Kamrup district of Assam.

The wide and ever-increasing development gap between the region and the rest of the country is of much concern to many scholars. They bring out the paradox of a rich and fairly diversified resource base and the extent of underdevelopment. Many micro level studies continue to be carried in this context.

ASSAM LOCATION MAP

20 40 60 KM



Districts

1. Dhubri
2. Kokrajhar
3. Bongaigaon
4. Goalpara
5. Barpeta
6. Nalbari
7. Kamrup
8. Darrang
9. Sonitpur
10. Morigaon
11. Nogaon
12. Karbi Anglong
13. North Cachar Hills
14. Cachar
15. Hailakandi
16. Karimganj
17. Lakhimpur
18. Dhemaji
19. Tinsukia
20. Dibrugarh
21. Sibsagar
22. Jorhat
23. Golaghat

ASSAM ADMINISTRATIVE MAP

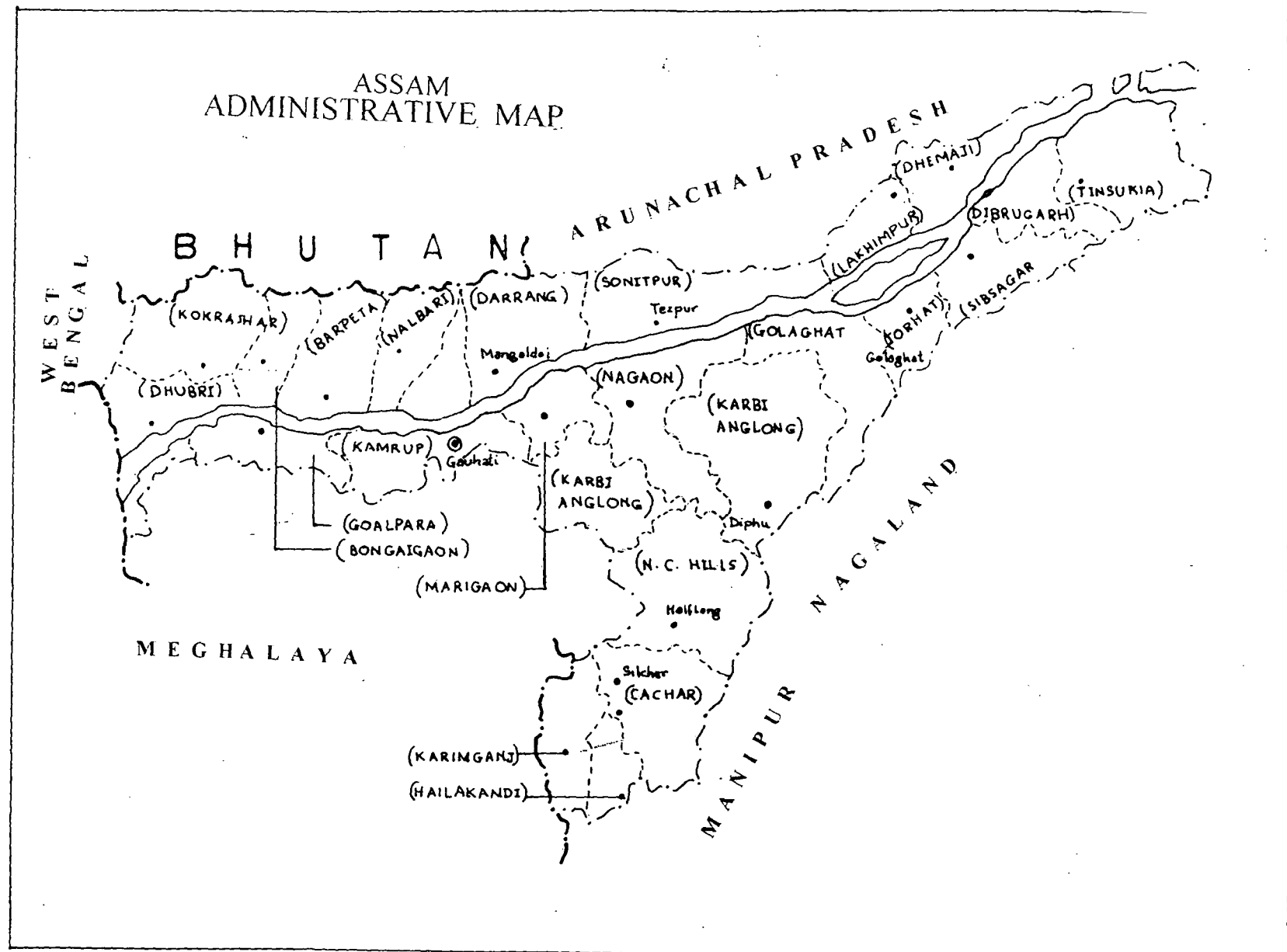


Fig.2

Chapter II

Assam – Geographical, Economic and Socio-Economic Profile

Assam can be considered as a geostrategic region using Cohen's terminology.¹ It possess characteristics which could influence this part of the world, being located at the tri-junction of South, S. Eastern and East Asian region. Here cultural, social and economic interaction across the border has been an important historical aspect. It also shares common boundaries with all North Eastern states and provides land links to these states to the wider nation. It's physical, cultural, and social distinctiveness and complexity renders it a multi-feature region. Fertile alluvial plains, a range of agro-climatic conditions, mineral and vast water resources makes the state a potentially rich land. On the other hand, it is connected to rest of the country through a narrow corridor and places it at a disadvantaged position with regards to distance and accessibility. These geographical factors then must have a major role in any policy decision and in policy operations. Therefore understanding the geographical facts and phenomena of the state, as the frame against which economic policies and reforms take cognisance is essential. Any region with as much diversity as in the state, with unique distribution pattern of these phenomena offers challenges to any development efforts.

¹ Cohen defines geostrategic region as a region "large enough to possess certain global influencing characteristics and functions". Inter-relationships of a large part of the world in terms of location, movement, trade orientation, and culture or ideological bonds express a geostrategic region.

As quoted in Prescott, J.R.V., (1968) *The Geography of State Policies*, Hutchinson University Library, London, p.44

SECTION I. Geographical Profile

2.1.1. Physiography

Three major units characterise the physiography of Assam-the Brahmaputra Valley, the Barak Valley and the Hills region.

Brahmaputra Valley- Physiographically, it contains different geomorphic units viz. active flood plains, younger alluvial plains, piedmont plains and structural plains. The Brahmaputra river-the river separates these geomorphic features into north and south bank features and its tributaries have in fact been largely responsible in shaping these features. They are found parallel to river Brahmaputra throughout the valley. The active flood plains are found on both sides of the river, the piedmont plains along the north, adjacent to the eastern Himalayas. Correspondingly, in the south adjacent to the Meghalaya Plateau, and the hills of Nagaland (to the east) are the structural plains.

Along the Brahmaputra riverine landforms and river islands are formed and eroded due to meandering, braiding and course change of the river. Characteristic formations are the "char land"- flat, sandy land surrounded by river on one or more sides and subject to frequent flash floods for varying length of time and varying depth.²

The piedmont plains in the north consist of the Bhabar and the Terai belt-characterised by numerous alluvial fans formed by the tributaries as they

² Taher, M. (1975). "Regional Basis for Agricultural Planning in Brahmaputra Valley" in Journal of the N. E. Indian Geographical Society, Vol 8, Nos. 1 & 2, p 13.

emerge from the high Himalayas. These alluvial fans in fact are responsible for the floods in the north bank as they obstruct the large volume of runoff during monsoons. Lack of proper drainage has resulted in the formation of numerous swamps and bills. Characteristic to the north bank is the appearance of few inselbergs for eg. the Sualkuchi hill, the Borlah and Hajo hill, in the Kamrup region, which are the out-liers of the Meghalaya plateau.³

Somewhat similar features are repeated in the south bank with exception of the alluvial fans, which are absent here, due to the fact that the transition of the streams to the plains here is gradual. Backward erosion by these streams has extended the plains into the southern hills in many places.

Barak Valley - Separated from the Brahmaputra plain by the Karbi Anglong hills and the North Cachar Hills which approximately forms the watershed between the two basins, is the Barak plain located in the southern part of the state. It is an undulating, uneven plain comprising of active flood plain, older alluvial plain with numerous depressions/ bills. These bills and the big water bodies locally known as "hoars" hold potential for fisheries and minor irrigation.⁴ The physical isolation from the rest of Assam has been to a large extent responsible for the neglect of this valley. Surrounded on three sides by hill ranges, to the west it forms a geographical continuity with the Surma valley in Bangladesh. This has encouraged Bengali immigrants to settle here in such large numbers as to change the demographic composition of the valley.

³ Land Use/ Landcover Maps and Reports of Assam (Districtwise), Vol 1: Reports. Remote Sensing Application Centre. Assam Science, Technology and Environment Council, Guwahati. March 1990, pp. L1-13.

⁴ Ibid.

The Hills Region - The hills region consist of Karbi Anglong, Hamren and N. Cachar hills. Highly uneven structural formation- of highly eroded hills, exposed rock surfaces, and denuded plain surfaces are the prominent physiographic features of these hilly areas. The rugged topography of the N.C Hills has elevation varying from 600 metres to 900 metres. Most of the hills have slope varying from 10 degrees to above 30 degrees. The highest peak rises to a height of 1360 metres which is in the Karbi Anglong hills. The denuded plain surfaces consist of the valleys of the Jamuna, Kopili and Dhansiri. The plain areas cover 40% in Karbi Anglong and 10% in N.C. Hills district.

2.1.2. Drainage

The principal drainage system- Brahmaputra system, and the Barak subsystem have a huge catchment area. The total catchment of Brahmaputra- 5.80 lakh sq. km. is spread over Tibet (2.93 lakh sq. km.), India (2.95 lakh sq. km.), Bhutan (0.45 lakh sq. km.) and Bangladesh (0.47 lakh sq. km.). The Barak subsystem have a catchment area of 0.42 lakh sq. km. in the states of Assam, Manipur, Meghalaya, Nagaland, Tripura and 751 sq. km. in Myanmar. Thus these two drainage systems have interstate (or international) ramification. This in the past has posed problems, having political dimensions as it is, in the development and utilisation of the vast water potentials.

The Brahmaputra, a major international river has its source in the Chema-Yung glacial, in the northernmost chain of the Himalayas in the south west of Tibet. Known as Tsangpo (sacred river to Tibetans), the river flows through Tibet for

about 1,000 miles eastwards receiving many tributaries. 'It touches the biggest trade centres in the Tibetan plateau viz. Shigatse, Chusul Dzong and Tsela Dzong. From near 83 degrees east, the Tsangpo has a wide navigable channel. It is perhaps the most remarkable inland waterway in the world-for 400 miles boats ply at an incredible height of 12000 ft. above sea level'.⁵ Further east, the river turns north and north east and makes its way through a succession of stupendous gorges between the high mountain masses of Gyala Peri and Namchebarwa. Through these deep gorges it rushes down turning round the range in a hairpin bend. Then turning to the south and Southwest it emerges from the foothills under the name Siang and then Dihang. Near Sadiya it meets the Dibang and Lohit whereafter it is known as the Brahmaputra. From here it flows in a westerly direction, traversing 450 miles within the Valley. On the whole it traverses a total length of 1800 miles.⁶

River Brahmaputra carries a huge discharge of as much as 3.6 million cusecs during its flood stage, and carries a heavy concentration of sand and silt- 402 million tones on an average annually. Its basin covers 165,000 sq. km. within the north east, covering whole of Arunachal Pradesh, major parts of Assam, and parts of Nagaland and Meghalaya. Within N. E. it receives as many as 104 large and small tributaries. The high velocity of the river, being as much as 14 ft. to 16 ft. per sec., and the large volume of water cause the river and its tributaries to extensively erode its banks. The north bank tributaries often change course in monsoons, causing immense damage to land and material.

⁵ Guha, K.B. 1985 : "Flood Control Measures in the North Eastern Region", in *Journal of the North Eastern Council*, Vol. VI, 1985, No. 1,12,3 & 4, Jan.-April, 1985, p. 6..

⁶ *ibid.*, pp. 6-7.

River Barak rises on the southern slopes of the hills to the north of Manipur and flows south-westward until it takes a sharp 280 degrees bend at Tipaimukh towards the north. Its length from the source upto the border of Assam is 350 miles. With an average annual run-off of 30 million acre ft. and draining an area of 4926 square miles, river system affects the lives and activities of people of the southern district of Cachar, Karimganj, and Hailakandi, where about 23 lakh people are settled. Here it has formed an alluvial tract by gradual process of deposition. The great earthquake of 1869 caused major changes in the topography and created numerous depressions-a long chain of swamps and marshes at the foot of the surrounding hills on both sides. The river is characterised by loops in its meandering course in the plains of Karimganj and Cachar.

These two systems have shaped the lives and activities of the people here. Their fertile alluvial plains have supported agricultural systems. At the same time floods have annually caused havoc to their live and property. Annually, about 365 of total agricultural land gets submerged under the flood water affecting on an average 2.26 lakh hectares of cropped areas. The average annual damage to crops is around Rs. 55.20.⁷ They cause fluctuations in agricultural production. In 1998, the area inundated crossed all previous records- out of 23 districts as many as 21 were affected. It destroyed standing crops on 38.20 lakh hectare- 36 % of the total agricultural land.⁸ Map no. 3 shows the flood prone areas of Brahmaputra valley. The requirements of funds for relief, restoration and rehabilitation was put at Rs. 1000 crores. Over the

⁷ Report of the Regional Task force for flood management of N.E. Region, Brahmaputra Board, Assam, 1998.

⁸ *ibid.*

ASSAM PHYSIOGRAPHIC DIVISIONS

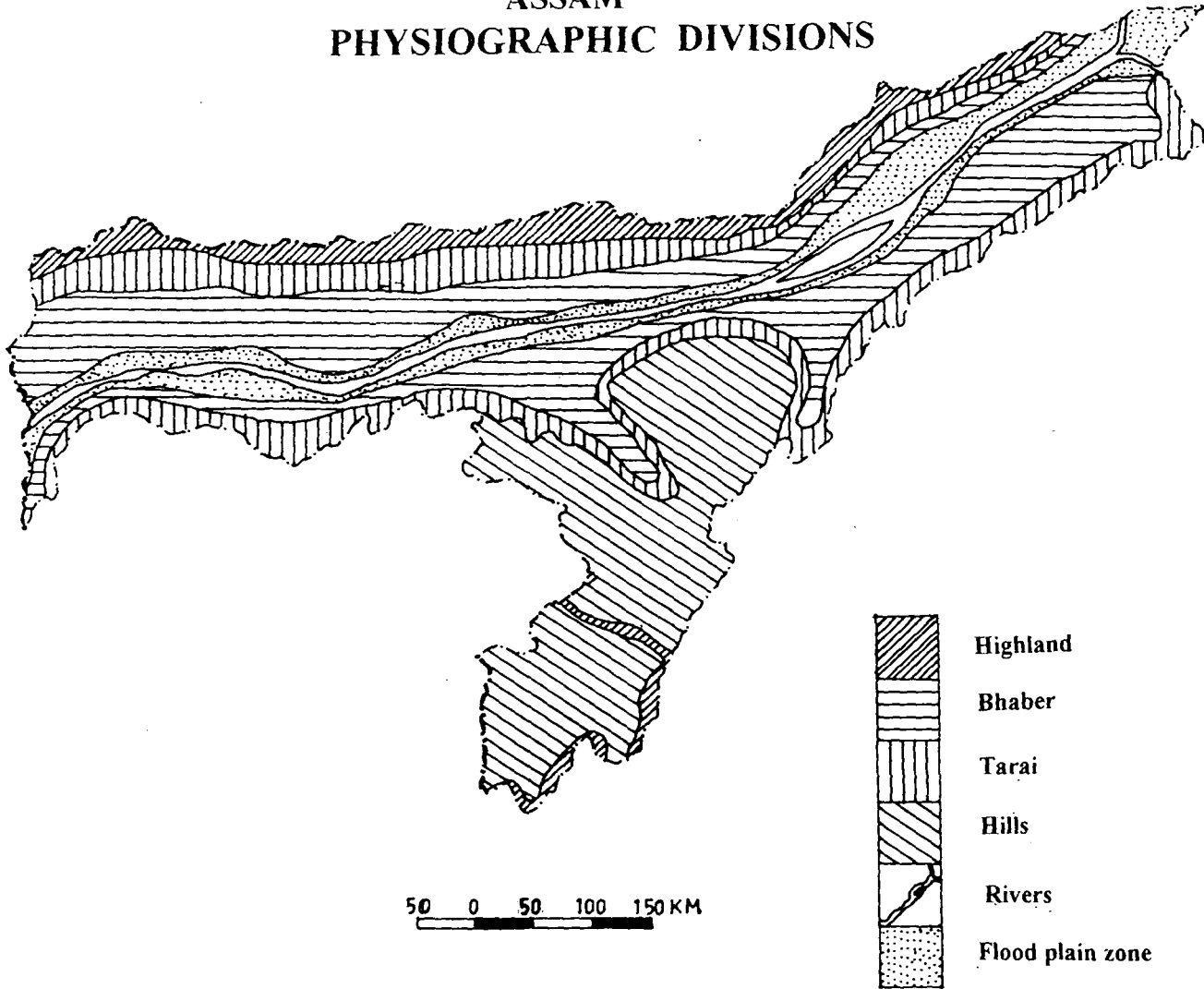
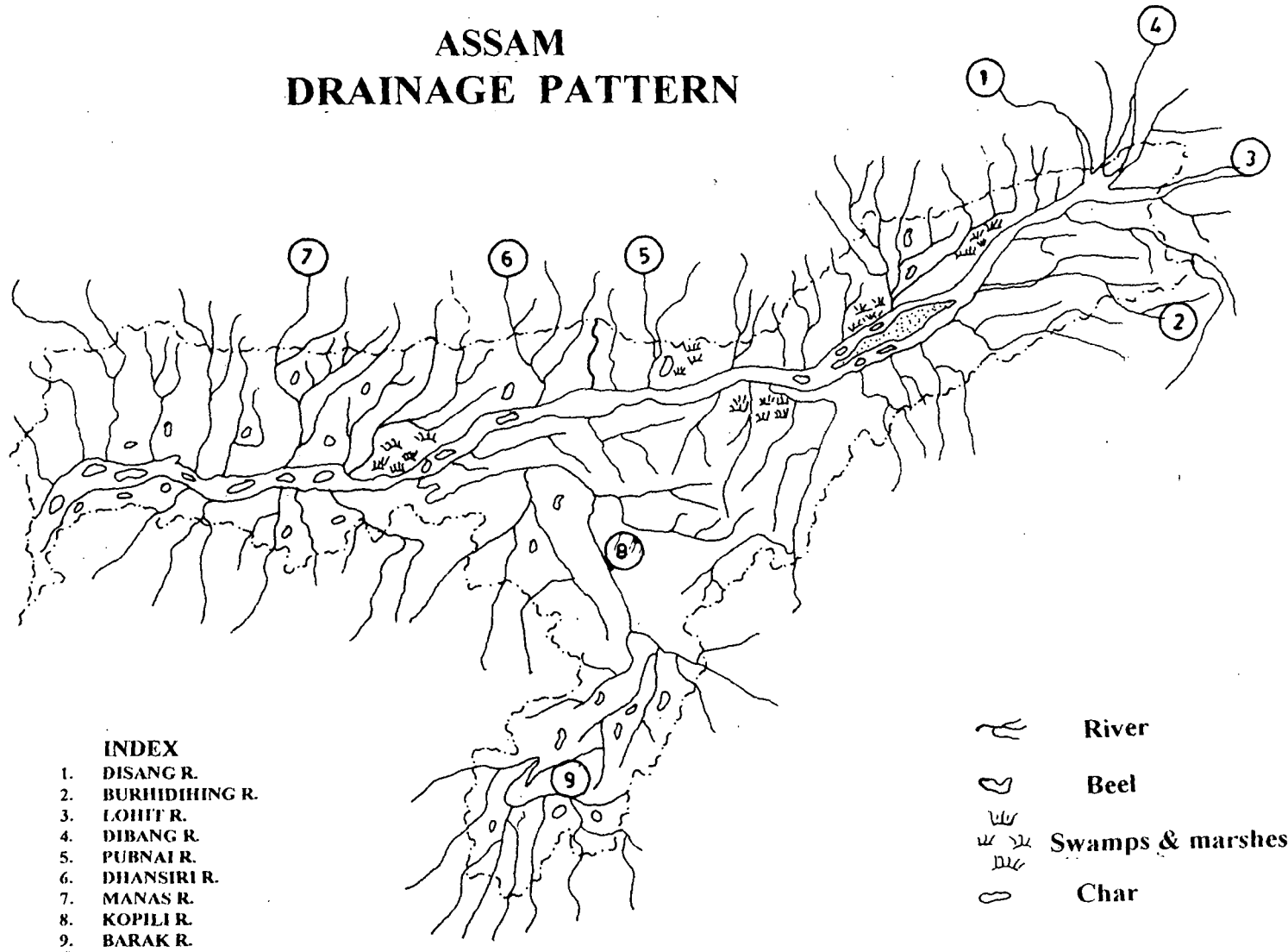


Fig.3

ASSAM DRAINAGE PATTERN



- INDEX**
1. DISANG R.
 2. BURHIDIHING R.
 3. LOHIT R.
 4. DIBANG R.
 5. PUBNAI R.
 6. DHANSIRI R.
 7. MANAS R.
 8. KOPILI R.
 9. BARAK R.





-  River
-  Beel
-  Swamps & marshes
-  Char

Fig.4

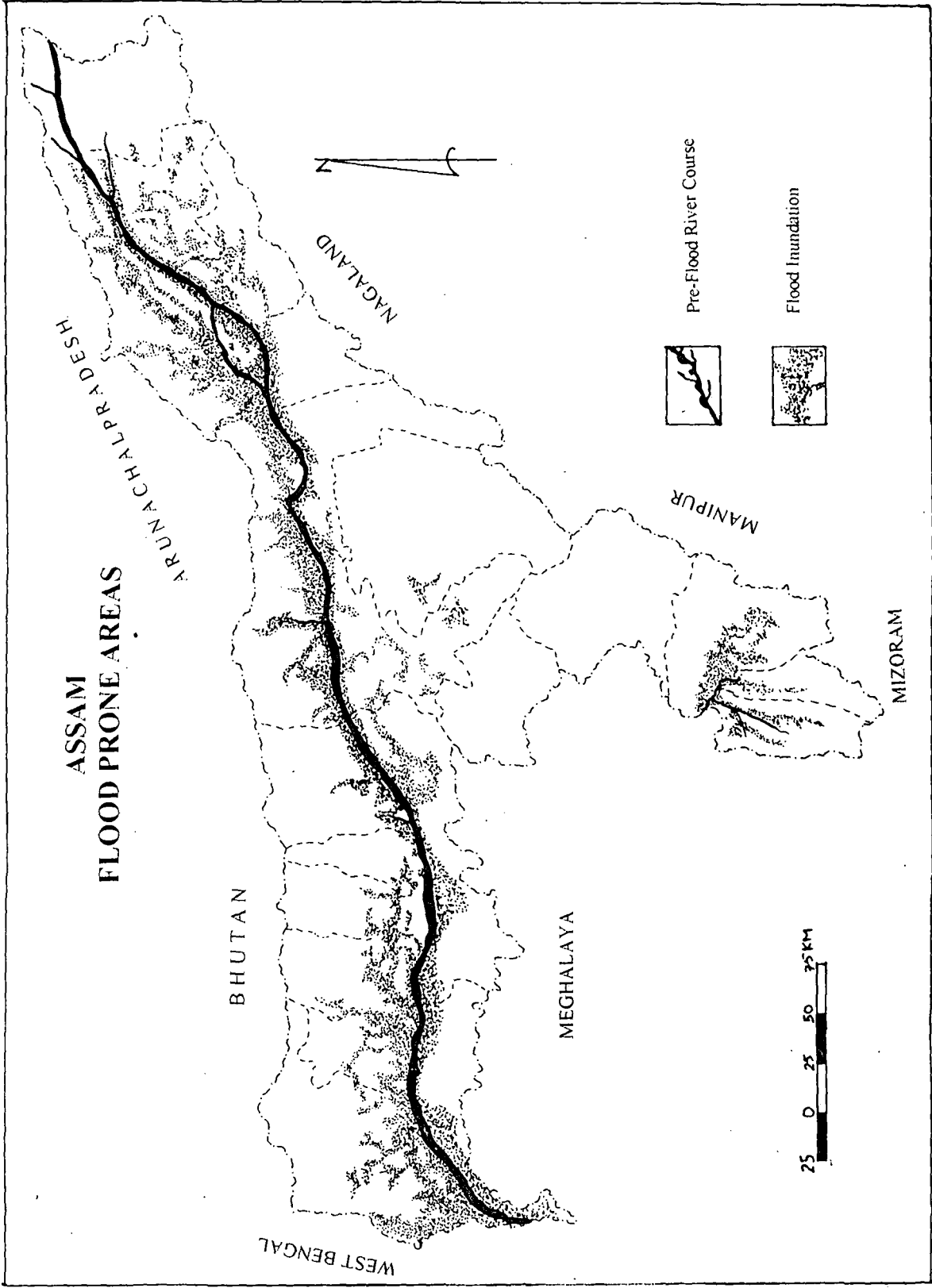


Fig.5.

years this has cost tremendously to the centre and the state. Every year the losses are to the extent of 25 crores per annum. According to experts, the extent of inundation has increased considerably since the great earthquake of August 15th, 1950, which violently lifted the river bed of the Brahmaputra. Fig. 5 shows the geographical distribution of flood prone areas within the two basins.

The Barak basin too is annually affected by successive waves of floods due to heavy precipitation (80% of the annual rainfall occur in 3-4 months) in the catchment area. The intensity of rainfall being very high- ranging from 2000-4000 mm., against the average annual of 1150 in the country, and the hilly terrain of the catchment areas which heavily denuded due to the practice of jhumming, more than 70% of precipitation flow as surface runoff loaded with sediments. This has caused aggregation problems in the river, raising the river bed and reducing the carrying capacity. As a result the problem of flood and drainage congestion has become a perennial problem. An idea of flood damages within the state can be had from table 2.1.

Table 2.1. Flood damages by the river Brahmaputra.

Total damages (from 1953-94)	655.99 crores --cumulative damage 144.9 crores- annual average.
Net loss to forest cover- 1991-93	243 km. sq.- due to degradation of catchment area.
Total agricultural area affected	38.20 lakh hectares. (36% of total agricultural land)
Total cropped area affected	11.30 lakh hectares (2.26 lakh hec. average annual.
Total damage to crops	6638.40 lakh Rs. (1998) 55.20 lakh Rs. Average annual
Human lives lost	38 average annual

Source: Report of the Regional Task force for flood management of N.E. Region, Brahmaputra Board, Assam.

The annual flood prone area is identified as about 5.46 lakh hectares. The agro-climatic sub- zonewise flood prone areas are given in the table in Appendix VI.

Measures to contain floods and its impact have till date been all short term. Since 1954 a total of 4,448 km. of embankments- 1013 km. along the main river and 2634 along the tributaries, 624 protection and anti- erosion work, 85 major sluices and 850 km. of drainage channels have been created.⁸ These short term measures have so far not been successful in reducing the fury of floods.

Long years of representation, agitation, and demand compelled the central government to set up the Brahmaputra Board in 1982 after an Act was passed by parliament. The Board has prepared a Master-plan for harnessing the Brahmaputra, the Barak and their tributaries- a long term measure to create reservoirs in the tributaries for power generation, monitor water availability, and improving navigation besides irrigation, fisheries and tourism. The plan is in three parts, namely,

- Master Plan Part – I for mainstream of Brahmaputra,
- Master Plan Part- II for Barak river and its tributaries, and
- Master Plan Part III for 39 tributaries of the Brahmaputra and 8 rivers of Tripura for flood management in Brahmaputra and Barak valleys.

The Master Plan envisage storage dams, embankments for anti erosion – measures, and schemes to prevent drainage congestion. In the success of the plans lies the solution to the recurring problems of flood.

2.1.3. Climate affecting Agriculture

A range of climatic conditions characterise the entire state which have shaped the agricultural characteristics of the state. The state experience humid, per-humid to sub humid conditions. Rainfall within the state ranges from 1100 mm. to 3000 mm. annually. Relative humidity is high- between 70% to 90% and maximum temperature of 37 degrees C. and minimum of 7 degrees C is experienced. These are also the parameters applied to delineate the state into a number of agro-climatic zones.

Influenced by the tropical monsoon, the climate of Assam is considered highly humid. It is high not only during monsoon but even during winter months. Average relative humidity is about 85%. Highest relative humidity is recorded in N. Lakhimpur where it is about 88%. Generally it is higher in upper Assam and western part of lower Assam, and in the Barak valley while it is lower in the rainshadow zone of central Brahmaputra. Humidity is relatively less during the dry months of February, March and April, when the relative humidity range from 63% in Tezpur and Guwahati, 65.83% in Luming, 68% in Silchar, to 71% in Dibrugarh.⁹ The high humidity is as a result of high rainfall. The mean annual rainfall in the state as a whole is recorded to be about 225.2 cm. the variation of mean annual rainfall in different localities is between 350 cm. and 122.5 cm. Rainfall is considerably less in central Brahmaputra. The district of Nogaon, Diphu subdivision of Karbi Anglong and south-western part of Golaghat records the lowest rainfall in the state. Lowest rainfall during the

⁹ Statistical Handbook, Directorate of Economics and Statistics, Government of Assam, 1994, pp. 62-63 and 1996, pp.45-46.

monsoon months of June to September are recorded in Lumding where it is only about 86.36 cm for the four months (average-21.59 cm).¹⁰ The months of February and March are relatively dry months with less than 5 cm. of rainfall in most places, with the exception of upper Assam where recorded rainfall are around 8 cm to 10 cm in places like Dibrugarh and N. Lakhimpur. Thus rainfall conditions are characterised by a great deal of uncertainty. The winter (Rabi) months have drought like conditions, and the monsoon months mostly experience excessive rainfall. The uncertainty is also in the early or late arrival of the monsoon rains. Conditions of flood, drought or hailstorm thus greatly affect agriculture in the state.

Daily bright sunshine hours is low due to overcast skies for major parts of the year. Even during pre and post monsoon seasons the skies remain mostly cloudy. The surrounding hills makes cloud dispersal low. It is estimated that at Jorhat the bright sunshine hours are 48% & 36% of the expected hours during November to April, and May to October respectively.

Temperature is moderate. The monthly mean maximum temperature ranges between 28 degrees to 35 degrees. Mean minimum temperature is 15.5 degrees except in hills of K. Anglong and N. Cachar where monthly mean minimum is about 10 degrees during winter. Except in the hills, temperature is more or less evenly distributed.

From the agricultural point of view, the winter or the Rabi season receives abundant solar energy because of more number of bright sunshine hours. It is

¹⁰ Ibid.

also free from natural calamities like floods, and has enough residual soil moisture. The drought like conditions in places could be checked through irrigation and water management. There is thus potential for raising crop production during this season. Kharif season coincides with the monsoon season. Cultivation during this season is essentially rainfed. It therefor the major physical constraints. The physical constraints are related to excess rainfall, floods and prolonged inundation. Excessive rainfall is responsible for the low response of crops to chemical fertilisers. Annual floods and prolonged inundation decreases yield potentiality, as also the low photosynthetic efficiency due to overcast skies during this season. The uncertainty of rainfall in the early part of the season also causes delay in sowing and transplanting of paddy. High humidity and temperature are biotic conditions for high infestation of weeds and pests. High yielding varieties of crops tolerant to such ecological condition is therefor the answer to the problem of increasing agricultural production.

2.1.4. Agro-climatic conditions

A range of agro-climatic conditions characterise the entire state- ranging from humid, per- humid to sub humid conditions; rainfall ranging from 3000 to 1100 mm. per year. Relative humidity is quite high- between 70% to 90%. Maximum temperature rises to 37 degrees centigrade and minimum drops to 7 degrees centigrade. On these parameters the state has been divided into agro-climatic zones by the Working Group Zonal Planning team, Eastern Himalayas

Region (zone 3) for 'Agro- climatic Planning for Agricultural Development in the State of Assam,' for the 8th plan.¹¹

Table 2.2- Agro-climatic sub- zones of Assam.

Name.	Districts.
I. Upper Brahmaputra valley (North)	Lakhimpur, Dhemaji, Sonitpur.
II. Upper Brahmaputra valley (South)	Tinsukia, Dibrugarh, Sibsagar, Jorhat, Golaghat.
III. Central Brahmaputra valley.	Nagaon, Marigaon.
IV. Lower Brahmaputra valley (North wes	Nalbari, Barpeta, Darrang.
V. Lower Brahmaputra valley (North)	Dhubri, Kokrajhar, Bongaigaon.
VI. Lower Brahmaputra valley (South)	Kamrup, Goalpara.
VII. Barak valley	Cachar, Karimganj, Hailakandi
VIII. Hills	Karbi Anglong, North Cachar Hills

Source : Assam Agricultural University, Jorhat.

Upper Brahmaputra valley - North (sub-zone I), on the North bank of the river Brahmaputra, falls in the humid and per- humid climatic belt. The rainfall varies around 2741 mm per year. Relative humidity varies from 71% to 84% and the maximum temperature rises to 32 degrees centigrade and minimum drops to 9 degrees C. The number of rainy days vary around 155 days. The soil is mostly light to medium textured with depths from deed to very deep. This sub- zone has potentials for cultivation of two crops of rice, mustard and pulses in the young alluvial flood plains; sericulture and horticultural crops in the piedmonts and foothills, and fisheries in the derelict water bodies.

¹¹ 'Agro-climatic Planning for the Agricultural Development in the State of Assam,' draft outline for the 8th plan period, Assam Agricultural University, Assam, 1991, p.1.

ASSAM

AGRO - CLIMATIC SUB - ZONES

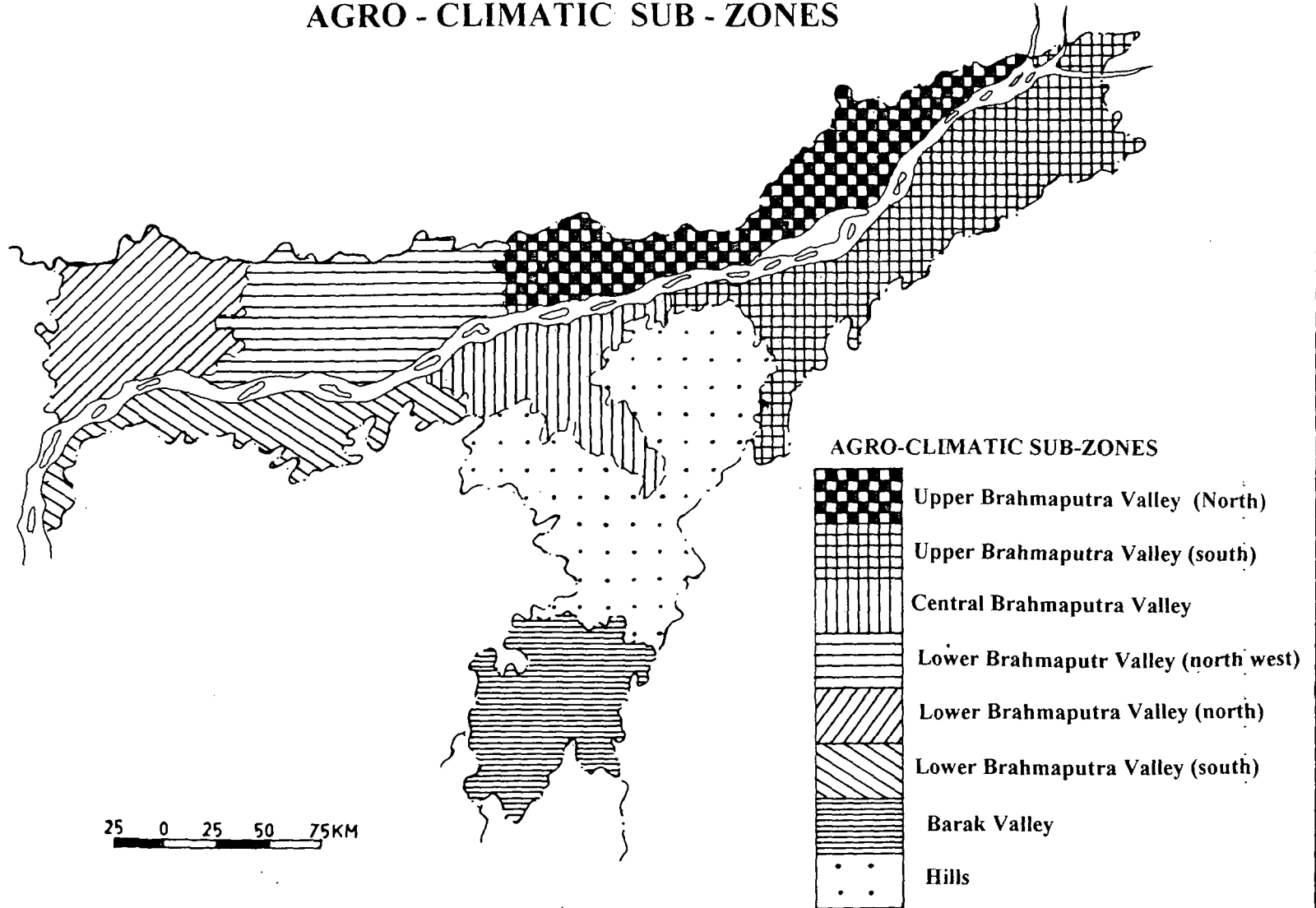


Fig.6.

Upper Brahmaputra valley –South,(sub-zone II) have humid and per humid climate with rainfall ranging from 2042 in Jorhat to 2741 mm in Dibrugarh district annually. Maximum temperature rises to 32 degrees centigrade and minimum drops to 7 degrees centigrade. The potential Evapo-tranpiration (PET) varies from 995mm in Dibrugarh to 1260mm in Sibsagar district. It shows that precipitation exceeds PET for the greater part of the year and the soil remains dry for only a few days. The length of the growing period varies from 351 days in Jorhat to 365 days in Dibrugarh district. The soil is mostly heavy textured with deep to very deep soil depth. The sub-zone has potentials for cultivation of two crops of rice, tea, orchards and fisheries in the derelict water bodies.

The Central Brahmaputra valley (sub-zone III) comprising of Nagaon & Marigaon districts have humid to sub-humid climate, with annual rainfall varying from 1129 in Hojai and 1795 mm in Morigaon district annually. About 30% of this agro- climatic zone fall under the rainshadow belt where rainfall is around 600 mm. only annually. Maximum temperature rises to 37 degrees centigrade in July- August and minimum falls to 8 degrees in January. Light textured deep to very deep soil predominates in this sub-zone. The agricultural potentials are for three successive crops of paddy, oilseeds, jute, wheat, pulses and fish farming in the marshy and wastelands.

The lower Brahmaputra valley, North- west (sub-zone IV), have humid climate with average rainfall around 2072 mm. The maximum temperature rises to 32 degrees C. and minimum to 11 degrees. The PET varies around 1060 mm. for the N. W, and the growing period extends to 344 days a year. Light to medium soil at deep to very deep depths are characteristic. The sub-zone possesses

potentials for three crops of rice, oilseeds, pulses, livestock and natural fisheries.

The Lower Brahmaputra valley-North (sub-zone V), falls in the humid climatic belt where the annual average rainfall varies from 2464mm to 3000mm, and the maximum temperature rises to 32 degrees C, while the minimum drops to 12 degrees. The PET value varies around 1322mm and the length of growing period extends to 291 days. The potentials of this sub-zone are similar to that of the sub- zone IV, besides which it also possess potentials for horticultural crops particularly citrus and pineapples in the foothills and piedmonts.

The lower Brahmaputra valley (sub-zone VI)- South zone comprising of Kamrup and Goalpara have humid climate, and rainfall ranging between 1616mm.- 2504mm. PET varies from 1060 mm.- 1235mm., and length of growing period varies from 291- 244 days a year. Heavy textured soil predominates the sub-zone. Two crops of rice, horticulture, and commercial fisheries are the potentials.

The Barak valley - Zone VII, forms an altogether different sub-zone. This subzone experience humid climate, and a much higher rainfall, ranging from 3227- 3500 mm. the subzone also experience a high temperature range- maximum being 37 degrees and minimum 9 degrees C. Relative humidity varies around 1435mm., and length of growing period extends to 365 days a year. Three crops of rice with the help of irrigation, horticultural crops, spices and commercial fisheries are the potentials of the sub-zone.

The Hill areas form a separate agro-climatic zone-zone VI. Here sub-humid to humid conditions prevail, average rainfall varies between 1200mm to 1622mm. Range of temperature is relatively lower with maximum rising to 28 degrees and minimum falling to 10 degrees C. Relative humidity varies from 62% in March to 91% in January. The subzone has varied soil types. It holds immense potentials for intensive farming by scientific management of soil; potentials for horticulture, and livestock (piggery)

Thus each of the agro-climatic sub-zones possesses potentials for a wide range of agricultural and allied activities. In most of the zones the long growing season favours cultivation of 2-3 successive crops, for eg. Cultivation of 2 rice crops, pulses and mustard in the humid and per-humid young alluvial flood plains of upper as well as lower Brahmaputra valley zones, horticulture in piedmonts and foothills, and fisheries in the water bodies.

2.1.5. Soil and water regime in the sub-zones.

Important factors influencing agriculture and agricultural potentials are the soil and ground water regimes. Each of the sub-zones is characterised by distinct regimes. Ferruginous soil are found in the foothill areas of Lakhimpur and Sonitpur (subzone I), Darrang (subzone IV), and the foot hills of Kamrup and Goalpara (subzone VI). Red soil which are also old alluvial are found in parts of subzone II particularly in Dibrugarh, Sibsagar, Golaghat and Jorhat, and in subzone VI in Kamrup and Goalpara and also in Nagaon of subzone III. Laterite soil is found in the western part of hills of Karbi Anglong Cachar hills. Recent riverine soil or young alluvial soil dominates the active flood plains

along the entire river bank. The low lying submerged areas of the Brahmaputra and Barak valley contains peat soil.

Generally the soils range in texture from sandy, sandy loam, loamy to clayee and clayee loam. Except for the new alluvial soil, they are mostly acidic in reaction (particularly the old alluvial) and the pH varies from 4.5 to 5.5, in certain areas going upto 6.5 (in the foot hills). The new alluvial soil is neutral in reaction. As regards nutrient status, phosphate contents are low, nitrogen and potash contents are medium.

Ground water availability in the state is favourable given the high rainfall. It is available at shallow depth in the active plains and younger alluvial plains areas. This is an advantageous condition for the development of irrigation through shallow tube wells. In the lower and upper piedmont plain areas with deep to very deep soil ground water is available at moderate to greater depths. In the hilly areas the ground water availability is poor.

2.1.6. Biodiversity and Biotechnology potentials¹²

From the agricultural point of view the north eastern region has been found to be one of the richest reservoir for genetic variability of large number of crops. Rich diversity in paddy numbering about 6730 different types includes primitive cultivars, sugarcane, jute, citrus, banana and orchids can be

¹² The office of Technology Assasement of US Congress defines biotechnology as a technique that use living organism or substance from these organisms to make or modify a product, to improve plant or animals or to develop micro- organism for specific use. This could range from traditional brewing to modern genitic engineering.

Some of the important applications of biotechnology in agriculture are- (a) development of disease resistant and early maturing varities of crops. (b) rapid multiplication of useful plants, and biological pest control agents, (c) cloning.

considered as genetic wealth of immense potential. In addition the genetic diversity is also met in other crops like ginger, maize, oilseeds, potato, capsicum etc. Similar diversity is also seen in bamboo and cane.

The state along with the rest of the other North Eastern states has been described as one of the major centres of diversity of citrus, with about 17 species and 52 varieties. Species like *Citrus limon* Burm, *C. jambhiri* Lush, *C. ichangensis* Swingle, *C. latipes* Tanaka, *C. macroptera* Montr., *C. assamensis* etc. have been identified. The Indian wild orange is found in the Kaziranga forest. Similarly in mango the wild form of *Mangifera indica* and its allied species *M. sylvatica* occur commonly in the forests of the region. In banana, *Musa acuminata* is found in Assam which is considered as one of the primary centres of origin of banana as a part of East Asian region comprising Assam, Myanmar, Malaya, and Indo- China.

The wild tea plant-*camalia* is indigenous to Assam. Growth and development of this bio-resource since the early part of the 19th century gave the state its largest and highest revenue earning agro-industry. Another indigenous plant that has commercial value as a fibre crop is Ramie or *Boehmeria nivea*. Locally known as Riha, the plant is indigenous to Assam, its fibre is used for making fishing nets and ropes by the indigenous people. It can be cultivated as a plantation crop on the higher grounds near the foothills.

The rich Biodiversity faces grave danger due to shifting cultivation, large-scale deforestation, floods and also civilian unrest, ethnic strife, poaching and commercial greed. The genetic resources face genetic erosion too due to improper land use and invasion of weeds.

The enormous genetic diversity makes the state a natural germplasm bank or gene pool useful for evolving new strains. The application of biotechnology for the utilization of these rice resources offer solution and possibilities for the state faced with the problem of feeding a population, which has nearly doubled in two decades (1971-91). Research centres have been entrusted with developing better seeds of specific crops. Over the years the Regional Agricultural Research Stations (RARS) have developed crop strains (paddy, jute, tea etc.) which grow favourably in the state's given agro-climatic and ecological conditions. The Regional Agricultural Research Station, Titabar developed rice varieties such as-

1. Long duration kharif rice (Bahadur, Ranjit, Moniran, Kushal etc.) for low land,
2. Medium duration rabi rice for early ahu /Autumn (Lachit, Chilaria, and Jaimoti),
3. Long duration aromatic rice for kharif season,
4. Short duration pre and post flood rice (Luit and Kapilee),
5. Long duration glutinous kharif rice (Aghoni, Bhogali, Rongilee) for lowland sali areas,
6. Medium duration rice for double cropped area (Satya and Basundhara)
7. Long duration traditional variety for late planting in flood affected areas.¹³

These varieties have been screened for different situations and suitable technologies recommended. On farm testing/research – in farmers' field or model farms within the RARS for sali varieties Bahadur and Ranjit, has

¹³ Reports of Regional Agricultural Research Station, Titabar, Jorhat. 1993-94, 1995-96.

yielded an increase of about 60% to 80% in the average yield rates.¹⁴ Similar increases in the yield rates of Moniran and Kushal were noted. In comparison to the traditional sali- Bogabar rice (44.6 q/ha.), yield rate of 'Kushal' is higher-51.9 q/ha. Twenty eight rice cultures and seventeen short duration cultures developed at Regional Agricultural Research Station (RARS), Titabor as boro rice yielded significantly ranging from 2169 kg/ha to 3333 kg/ha. outyielding traditional boro variety.¹⁵ Adoption of these varieties holds the answer to the state's self-sufficiency in rice. The long duration kharif rice varieties developed by the research station for lowlands holds the promise in the vast rained ecologies where intensive farming is practised. The introduction of short and medium duration rice-'Luit' and 'Kapilee' offers possibility of raising two crops of rice before and after the floods.

High yielding varieties of oilseeds specific to local conditions are developed in RARS, Shillongani, Nogaon. Through plant breeding increase in seed size and seed population per plant achieved has resulted in higher yield rates. Mustard variety Rai genotype RS-1, developed at RARS, Shillongani produces significantly high seed yield -969 kg./ha. as compared to non location specific varieties such as TM-4 which gives seed yield of 712 kg./ha. Other non location specific varieties like M-27 higher seed yield (1125.9 kg/he.) has been obtained from the parental line (833.3 kg/ha.) by inducing late maturity. Research in plant pathology, suitable agronomic practice and experimentation on plant entomology along with plant breeding have provided a collection of H.Y.V oilseeds of rapeseed and mustard, linseed and niger though their

¹⁴ Annual Reports, Directorate of Extension Education, Jorhat, 1995-96, 1997-98.

¹⁵ Annual Report, 1992-93, RARS, Titabar.

significant field adoption has not taken place. Collection, maintenance and evaluation of jute germplasm too take place in the RARS. The station cannot breed new varieties of jute. However existing 110 lines of capsularies jute and 94 lines of olitorius jute germplasm are maintained and pathological and entomological observations recorded.¹⁶

Over the years research in tea has led to considerable biotechnological development in this important crop. Numerous high yielding tea clones are developed which includes TV 18, TV 20, TV 25, and low caffeine clones obtained from hybrid progenies of *camillia assamica*-*C. irrawadiensis*, and their seeds and seedlings produced.¹⁷ Gene bank have been developed the by the Tocklai Experimental Station, Jorhat. *In vitro* mass propagation technique is developed. The station makes studies of optimum plant physiology and nutritional levels.

As yet the genetic diversity of spice crops have missed attention in terms biotechnology development. These crops having demand in the international market holds promise for increased trade.

¹⁶ Annual Report, 1989-90, Shillongani, Nogaon.

¹⁷ Annual Scientific Report, 1994-95 and 1995-96, Toklai Research Station, Jorhat.

SECTION II - Economic Profile

2.2.1. Economy during the British period

Much of the development in sectors like plantation, mining-coal and oil owe to the pioneering efforts of the British. Although governed by the motive of furthering their own economic gains, the region too gained from these efforts. The region gained by way of – introduction of modernised plantation agriculture as well as introduction of jute as a cash crop, development of transport network, development of mining activities.

2.2.1.1. Agriculture- agriculture took an altogether new turn with the discovery of tea in Upper Assam. In the 1830s tea was cultivated on experimental bases. The British were keen to establish a commercialised agricultural economy from which they would derive maximum benefits. “A prosperous plantation sector was carefully organised out the natural conditions of Assam”.¹⁸ Prime agricultural land was utilised for this purpose. The formation of Assam Tea Company in 1839 ushered in the era of commercial plantation. By 1872, a total of 27,000 acres was under cultivation, producing 1,33,20,000 kg. per year. A liberal policy in production functions, marketing and export ensured it as one of the foremost revenue earners. A Board of Directors in London formulated policies and programmes. The major concern of the Board was to increase production by way of area expansion. Attractive concession in respect of grant of land, taxes and low wages were offered.

Jute also received attention from the British. Commercial cultivation of jute was started in the wastelands of Assam with the help of immigrants from E. Bengal. Considerable area was brought under jute cultivation. From less than 30 thousand acres in 1905-06, the area under the crop increased to 106 thousand acres in 1919-20.¹⁹

2.2.1.2. Transport

Waterways - The British found lack of transport one of the most serious obstacle to the development of the province. A good transport network to facilitate the exploitation of the resources and to export them outside was ardently needed. The waterways could afford the region the necessary link with the neighbouring provinces. Thus East India Company started a steamer service from Calcutta to Guwahati in 1847.²⁰ Later, two private navigation company were established- the Indian General Navigation Company and the Rivers Steam Navigation Company. The service – between Calcutta to Guwahati, was later extended upto Dibrugarh in 1863. In 1864 a regular commercial steamer service was opened. However the service remained inadequate and unsatisfactory. Therefore the Chief Commissioner R. H. Keatings in 1874 moved to the government to open a daily express service to Assam. The result was the opening of daily mail steamer on the Brahmaputra by two private companies, on government subsidies. A similar daily mail service was opened on the Surma between Calcutta and Silchar, in 1887, and

¹⁸ Mills, A.J.M., 1853 (rev. 1980), Report on Assam, Delhi, p. AI- 4.

¹⁹ Guha, A, 1988 (reprint) : *Planter –Raj to Swaraj: Freedom Struggle & Sectoral Politics in Assam, 1826-1947*, People's Publishing House, New Delhi.

²⁰ Goswami. P.C. 1988 : *Economic development of Assam*, Kalyani Pub. New Delhi, p.170.

between Dibrugarh and Dhubri in 1884.²¹ The above two companies were commonly known as the Joint Steamer Companies.

These steamer services catered to the needs of the tea gardens within the region. Needless to say, independence and subsequent partition of this part of the country into East and West Bengal led to the discontinuance of these services between Calcutta and the region.

Railways – Extension of tea gardens beyond the waterways necessitated establishment of Assam Railway & Trading Company in 1881. Initial efforts were

- construction of Dibrugarh – Sadiya rail-line connecting Dibrugarh steamer-ghat and Jiapur Road in 1882; in 1884 this was extended to the coalfields.
- two rail-lines made operational in 1885, i.e. the Jorhat Provincial Railway, which connected the tea gardens of Mariani & Titabar with the river port of Kokilamukh; and a line between Tezpur and Bindukuri which was extended upto Balispara in 1894-95. This rail-line came to be known as Tezpur-Balipara Railway. The Provincial Government owned this railway system, but ownership was vested in the government of India in 1937 and was added to the Bengal Assam Railway in October 1943. It was converted to the metre-gauge thereafter.²² In 1885 a small narrow-gauge railway-line named Tezpur – Balipara Railway was opened to connect the river port at Tezpur with the gardens in the north around Balipara.

²¹ Hazarika, B.B. 1987 : *Political life of Assam during the 19th Century*, N.Dehli, p. 414

²² *ibid.*

All these rail-lines served the needs of the local tea industry in their respective region. They did not connect the region to the rest of the country. The first effort to connect Assam to the rest of the country by rail took place in 1892. British tea planters who wanted to invest in tea estates and to import tea established the Assam Bengal Railways. Consequently a rail-line between Chandura in Bengal and Badarpur in Barak Valley was opened. From Badarpur a branch line to Silchar along the left bank of river Barak was established in 1899. Guwahati – Jamunamukh section of the Assam – Bengal Railway was opened in 1897. However the line was closed due to the great earthquake in the same year.²³

The establishment of rail-link between Chittagong and Dibrugarh in 1904 contributed much towards the development of tea and coal industry in Upper Assam, and tea in Barak Valley. Upto 1933 there was rapid expansion of railways after which till 1961, practically no rail-line was constructed in Assam. In 1939 the railway mileage in the whole province was about 1,300 miles only.²⁴ However, a war front was opened during the second World War in eastern Assam. There was urgent need to improve communication. Hence to achieve efficiency and speed up movement of military stores, the Assam-Bengal Railway with Head Quarters in Calcutta (opened in 1942) was directly operated by the American Railway troops. Number of trains were trebled and tonnage capacity increased.²⁵

²³ Goswami, P. C. 1994, *op.cit.*, pp. 176-177.

²⁴ *ibid.*

²⁵ *Ibid.*, pp. 177-78.

After partition, the necessity for re-establishment of the disrupted rail lines with the rest of the country was realised. Thus efforts towards this in the form of Assam Rail Link Project was initiated by the government with a sanctioned amount of Rs. 8.9 crores. Work on the new lines started in January 1948.²⁶ The project was completed in 1949. With this Assam's railway communication with the rest of the country was once more established. These later developments are discussed in section 2.2.2.3. of this chapter.

2.2.2. Economic situation –Post independence

2.2.2.1. General Economic conditions

The Economy prior to 1990 - Economic development in the state, in the post independence period, has been overshadowed by wrong strategies and misplaced priorities. This has led to a slow down of the economy and worsening socio-economic condition of the masses. Consideration of some of the economic indicators point to the low levels of economic development. These indicators are – per capita SDP, percentage of literacy, extent of unemployment, poverty levels, employment in non- agricultural sector, contribution of industries to the economy, cropping intensity, road and rail-route per 100 square km.

Rate of capital formation was very low due to very low levels of per capita income. Per capita income of Rs. 528/- at current prices compared very poorly with the national of Rs. 636/- in 1970-71. By 1976-77 it rose to only 816/-

²⁶ Railway Board, *Indian Railway- One Hundred Years*, 1953, pp. 155-56.

while the per capita income for the nation as a whole was Rs. 1049/-. By 1989-90 it went up to Rs. 3723/- at current prices. Unemployment level was very high and it accentuated with each plan period. By end 1975 the number of job seekers were 0.85 lakh which grew to 1.44 lakh by end of 1980. By 1985 the unemployment figure was 3.19 lakh and by 1985 figure went up to 7.82 lakh. Likewise, poverty levels was not only one of the lowest in the country, but also registered increase at the end of every plan period. In 1960-61, about 48% of the state's total population were below the poverty line on the basis of minimum nutritional needs. By 1977-78 the situation aggravated and figure went up to 51.10%.²⁷ In 1987-88, the official figure of population below the poverty line was 22.8% while the Planning Commission's Expert Group report put the figure at 39.3%.

The state possessed only 1479 manufacturing units in 1982-83. This went up to 1698 by 1986-87.²⁸ Of these, only 94 units were major and medium scale industries. This is indicative of low levels of industrialisation. That Assam was an industrially backward state is also apparent from the fact that during 1969 per capita value added by Sectoral contribution to NSDP manufacture in the state amounted to Rs. 28.00 only against all India figure of Rs. 51. Further, per capita gross output in industry in Assam stood at Rs. 128.00 as against all India's Rs. 220/- during the same period. Again, total income from industries in Assam constituted between 18.0 % to 19.5% of the total net state domestic product (NSDT).²⁹

²⁷ Fifth Five Year Plan, Draft, Volume III, Planning and Development Department, Assam, p. 1.

²⁸ Goswami, P. C., op. cit., p. 166.

²⁹ Economic Survey, Assam, 1974-75, 1978-79, and 1981-82, Directorate of Economics & Statistics p. 6, p. 32, p. 78 respectively; Statistical Handbook, Assam, 1995, p. 246.

ASSAM

Percentage contribution to NSDP

1996-97 (1980-81 constant prices)

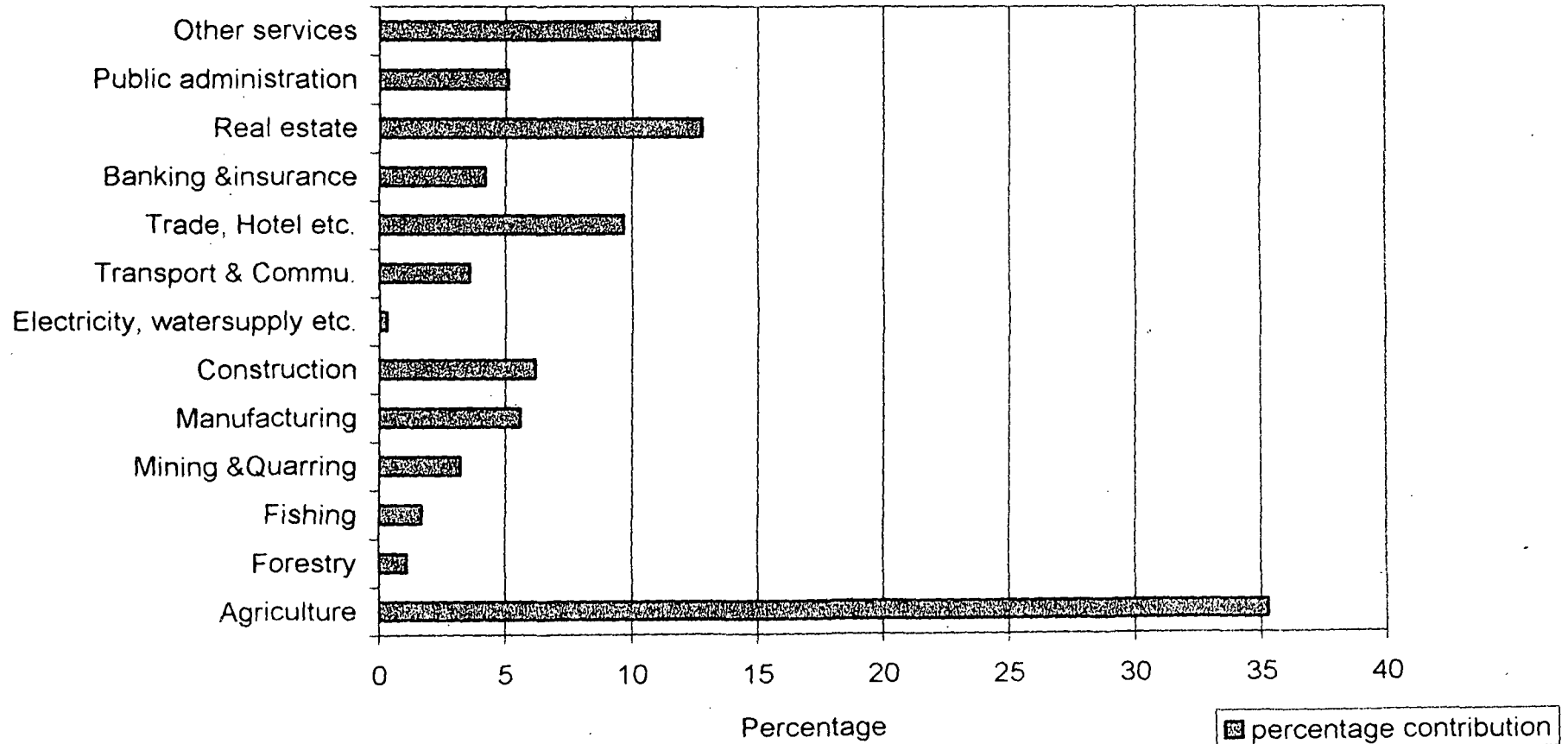


Fig. 7.

The Economy since 1990- The situation since 1990 in Assam is that there is an estimated 25 million (45%) below the poverty line. 1.4 million are unemployed of which 5.6% are educated unemployed. Per capita income is at Rs 1,628/- (constant price) only.³⁰ Chronic mass poverty, due mainly to obsolete methods of production and misfortunes spelled by recurring natural disasters has continued to keep the state income at one of the lowest levels. It is as low as Rs. 4107.26 crores (estimated Net State Domestic Product in real terms, i.e. at 1980-81 prices). It grew at 3.4% in 1997-98 only over that of 1996- 97, the same rate of growth as the preceding year. At the current prices the NSDP was Rs. 16811.48, a 8.1% rise as against 6.75 % of the preceding year.³¹

Evident from table 2.3., per capita income at Rs. 1628 (constant prices) in 1996-97 lags far behind the per capita at national level-at Rs. 2761. At current prices the comparison works out to be Rs. 6663 only as against Rs. 10,771 for the country as a whole.³² There has been no perceptible upward movement in the per capita net state domestic product. Over the 16 years the increase at constant price from Rs.1284/- in1980-81 to Rs.1628 in 1996-97, have been only 26.79%. The result is low capital formation within the state since the volume and rate of savings depend on income. Therefor capital deficits state with little hope of generating capital required for development on its own, leaving it a dependent on central assistance.

³⁰ Assam at a Glance, 1998, Directorate of Economics & Statistics, Government of Assam, p.15.

³¹ Economic Survey, Assam, 1997-98, Directorate of Economics & Statistics, pp. 8-9.

³² Ibid.

Table 2.3. Movement of Net Domestic Product (NSDT) of Assam at current and constant (1980-81) prices.

Year	Per capita Net State Domestic Product (Rupees)	
	At current price	At constant prices
1980-81	1284	1284
1981-82	1625	1402
1982-83	1803	1437
1983-84	2113	1470
1984-85	2430	1447
1985-86	2612	1510
1986-87	2767	1437
1987-88	3060	1468
1988-89	3204	1446
1989-90	3723	1517
1990-91	4281	1544
1991-92	4683	1575
1992-93	4973	1557
1993-94	5520	1583
1994-95	6017	1585
1995-96	6288	1606
1996-97	6663	1628

Source: Economic Survey, Assam, 1997.

Sectoral contribution to NSDP (fig. 7) shows agriculture as the major contributor. It contributed about 35.30% to the NSDP during 1996-97. Sectors other than agriculture such as manufacturing, banking, transport, electricity, etc. contribute very marginally to the state NSDP. Manufacturing contributed only 5.6%, banking-4.20%, transport-3.60% and electricity contributed less

than 1% at just 0.30% in the same year.³³ This is indicative of the underdeveloped nature of these sectors.

Nature of industries and volume of products indicate low levels of industrialisation. Basic industries are conspicuous by their absence. Modern industries like electronics, chemicals etc. have a microscopic presence. Other industries are largely dependent on exhaustible natural resources.³⁴ Growth in these industries has been marginal. Besides, the only large scale industries within the state are the oil refining industries; there are no medium scale industries. Medium scale industries such as agricultural tools and implements vital for modernisation of agriculture are absent, as well as large/medium scale industries utilising agricultural products as raw materials, except tea. Other industrial raw material of agricultural origin goes out region for example raw jute. Oilseeds are utilised for oil extracting in small plants only. Thus linkages between small, medium and large scale industries are absent.

The overall index of industrial production (base 1970=100) has been more or less declining from 204 in 1994 to 202 in 1997. It picked up slightly in 1996 to 210.³⁵ The marginal increase in between was due to increase in production of cotton yarn, jute textiles, fertiliser production and also a very marginal increase in tea production that had stagnated over the years. The value of output, net value added, and net income from industries in the state during the period from

³³ Ibid., pp.8-10.

³⁴ Bhattacharya, D. "Impact of Liberalisation on Industrial Development of India's North East" in Das, G., and Purkayastha, R.K. (co. ed.) *Liberalisation and India's North East*, Commonwealth Publishers, New Delhi, 1998, pp. 301-303

³⁵ Economic Survey, op.cit., p.4.

1990-91 to 1994-95 (latest data available) given in the following table (table 2.4) indicates a decline in this sector.

Table 2.4. Some principal characteristics of annual survey of industries
(Assam)

Item	unit	1990-91	1992-93	1994-95
Factories	Number	1548	1708	1514
Fixed capital	Rs. in crores	1032	1599	1937
Working capital	„	569	729	919
Invested capital	„	1523	2308	2792
Total employee	Number	108953	131938	124095
Value of gross output	Rs. in crores.	2887	3735	4316
Net fixed capital formation	„	77	51	108
Net value added	„	733	830	986
Net income	„	653	643	730

Source: Report on “Annual Survey of Industries”, (Summery Results) for Factories Sector brought out by C.S.O.

A wide gap exists between fiscal deficit- revenue receipts and revenue expenditure. Revenue receipts grew at an annual compound rate of 14.65% over the period 1984-85 to 1997-98. On the other hand, revenue expenditure also grew at the rate of 14.98% during the same period.³⁶ Negligible returns, heavy losses suffered in capital expenditure on projects and investment on PSUs, declining buoyancy of the state’s tax revenue, increasing public debt, increased borrowings have all added to the fiscal stress. Forced to heavy borrowings to meet its expenditure requirements, the borrowings increased from Rs.24.45 crores in 1984-85 to Rs.355 crores in 1998-99. Besides, loans

³⁶ Economic Survey, op.cit. pp.74-75.

from the centre have increased from Rs.303.02 crores to Rs.579.77 crores during the same period, despite the state getting the benefit of 90:10 pattern of grant/loan financing from the centre since 1990-91.³⁷

Negligible returns and heavy losses from the state PSUs compound the problem resulting in escalation of revenue deficit. The cumulative investment of the state government in 49 PSUs at the end of 1996-97 was Rs.2243.³⁸ Poor investment decisions, over staffing, heavy overhead costs, low levels of capacity utilization and financial mismanagement have rendered most of these PSUs nonviable and not in a position to yield any further returns.

2.2.2.2. The Agricultural Situation

In the post independence period, the important agricultural sector has not helped much in capital generation. This is basically because of the characteristic of agriculture - as a predominance of small, landless and marginal farmers, and a tenancy system largely against them even after decades of efforts on land reforms. The contribution of this sector to the State Domestic Product has been relatively very low. In 1996-97 it contributed only 39.18% to the NSDP at current prices and 35.29% at constant (1980-81) prices.³⁹ This is despite the fact that largest percentage of workforce – about 69% are in this sector according to the 1991 census. Its movement shows a downward trend. In

³⁷ *ibid.*

³⁸ *The Sentinal*, April 15, 2000

³⁹ *Economic Survey*, *op.cit.*, p.11.

1980-81, its share to the total NSDP was 44.2% at current prices, falling to 40.7% in 1995-96 and then to 39.13% in 1996-97 (Table 2.5). At constant prices the decline is steeper- from 44.2% to 35.7% and to 35.3% for the respective years.

Table 2.5. Share of agriculture to Net State Domestic Product.

Year	Agriculture		Total NSDP	
	At current prices	Constant prices (1980-81)	Current prices	Constant prices (1980-81)
1980-81	101606 (44.20)	101606 (44.21)	229827	229827
1990-91	347893 (36.62)	130542 (38.11)	949847	342555
1991-92	416570 (39.18)	134350 (37.56)	1063230	357661
1992-93	457268 (39.61)	135609 (37.53)	1154276	361309
1993-94	519528 (39.67)	138053 (36.77)	1309525	375392
1994-95	611402 (41.93)	139499 (36.32)	1457980	384095
1995-96	632540 (40.67)	141791 (35.70)	1555331	397155
1996-97	658691 (39.13)	144935 (35.29)	1681148	410726

Source: Economic Survey, Assam, 1997-98.

A comparative study of the agricultural situation of the state with those of some of the other states brings to the light the extent of underdevelopment of this sector (table 2.6). The table brings to the light the low productivity levels, the very low share in the total national agricultural output (foodgrains) and declining share in national total incremental output. A noteworthy point from the table is that the percentage share in total national output for Haryana was much lower during the period 1962-65 while in comparison Assam's share was better at 3.7%. However over the years Haryana improved tremendously, while Assam's share fell to even lower levels at just 3.5%. Punjab, from an almost

equal share of 3.95% has increased its share to 7.8% over the same period. In case of percentage share in the National-level incremental output was only 2.5% during the period 1980-83 to 1990-93; West Bengal's share at 11.2%, Punjab's at 9.4%, Haryana's at 6% and even Maharashtra's 4.2% for the same period indicates the poor agricultural situation of the state. Even worse situation is that of the share in the country's incremental foodgrains output.

Table 2.6. Distribution of agricultural output (aggregate of 41 crops)
(1980-81 prices)

State	% share in Total National Output				% share in National level Incremental output between			% share in incremental foodgrains output	
	1962-65	1970-73	1980-83	1990-93	1962-65/ 1970-73	1970-73/ 1980-83	1980-83/ 1990-93	1970-73/ 1980-83	1980-83/ 1992-95
Assam	3.7	3.7	3.8	3.5	3.5	4.4	2.5	1.7	1.8
W. Bengal	6.9	6.9	5.8	7.4	7.0	1.5	11.2	-1.8	12.2
Punjab	3.9	5.5	7.2	7.8	14.7	13.5	9.4	19.2	14.9
Haryana	2.8	3.5	3.8	4.5	7.3	5.1	6.0	6.3	7.8
Maharashtra	8.6	5.4	8.3	7.1	-11.2	19.6	4.2	18.6	3.9
Gujarat	5.6	5.5	5.9	4.6	5.4	7.3	1.3	3.6	-0.3
Karnataka	5.7	5.8	5.8	5.8	6.6	5.5	6.0	3.0	2.8

Source: 1. Bhalla, G.S. and Tyagi, D.S., *Patterns in Indian Agricultural Development: a District level Study*, I.S.I.D., New Delhi, 1989.

2. Chadha, G.K.: *Employment, Earnings and Poverty: A Study of Rural India and Indonesia*, New Delhi, 1994.

Comparison of infrastructural support in agricultural in Assam with those of some other states also reveal a similar situation. The state presents the lowest

1980-81, its share to the total NSDP was 44.2% at current prices, falling to 40.7% in 1995-96 and then to 39.13% in 1996-97 (Table 2.5). At constant prices the decline is steeper- from 44.2% to 35.7% and to 35.3% for the respective years.

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Evident from table 2.7, percentage share of electricity used in agriculture in the state is much lower than those used in states like Punjab, Haryana, or even Orissa. Worse still, unlike in other states where there is an increase in use of the same, within the state it has declined in the last two decades. Assam also has the lowest figures in terms of credit availability. In comparison to the number of loans issued by the primary agricultural co-operative societies in Punjab-460, Haryana -394, or even Orissa- 34, loans issued from similar source in Assam was only 18.46 in 1990-91.⁴⁰ Figures of the loans issued by primary Agricultural co-operative societies shows not only the lowest number of loans-only issued but also very small improvement from the 1971-72 figure of 1.41. On the other hand, states like Punjab have registered tremendous increase. From 148 loans per hectare in 1971-72 (a mere 29.26 number of loans per hectare in 1965-66), it has increased to 460.76 loans per hectare.

The index of agricultural production was 155.19 only for the year 1997 while it was 164.3 for the country as a whole. Agricultural production has stagnated at 3.5 million tonnes.⁴¹ In 1990-91 the index of agricultural development was 138 (148-all India), in 1993-94 it went up 148 (157) and in 1996-97 it was 153 (176). Foodgrains production could not increase in concurrence with the growth of population. Considerable amount of money is spend on procurement of grains from outside. An efficient input production and distribution system could not yet develop. Nor, till date have there been effective instruments for credit or for knowledge and skill transfer. Input & output pricing, and marketing arrangement have been conspicuous by their absence.

⁴⁰ Mishra, M., 1992, *Infrastructure and Agricultural Development in India; A Regional Analyses*, (unpublished), JNU, New Delhi.

⁴¹ Economic Survey, op.cit., p. 12.

Considerable intra- state variation in patterns of agricultural growth also exists. The districts of Lower and Central Assam have shown relatively better performance. Several parts of the state are yet to benefit from new technologies. Important crops like pulses and oilseeds are yet to see the growth rates essential to improve per capita production and consumption. In the absence of industries vital for agricultural modernisation such as those manufacturing modernised agricultural tools, implements and machinery, mechanisation and modernisation has been very slow. These reflect the inherent weakness in state agricultural planning and management.

The low levels industrialisation and the absence of linkages between the existing industries too have affected agricultural development. Except for tea industry, other large or medium scale industries based on or utilising agricultural products are absent. Other industrial raw material of agricultural origin goes out region for example raw jute. Only small scale agro-based industries exist in the state. Medium or large scale industries within the state are based on exhaustible natural resources only.

2.2.2.3. Transport

Earlier observation of development of transport network within the region by the British reveals the development confined only to resource rich sections of the State-in Upper Assam, and partially in Barak Valley. After independence and the partition of the country much of these transport links of the region with the rest of the country were severed. Before the partition, communication with Calcutta and Chittagong, the two ports serving Assam were easy and speedy.

Following partition, port facilities of Chittagong was no more available, and access to Calcutta became difficult. Trade and commerce, and therefor whole of the economy of the state faced the problem of a serious transport bottleneck. The necessity for the re-establishment of rail link between Assam and the rest of the country through Indian territory was therefore realised. Efforts began to re-establish links and to fill in the gaps in the existing railway system. Work on the Assam rail link was started in 1948 which was completed in December 1949. A new railway system - the Assam Railway, with headquarters in Pandu was set up. With the regrouping of railways, this later was merged with the North Eastern Railway zone in 1952. In 1958, the North East Frontier Railway, with headquarters in Maligaon, was formed to take over the management of the rail-line east of Katihar. Since then, expansion and improvement of the railway lines have continued. The total rail route length in Assam increased from 1758 Km. in 1960-61 to 2373.52 Km. in 1998-99 (902.94 under Broad gauge and 1470.58 Km. under metre gauge). Major developments have taken place during the 8th and the 9th plan such as-

- Extension of broad gauge (BG) line from Guwahati to Dibrugarh to the extent of 801 kilometres as part of the project for conversion of multi -gauge to unigauge
- Tinsukia -Ledo BG line, 12 kilometres long
- Chaparmukh- Haibargaon BG line, 35 kilometres
- Besides, Balipara- Bhalukpong metre gauge line was opened to passenger traffic in 1989, as well as the Lala Bazar- Bhairabari metre gauge line in the same year
- Rail-cum road bridge -Naranarayan setu, across the river Brahmaputra, connecting Jogigopa and Pancharatnain the Gaolpara district.

However the position of the state in respect of broad guage route length is still very disappointing as it accounts for even less then 2.2 % of the country's total. The state's metregauge railway route length for every 100 sq. Kilometre of area is only 2.0 Kilometre. Broad guage route length is only 1.00 kilometres per 100 sq. kilometres of area.⁴² In 1997, the proportion of broad guage route length to the total railway route length worked out to be only 38.1% for Assam as against nearly 55.0% for the country as whole. At the same time, the operating conditions of railway in Assam is very difficult due to breaches from natural causes like floods and heavy landslides in hilly regions during monsoons which affect the rail transport adversely every year.

Waterways-Water transport played a very significant role during the British period and even before that. Even upto 1965, i.e. before the Indo -Pakistan war, about 93% of tea and 90 % of jute exported from Assam were carried by waterways. But it was just as adversely affected by these political events in the subcontinent as the railway links. The route was disrupted resulting in huge inconveniences and loss to the economy of Assam. At present the State has a total navigable waterways to the extent of 4065.6 kilometres out of which a total 2,193.6 kilometres are navigable through the year. The rest-1,872 kilometres, are navigable only during the monsoons.⁴³ Two Public Sector organisations viz. The State Directorate of Inland Water Transport and the Central Inland Water Transport Corporation operate passenger and goods vessels on a commercial basis.

⁴² Calculated from Basic Statistics of North Eastern Region, 2000, North Eastern Council, Shillong, P.111.

⁴³ Report of the Regional Transport Survey, Vol-I, p. 210.

Water transport in Assam can still play a significant role, more so with the opening of the Indo-Bangladesh river route. The revival of transport link that the state had with Calcutta via the erstwhile East Pakistan, as agreed recently by the Bangladesh government will open a new era of trade relations with North Eastern part of the country. The salient features of the agreement includes, among others, the protocol for clearance for three corridors in Bangladesh to facilitate loading and unloading ships originating from north eastern states of India. River traffic between parts of Assam, Tripura and Bangladesh and the rest of the country along the Brahmaputra and other rivers will increase. Exports from Assam can gain with saving of time and money.

Road transport – Because of the excellence of waterways, the people of Assam were less dependent on road transport. Even in 1855 when Mills visited Assam there were only few roads in the province.⁴⁴ At the time of independence, Assam had only 2,610 miles of motorable roads including the national highways, of which 2,040 miles were in the plains. After the separation of Sylhet district from Assam, the road communication through the Indian Territory was cut off. A jeepable road was constructed from Shillong to Silchar, via Jowai and Haflong. Another road from Badarpur to Jowai as also opened. The missing link in the national highway from Cooch Bihar to Assam was restored in 1949-50.⁴⁵

Physical conditions for e.g. topography and heavy rainfall have made construction of roads in Assam extremely difficult. In the plains all roads have

⁴⁴ Gait, Sir Edward. 1929 : *History of Assam*, Calcutta. p 40.

⁴⁵ Goswami, P.C. 1994 (rev. ed.): *The Economic Development of Assam*, Kalyani pub. N. Delhi, p. 186.

to be constructed to a height of about five feet above the surrounding land to protect them from floods. Culverts and bridges are necessary at short intervals to facilitate drainage of rainwater. During May to October road construction is difficult due to heavy rains and floods. All these makes the cost of construction of roads in Assam comparatively higher.

The state as on March 1996 had a total road length of 68079 kilometres, of which 11422 kilometres are surfaced. The road density within the state is 86.8 kilometres per 100 sq. kilometres. This is slightly better than the road density for the country as a whole which is 73.0 kilometres. Roads per thousand population is also marginally higher in the state at 3.05 kilometres while for the country it is 2.85 kilometres.⁴⁶ However the condition of most roads in Assam is not satisfactory and requires frequent repairs due to floods.

2.2.3. Natural resource

2.2.3.1. Conventional Power.

The basic infra-structural requirement for the growth of industries, power potential of Assam is immense in the form of hydel power, natural gas, oil, and coal resources. The state's conventional power potential lies in an estimated 340 million tones of coal, 150 MT of crude oil, and 23,000 million cubic metres of natural gas.

⁴⁶ Basic Road Statistics of India, Ministry of Surface Transport, 1995-96.

Coal - The development of coal mines can be traced back to 1870 when initiative was taken by Dr John Berry white and George Turner. The first establishment of the first colliery by the Assam Railways and Trading Co. in 1882 at Ledo while laying metre gauge line was of great help to the Assam Tea Industries. Subsequently more collieries were started at Titak(1884), Nandang (1896), Ledo New West (1903) and Ledo New East (1904). At present coal of known economic importance are found in the coalfields located within the detached inliers of the Barails along the north- easterly continuation of the 'Belt of Schuppen' over the foot hills bordering the southern boundary of the Sibsagar and Dibrugarh districts- the coalfields of Dilli-Jaipur and Makum. The Dilli- Jaipur coalfields produce good quality coal having only 0.8 – 9.1% ash, 1.5 to 6.4% sulphur, 39.8 to 43.9% volatile matter and 45.52% Of fixed carbon.⁴⁷ The Makum coalfield covering a 30 km. long and 5 km. wide tract along the southern boundary of Dibrugarh district produce coal yielding 42 to 60% of fixed carbon, 1 to 4% sulphur, 38 to 51% volatile matter and 0.8 to 8.4% ash.⁴⁸ Inferred reserve of coal is 28,000,000 tonnes and 191,000,000 tonnes in the Dilli – Jaypur and Makum fields respectively. In these coal fields mining operation is carried out in an organised basis. The total reserves of these coalfields constitute 0.5% of the country's total reserves and comprise 30% of the N.E. region's 982 billion tonnes of reserves.

Oil - The oilfields in upper Assam lies adjacent to the coal deposit in the Barail Group. Since the discovery of Digboi oilfield, the oil industry has made

⁴⁷ Geological Survey Of India, Misc. Publications, No. 30, 1974, p. 47.

⁴⁸ Ibid.

tremendous progress in prospecting and production. Intensive search for oil resulted in the discovery of a number of oil producing fields in the state. Besides the Digboi fields, Naharkatiya, Moran, Rudrasagar, Teek, Lakwa are notable oilfields producing a major share of the state's and the country's oil. In the Digboi fields the rate of production, maintained at 0.4 million tonnes since 1931, has declined tremendously at present. The Naharkatiya and Moran fields together possess indicated reserves of 47,000,000 tonnes of oil and nearly 23,000,000,000 cubic metres of natural gas. The well drills at Rudrasagar area (about 8 km. west of Sibsagar) and Teek (W-S west of Sibsagar) indicates promising reserves of oil.

Despite this the power scenario is one of power shortage due to underutilization. The installed capacity remained almost unchanged at 552.4 MW to 552.5 MW over the period from 1994-95 to 1996-97 increasing slightly to 574.4 MW in 1997-98.⁴⁹ Notwithstanding this, the generation of power declined to 1032.66 million units at the end the of year 1997-98 as against the generation of 1331.70 million units during 1996-97 and 1422.70 million units during 1995-96. Total power available in the state at present is only around 488 MW. This is less than the peak demand of 503.5 MW- a shortfall of 15 MW. This is an improvement over the preceding year when the shortfall was 117.0 M.W.⁵⁰ The state thus continue to purchase power from other states.

⁴⁹ Assam State Electricity Board, Assam, 1998.

⁵⁰ *ibid.*

2.2.3.2. Nonconventional Power – Hydel power.

The state alone possess 28% of total hydro-power potential of the country. The total investigated potential is approximately 30,000 MW. Of this only 492 MW has been developed and another 1250 MW is on the process of being developed. The Brahmaputra alone has around 43,269 MW of hydro power potential which have remained largely unexploited. The mighty rivers Subansiri, Dihang, Dnoong, Lohit, Ranganadi, Dihang, Kameng, and Dhansiri are capable of generating about 40,000 MW of hydro- power. The Bhutan Himalayan rivers such as Puthimara, Manas, Sankosh, Tista, and Mahananda can easily add another 10,000 MW to this. Thus the tributaries of the Brahmaputra are themselves a repository of 50,000 MW of hydro- power which is 33% of the country's potential - and can cater to supply of the power needs of the entire country for all times to come. The total installed capacity of the country is 62,000 MW, and it is required to reach 1,20,000 MW in 2000-2001 AD.

The installed capacity of the existing power plants (conventional and non-conventional) are-

- Namrup thermal plant 133.5 M.W., Chandrapur thermal plant (30 MW),
- Bongaigaon thermal power station (60M.W.),
- Lakwa thermal power station – 4 x 15 MW,
- Mobil Gas Turbine Sets at Kathalguri- 4 x 2.7 M.W., Mobile Gas Turbine sets at Geleky,
- Bordikharu Micro Hydel project – 2 x 0.5 M.W. and
- Kopili Hydro Electric Project – 150 M.W.

In 1993-94 the state government signed MOUs with private developers to complete the Karbi- Longpi hydroelectric project, Namrup Thermal Power Extension Project, and Combined Cycle Gas – based projects at Amguri, Ademtilla, and Banskandi. Most of these projects are yet to take off since the state is starved of funds.

SECTION III

2.3. Socio economic condition

2.3.1. Population dynamics

All programs of socio- economic development must also necessarily take into account the major demographic dimensions, and population dynamics. Problem raised by the expansion of population are inseparable from large development issues which come to the fore when attention is focussed on the failure of economic growth to meet the basic needs of large population groups. The quantitative and qualitative aspects of demography of the state have had negative impact on development.

The state's 2.24 crore people (1991 census, 2.66 crore according to the provisional census report for 2001) grew at the rate of 19.3% (reference year-1993), a decadal growth rate of +34.75. It has recorded a consistently high growth rate, particularly from 1951 onwards when the population grew at 25.91% (Appendix I). It is common knowledge now that such unnatural high growth rate was not so much due to natural growth but due to influx from neighboring countries particularly after independence and in subsequent successive waves. During the years between 1951 to 1991, population increased from 80.29 lakh to 2.24 crore-an increase of 1.43 crore.⁵¹ The figures are much higher than the national average-an average of 21-24 per decade from

⁵¹ Census of India, 1991, Part X-A, Primary Census Abstract, Part II-B (1), General Population, Vol. 1, Series 1, pp.198-230.

1951 onwards. The density of population is high in all the plain districts. High-density areas are in the districts of lower Brahmaputra valley- Dhubri, Barpeta, Nalbari and Kamrup, the central district of Nogaon, and in the Barak valley- Karimganj districts where density is well over 400 persons/square km. Districts of upper Assam contain moderate density. Low density is evident in the two hill districts where density is much below 100 persons/square km. Fig. 8. shows the population density distribution map of Assam.

The rapid increase in population has to depend on a small population of producers for food. 38% of the total population are below the age of 14 and 4.1% above the age of 60. In other words, a high dependency ratio, since this percentage of the population are non- workers. Of the rest 62% to be considered as capable of working, only 36% comprise the main workers, of which 19% are cultivators and agricultural labourers. This has also resulted in the procurement of foodgrains from outside. The inelasticity of resources (land, for eg.) against the quantitative expansion of population have always put curbs on economic development and has inevitably accompanying socio- political consequences. A fast growing population also implies increase in labour force and in unemployment.

Another aspect of population that is of great concern is the increase in the number of agricultural labourers between 1971 to 1991. This could be taken as indicative of the increase in population of rural landless. Over the three decades there has been an increase in agricultural laborers by 2.26%. On the other hand, percentages of cultivators have decreased by 4.96 (Table 2.9).

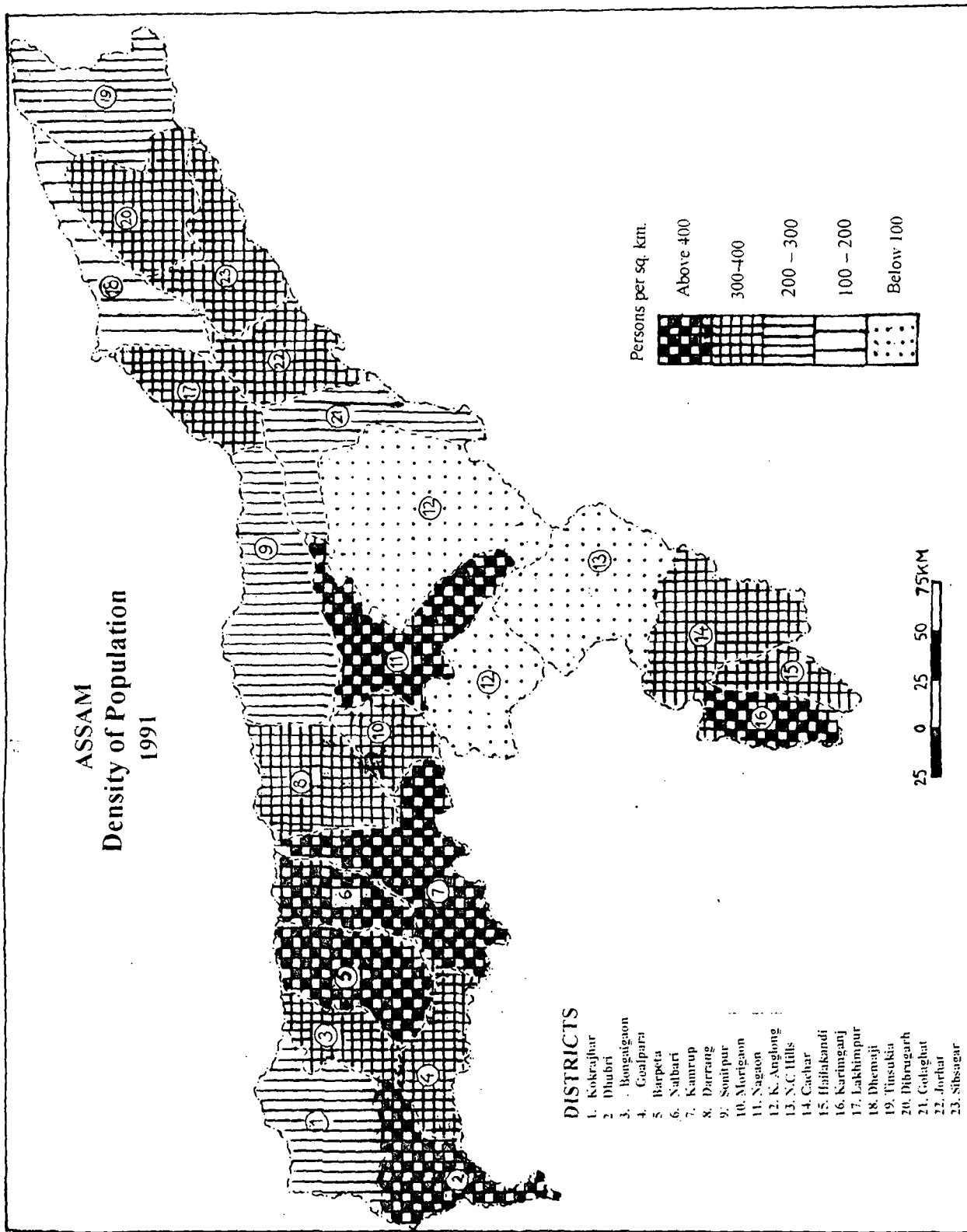


Fig 3

Table 2.9. Change in number of cultivators and agricultural labourers,
1971-1991.

Item.	1971	1991
Total population	14625152	22414322
Cultivators	2283698	3530844
As % of total population	55.86	50.90
Agricultural labourers	40544	832235
As % of total population	9.92	12.08

Source: calculated from Census of India, 1971, 1991.

2.3.2. Population as Resource- the Qualitative aspect

Human resource and man power, in the final analysis are responsible for any development. The need for, and urgency of building human capital for the attainment of accelerated and self- sustained economic growth in a developing economy need no stress. Human capital to mobilise, organise, and harness bountiful resources for the production is a prerequisite-a major problem faced in the state because of the quality of human capital. Perspectives on human capital must be on two considerations- resource in terms of workforce, skilled and unskilled, and extent and quality of education.

Average life expectancy, literacy and overall wellbeing are pointers to human resource development. According to the 1991 census only about half of the state's population are literate (Appendix I), as in many other states of the country. Levels of education -'the acquired and useful abilities of all

inhabitants or members of society in the concept of fixed capital' is very low in the state. The receptiveness of people to changes and new order/ systems is ensured if they are educated. Diffusion of technology and experimentation with new practices of production is slowed down due to a largely illiterate population. This has been partly responsible for low levels of agricultural modernisation, and continuance of jhum cultivation in the tribal belts. It has been to a large extent responsible for the low response to 'Lab to Land.' transfer of farm technology and limited diffusion of new and improved agronomic practices. Education too ensures that there is efficiency in the utilisation of limited resources and adoption of sustainable farming practices. Illiteracy therefore has been a social weakness responsible for economic backwardness. The significance of quality of human resource in agricultural development in the post liberalisation era cannot be overstressed. The knowledge of the avenues open and the benefits to be reaped in the open, competitive market via a new agriculture-export mix is possible only when population is educated. This is an important factor in the process of diffusion of technology too. It also brings an alertness of the demand- supply position in the international market.

The work force comprise mainly of unskilled and semi- skilled workers-about 31.19% of the total population. They constitute cultivators, agricultural labourers, marginal workers as also non workers. Table 2.11 brings out their percentage composition within the state. An examination of sectoral distribution of workforce also reveals the predominance in the primary sector-more than 80%, while workforce in the secondary sector is only 3.78%

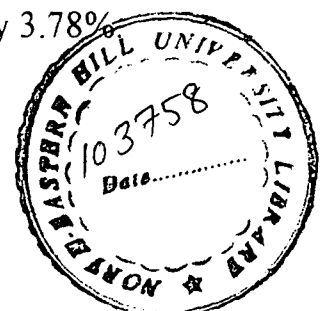


Table 2.10. Percentage distribution of main workers by industrial category, 1991.

Item	Rural	Urban	Total
Cultivators	56.62	3.74	50.90
Agri. Labourers	13.45	1.63	12.09
Allied activities	11.39	3.29	10.52
Mining & quarrying	0.42	1.06	0.49
Sub-total primary	81.88	9.77	73.99
Secondary	3.78	19.42	5.56
Tertiary	14.34	70.81	20.45

Source: Directorate of Economics & Statistics, 1991.

Lack of skilled manpower has been one of the most important factor responsible for the backwardness of the state. Lack of skilled workforce in the form of scientific, technological and managerial expertise, and dearth of efficient entrepreneurs, has created a situation where such personals have to be employed from outside. Within the state they form a very small segment of the total workforce. Limited exposure to science & technology, limited number of institutions and training centres etc. are to be blamed for such situation. Further, 'investment in man' to develop human capital has been insufficient.

Percentage Distribution of Main Workers -Sectorwise 1991

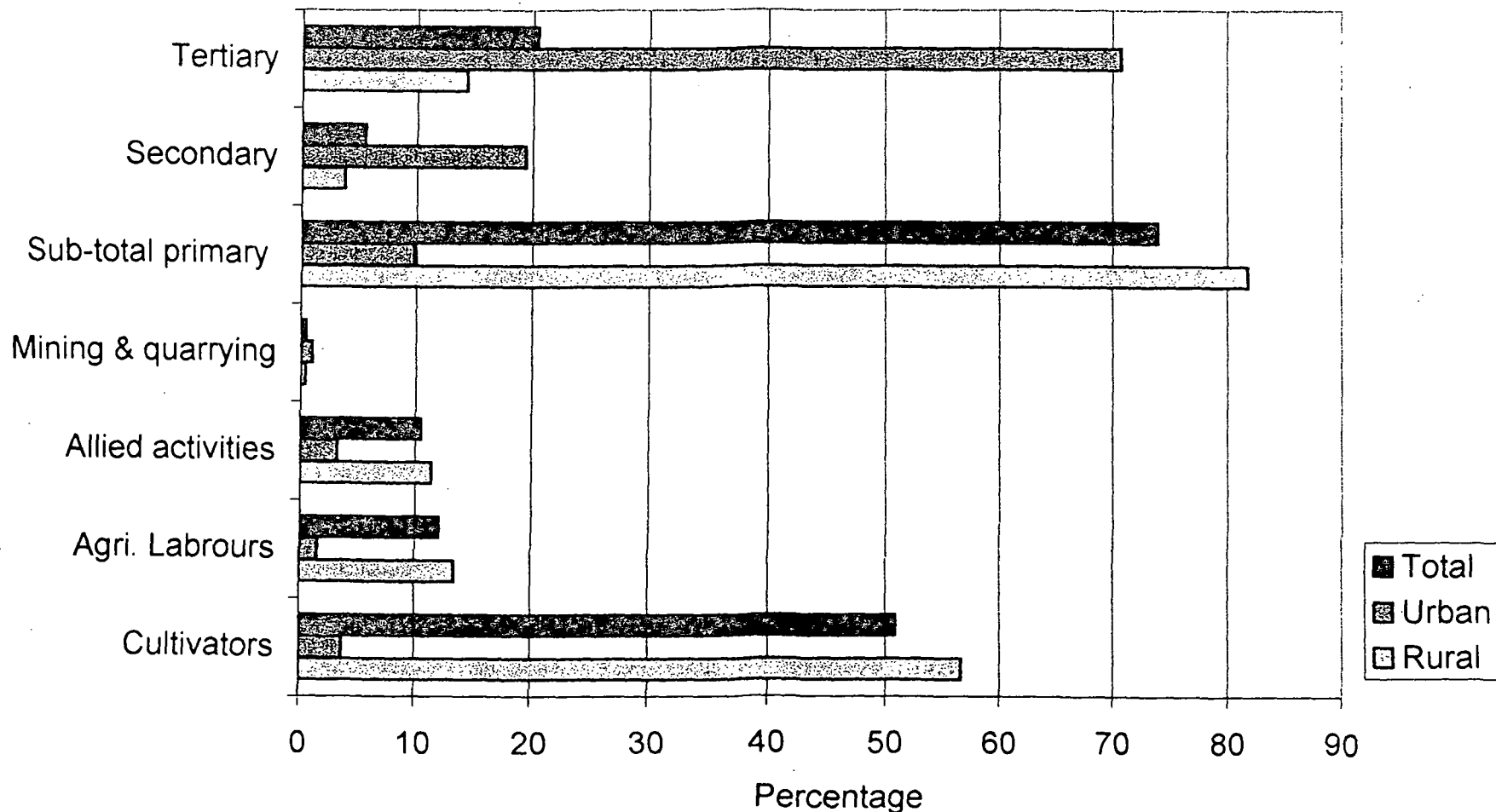
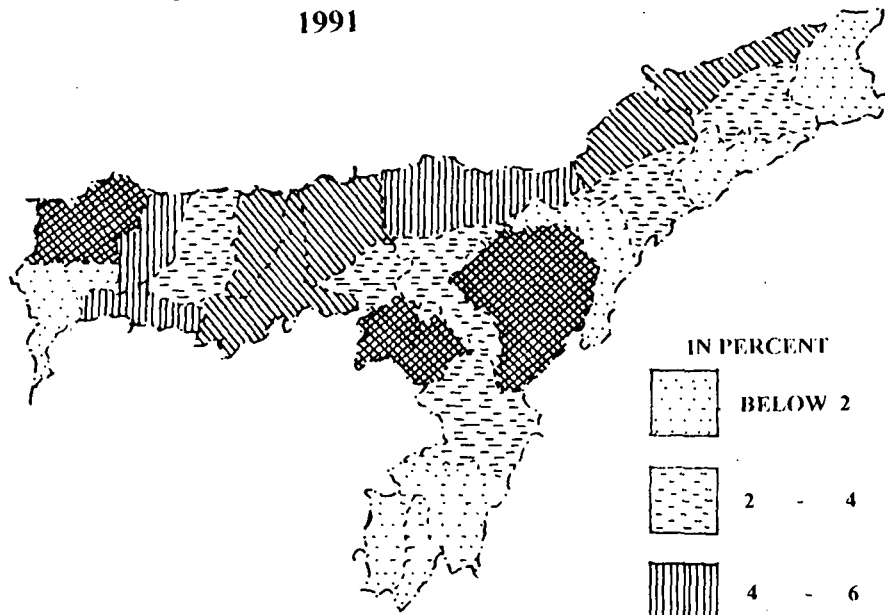
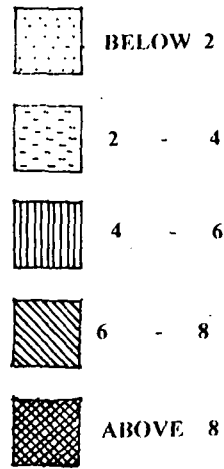


Fig. 9

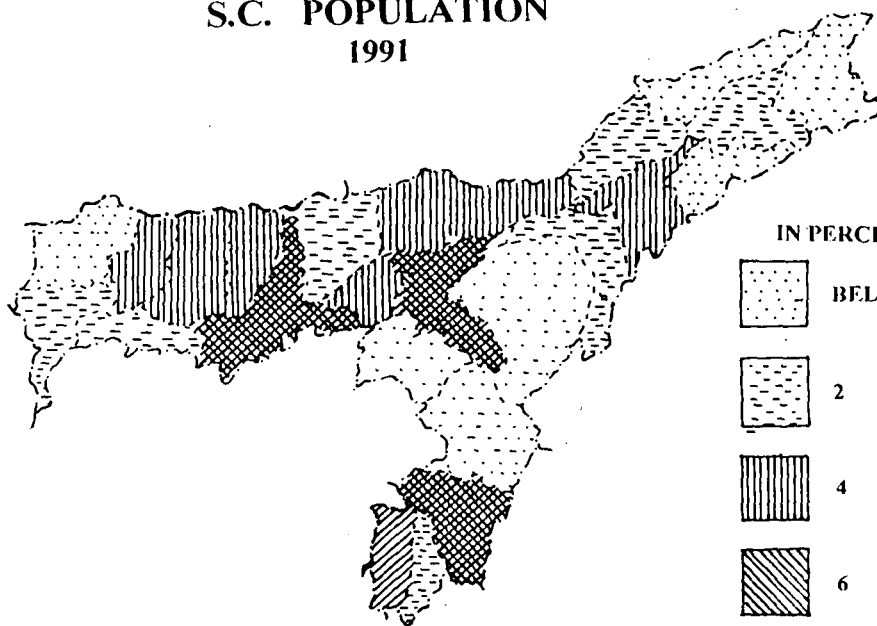
ASSAM
S.T. POPULATION
1991



IN PERCENT



ASSAM
S.C. POPULATION
1991



IN PERCENT

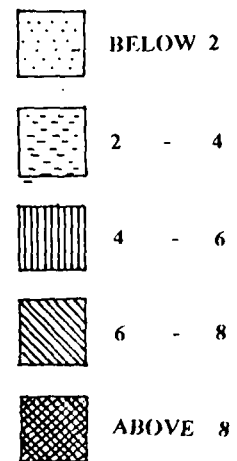


Fig.10

2.3.3. Ethnic diversity

Population composition of the state is characterised by great complexity in terms of ethnic diversity, tribal, non-tribal and caste composition, linguistic composition and composition by religion. The co-existence of different groups with incompatible socio-cultural structures, belief systems and value patterns is characteristic of the population. This is the condition under which one group is dominated by another often leading to situation of conflict.

The tribal population comprises of plain and hill tribes. The SC and ST (Amendment) Act, 1976 specified 9 plains tribes in the various plains districts and 14 hill tribes in the 2 Autonomous Hill Districts of Karbi Anglong and N. Cachar Hills. The 9 plain tribes predominant are Bodo-Bodo Kachari (Kokrajhar, Bongaigaon), Miri/Mishing (Golaghat, Jorhat, Sibsagar, Dibrugarh Tinsukia), Deori, Tiwa or Lalung (Morigaon, Nogaon), Rabha, and Sonowal Kachari (Dibrugarh, Tinsukia), Barman in Cachar, Mech, and Koch. Bodos are the largest group, constituting 45.42% of the total plains tribe. Their maximum concentration is in the districts of Kokrajhar, Goalpara, Bongaigaon, Nalbari, Kamrup and Darrang.

The 14 specified hill tribes are Karbi, Mikir, Dimasa, Hajong, Rengma Chakma, Garo, Maan (Tai speaking), Hmar, Khasi-Jaintia, Pawi, Lakhar Mizo, and Zeme. Karbis are predominant tribe in the hills. Appendix IIIa and III b. gives the population of these tribes as per 1991 census. Fig. 10 shows the distribution pattern of ST and SC within Assam.

These diverse ethnic groups have as diverse cultural traits. Communitarian control of land, associated value system different from those of the nontribals, different resource utilisation pattern and a different pace of economic growth is distinctive of these groups. The state initiated development programmes have not been sensitive to these individual characteristics. The result has been inequalities in development amongst the ethnic groups and the mainstream population. This has emerged as a major cause of dissidence.

2.4. Internal instability

2.4.1. Immigration

Migration has been a major demographic process within the state particularly in the valley areas. It has tremendously changed the population composition and given rise to a plural society. It is also responsible for significant changes to the socio-economic conditions within the valleys. At the same time, it has been responsible also to a large extent for the socio – political processes that emerged. An understanding of the historical process is imperative.

Colonisation of the Brahmaputra valley began with the Ahoms who came the valley from the east. They brought with them distinctive culture and language. At the time of Ahom colonisation there already existed small groups of indigenous ethnic communities (Bodo/ Boros, Kacharis Rabha, Tiwa, Miris etc.). They too had their distinct culture vastly different from the new settlers.

Colonisation at a much later date took place with the British coming to the region. The types of immigration that has taken place within the state are-

Pre independence - immigration in the plantation sector

-immigration in the traditional sector,

-immigration in the tertiary sector.

Post independence- refugees ,1947

-refugees, 1971, and

-infiltration.

Immigration in the plantation sector- Immigration in the pre-independence period started with commencement of colonial plantation economy. The colonisation scheme of Jenkines-the Charter to allow Europeans to hold land outside Presidency towns on a long term lease or with free-hold rights paved the way for the plantation economy.⁵² In the initial stage of the plantation economy, local labourers were utilised. But with the boom in the tea market after 1852, a much larger number of cheap labourers were required as a large number of planters entered into competition, extending their cultivation. It became imperative therefor to recruit labourers from outside. Thus the British brought large number of tea labourers from the tribal belts of Bihar, Orissa, W. Bengal and Andhra. And 'until the beginning of a much bigger movement from E. Bengal to Assam in this century, tea remained the biggest factor responsible for immigration.'⁵³ Thus, according to the 1901 census, "...just a little over one fourth of the total population had been born outside the frontiers of Assam. About half of these people came from the Chotanagpur division of Bihar...upward of 15000 persons came from Central Provinces of Agra, Oudh,

⁵² Guha, A., 1977, *Planters Raj to Swaraj: Freedom Struggle and Electoral Politics in Assam, 1829-1947*, p.15.

⁵³ *ibid.*

and over 4000 from Madras.”⁵⁴ By 1911 there were more than 1.3 million migrant tea labours.

Immigration in the traditional sector - A policy of tribal land grants was also devised and incentives offered to encourage the opening of the sparsely populated tracts of the state and thereby attract settlers from the more densely populated areas of Bengal and Bihar. Prior to that unfavourable living conditions had failed to lure immigrants to these tracts. The British also sought to strike a balance between the huge proportion of uncultivated land and the sparsely populated parts of the region because “...the government did not want to be deprived of land revenue from these wasteland...”. Therefore measures such as “Colonisation Scheme”, the “Land Development Scheme”, etc. were adopted. The vast, fertile and sparsely populated valleys, after 1900 therefor, attracted migrants from the over populated areas of E. Bengal particularly from the Mymensingh district.⁵⁵ C.S. Mullen estimated that over half a million persons had transplanted themselves to Assam Valley.⁵⁶ After 1911, there was, as C. S. Mullen described, a silent invasion of Mymensinghia cultivators and estimated that over half a million persons had transplanted themselves from Bengal to Assam Valley.⁵⁷

A significant impact of this influx was the introduction and expansion of jute cultivation. The British started commercial cultivation of jute in the wastelands

⁵⁴ Allen, B.C. 1906, Assam District Gazetteers, Vol. VIII, Sibsagar, Allahabad.

⁵⁵ Goswami, P. C. 1988 : *The Economic Development of Assam*, Kalyani Publishers, N. Delhi, p.26.

⁵⁶ Barpujari, H.K., 1993 : *The comprehensive History of Assam*, Publication Board of Assam, Vol.V, 1993.

⁵⁷ *ibid*

of Assam with the help of these immigrants from E, Bengal. "acreage under jute in Brahmaputra Valley increased as a result of this great population movement, from a little less than 30 thousand acres in 1905-06 to more than 106 thousand acres in 1919-20."⁵⁸

The other important source of immigration to the traditional sector was from Nepal. Livestock farming predominant amongst this section of the migrant population.

Immigration in the Tertiary sector - They were also responsible for the import of a class of Bengali functionaries to administer and serve the newly acquired territories of the Raj.⁵⁹ The government service sector was therefor virtually dominated by Bengali Hindus. This facilitated the supplant of Assamese language by Bengali in schools and courts in 1887. This was to sow the seeds of discontent amongst the Assamese. In trade and commerce, Biharis and Marwaris dominated. These groups, though small in numbers, exerted considerable influence on all spheres of activities- socio-economic as well as political.

Thus with British occupation and influx of outside population, a plural society was created. This was also the beginning of competition and struggle for occupation of land or for the same economic activities.⁶⁰

⁵⁸ Guha, 1988, op. cit. (reprint), p. 102.

⁵⁹ Barpujari, H.K. op. cit.

⁶⁰ Chhabra, K.M.L. 1992 : "Assam Challenge", Konark Publishers, N. Delhi.

Immigration in the post independence period - The process of immigration continued even after post independence. Two important events were largely responsible for large influx of immigrants the state in the post independence period -

- Partition and the break-up of Bengal into East and West Bengal on the basis of religion
- Bangladesh liberation war of 1971.

The first event brought a large influx of Hindu refugees, who came mainly to West Bengal, Assam and Tripura. As per 1951 Census, the number of Hindu refugees who came to Assam was 2,74,455. This influx continued in the following years and even increased after the 1964 communal riot in that country. The second event, liberation war of Bangladesh, resulted in a fresh spate of refugees, a large number of which did not return back to their home country even after the liberation of the country from Pakistan. These refugee population spread to all districts of Assam. However their concentration was more in the districts of Cachar, Goalpara, Kamrup, Nogaon, and Darrang. Many of them were cultivator refugees; subsequently they greatly changed the agricultural scenario.⁶¹

Since 1951 migration has been restricted. But it still continues illegally. Migration of population both legal as well illegal has been one of the major cause for internal instability. According to estimates roughly one to 1.5 million illegal immigrants have entered the state between 1971 to 1991. This is roughly 1% of the state's 25 million people. Apart from influx from Bangladesh and

⁶¹ Gopalakrishnan, R. 1991 : "Politics of Migration- Assam" in '*Political Geography of India's North East*', Vikas Publishing House, New Delhi. p. 122.

Nepal, influx from other parts of the country, particularly from Bihar, Orissa, Uttar Pradesh, West Bengal (not as just tea garden labourers but also as daily labourers), and from Rajasthan as traders.

The large influx of immigrants particularly illegal immigrants which still continues changing to a considerable extent the demographic composition of the state's population is an issue which has occupied the forefront of the state politics and has been the cause of rise and fall of political parties. Failure of the state and central government to appreciate the gravity of the problem posed by the post partition migration gave birth to the Assam Movement. The Assam Movement started by the All Assam Students Union in the 70's - a distinct and significant social movement was to bring attention to this unchecked influx of foreigners. The All Assam Students Union, Assam Sahitya Sabha, All Assam Gana Sangram Parishad etc. came to build an effective organisational network and methods of co-ordination and mobilised the masses for a relatively durable support base. The main cause behind this mass upheaval in Assam was the monstrous problem of infiltration by the illegal foreigners. To the leadership of AASU. & AAGSP this has resulted in an abnormal increase in population. The Movement, after more than a decade of activities that created instability in all fronts, culminated in the signing of the Assam Accord. However the most important issue of the Movement that of detection and deportation of the foreign nationals remained unchanged due to inherent judicial processes.

Economic implications of foreigners issue lies in the struggle for access and control of resources - for occupancy of land and same economic activities. This is so in a situation where economic opportunities (or employment) do not

increase in the same rate as population seeking employment increase. As noted earlier the proportion of unemployed is high within the state and when this population consist of a large numbers of educated unemployed the situation becomes explosive. Thus one of the demands of the Assam Movement was the increased employment/appointment of indigenous workforce. In the rural areas not only the increasing farm population and fragmentation of the already small holdings but encroachment by the immigrants, of the limited land resource had been the reason for the rural support to the Movement. The employment of "outsiders" (which refers to all non indigenous population irrespective of nationality) within the state and exploitation of resources by them is viewed with antagonism. Herein lies the problem of integration of the state economy to the market economy. Such feeling of regionalism sends wrong signals to the prospective investors.

The political dimensions arise from the fact that these illegal immigrants have so far, through connivance, and corruption on the part of the concerned officials (and also due to vested interest of political parties) managed to enrolled themselves in the electoral rolls and through their votes influenced the democratic process within the state. The Movement therefor demanded of for revision of the electoral rolls and deletion of these illegal immigrants from the same.

2.4.2. Ethnicity

Ethnicity is the use of ethnic identity for pursuing group interests, which may be articulated in particular context at a particular time. This is used as an instrument to seek political and economic advantages.⁶² In Assam's multiethnic society, the co-existence of different groups as observed already in the earlier section. In a society with incompatible socio-cultural structures, etc. dominance of one group over the other is unavoidable leading to a situation of conflict. Thus ethnicity has emerged as a reaction to challenges arising due to

- attempts by dominant groups towards assimilation
- growing economic competition among different ethnic groups and resultant economic deprivation of the minority groups
- development processes enforced by the government.

Also, at the root of tribal assertion of identity is the breakdown of the agrarian social structures and reduced role of local political authority. The tribal had substantial political authority that was associated with the Communitarian control of land and the strong social network characteristic of tribal societies. Immigration, entry of 'outsider' moneylenders and traders, the subsequent land alienation added to breakdown of the system.

Tribal uprising⁶² - Important factors in the break-up of Assam into several states had been tribal composition and language. Eastern India Tribal Union was

⁶² Karna, M.N. 1998, "Socio-Economic Aspects of Ethnic Identity in N. E. India" in Das, G., and Purkayastha, R.K., (co. ed.) '*Liberalisation and India's Noerth East*'. Commonwealth Publishers, New Delhi, p.223.

formed to demand the separation of the tribal “excluded areas.” Subsequently reorganisation of Assam led in stages to the severance of hill districts to become separate entities of Mizoram, Meghalaya, Nagaland and Arunachal after periods of transition as an autonomous hill sub-states or union territories.⁶³ The other hill tribes of Assam- the Karbis and Demasas - inhabitants of the Mikir and N.C. hills –who were sanskritised, were persuaded not to join Meghalaya (though physically contiguous with Meghalaya) with the promise of greater autonomy under the Sixth schedule. However it was after the launching of a movement by the Autonomous State Demand Council (ASDC) straddling the two districts for statehood under Article 244A (introduced to create autonomous hill state of Meghalaya), that greater powers were granted through a constitutional amendment. These developments were not lost to the plain tribes who were as identity conscious. Following Simon Commission’s (1928-29) endorsement of the tribal tracts as “excluded area”- excluded from application of provincial legislation and to be the direct responsibility of the centre by virtue of their “irreconcilable culture”, the Bodos too pleaded their distinctive character and wished to be separately enumerated in the census. They also sought to be separately represented in the legislature.⁶⁴ They organised themselves into Plains Tribal Council of Assam (PTCA) in March 1927 with head quarters in Kokrajhar to demand for full autonomy in the predominantly plains tribal areas. The subsequent movements reiterated the demands of creation of a separate state-Udayanchal, and of creation of Sixth Schedule Areas in predominantly tribal inhabited areas of Nogaon, Kamrup, &

⁶³ Verghese, B.G. 1996: *India's N.E Resurgent: Ethnicity, Insurgency, Governance, Development*, Centre for Policy Research, New Delhi, p.289.

⁶⁴ *ibid.*, p. 30.

Goalpara (undivided) adjoining Karbi Anglong district of Assam and Meghalaya.⁶⁵

The movement gained momentum since the ethnic Assamese quest for identity have blinded them to the aspiration of these numerous tribal groups who were never fully integrated into the Assamese society. The feeling amongst the tribals is that the provision under Article 330 & 332 of the Indian constitution has been violated purposely by the ethnic Assamese.⁶⁶ Also, that they enjoy the minimum constitutional safeguard among all the Scheduled Tribes in India. Contrary to the scheduled tribes living in other states, the tribes of Assam were deprived of the benefits of the Fifth and Sixth Schedule.⁶⁷

The effort to impose Assamese as the state official language made matters worse. The brewing discontentment was still further worsened by the continued neglect in the participation of political decision making. Thus led to more assertive demand for a separate Bodoland State. Their demand at present is further heightened by two factors- loss of their land and forest. The Bodoland Movement, a corollary of the Assam Movement, resulted in the Bodoland Accord and creation of the Bodoland Autonomous Council (BAC). However disagreement over the demarcation of the BAC boundary arose. The demand of the All Bodo Students Union, Bodoland People's Action Committee and the

⁶⁵ Dutta, P.S. 1990 : *Ethnic Movement in Poly-Cultural Assam*. Har Anand Publications, New Delhi, p. 224.

⁶⁶ Provision under these Articles provides for reservation of seats in the House of the people and the Legislative Assemblies of the States for the ST, proportionate to their population. This was done to ensure their representation in these institutions where they could focus their problems and grievances.

⁶⁷ Fifth Schedule has provision meant to safeguard the interest of the tribals in land, to give them protection against exploitation by moneylenders, and to protect the tribal way of life. The objective of the Sixth Schedule is to protect the customs, practices & identities of tribal people & afford opportunities of growth and progress acc. to their own genius & freedom.

Bodoland State Movement is for 3031 villages within the BAC, the notification by the Government of Assam includes 2,941 villages, 90 short of the demand. People's Democratic Front (PDF) with seven MLAs at present, a local political party created by the movement, wants drastic changes in the BAC- amendment or modification of its constitution and terms to fulfil the hopes and aspirations of the people. To the great displeasure of the Bodos, the BAC (Amendment) Bill passed on 14th May, 1999 have excluded already notified villages as also the Bongaigaon Refinery and Manas National Park.⁶⁸ This could bring violent repercussions.

The Karbis and the Demasas too raised their voice in demand for statehood. Rebel outfits such as the Dima Halam Daoga have been involved in subversive activities against non tribal "outsiders" in the N.C. Hills. They were formed in the mid nineties after the surrender of Dimasa National Security Force. The later organisation was formed in revolt against the failure of the government to reduce unemployment and check the collapse of the district's farm- based economy. Their demand was for a separate Demand. The collection of "Taxes" by DHD from the non tribal inhabitants in general create an unstable economic environment.⁶⁹ The Karbi National Volunteers, another militant group too themselves in similar activities.

At the root of tribal uprising therefor, are factors such as

- land alienation,

⁶⁸ The Assam Tribune, 16th May, 1999.

⁶⁹ The Telegraph, 11th May, 1999.

- a feeling of economic deprivation
- growing political aspirations and the feeling that proportionate political powers are not shared with them.

Language Regionalism – Another facet of ethnicity was the emergence of linguistic regionalism. Language played a prominent role in the perceived threat to identity and culture. It has always been an intensely emotive issue and a vital identity marker. Language, the major cultural difference among the migrants and the local communities have been responsible for nativism, using Weiner Myron's expression. The ethnic Assamese assertion of identity is on grounds that “ there is a culture and way of life in Assam which we want to protect; our culture have been moulded in the Brahmaputra valley.” Their right to “constitutional protection of our language and land” was in protest to the use of Bengali in administration by the imported Bengali functionaries and the subsequent declaration of Bengali as an official language.⁷⁰ This created a gulf between them. Then too the incoming flood of immigrants were Bengali (who to a considerable extent were Muslims) – which added a larger dimension to the language problem. “Assamese interest were sought to be safeguarded from 1920 by the so called Line System under which an imaginary line was drawn in the districts of heavy immigration, beyond which there should be no settlement. The system worked imperfectly and was breached through connivance and corruption.”⁷¹ This later was to culminate in eruption of violence against the community.

⁷⁰ Chhabra, K.M.L. (1992). “Quest for Identity”, chap. in *Assam Challenged*, Konarak Publishers, Delhi, p. 3

⁷¹ Verghese, B.G., “Legacy of the Raj” chap. in *India's North East Resurgent: Ethnicity, Insurgency, Governance and Development*, Centre for Policy Research, New Delhi, p. 26-27.

The mental divide which exist between the people of Brahmaputra valley and Barak valley have its origin in linguistic differences. The people of Barak valley are linguistically different from those of the Brahmaputra valley. It was a part of the Cachar and Sylhet district of pre-independent Assam and the population is predominantly Bengali speaking. Their demand earlier was for a separate administrative structure -the status of Union Territory. The demand, although was on the basis language, is also due to the fact that the region does not form a contiguous area with the Brahmaputra valley and maintains link with the state capital through 400 km of roadways via Meghalaya and often disrupted Metre Gauge rail track. As far back as 1961 the people of Barak valley started the Language Movement and Union Territory Demand Movement.⁷² The leaders of the Indian National Congress raised the demand for a separate administrative structure for the undivided Cachar. The current development in this part of the state is the demand for creation of a separate Barakland comprising of the three districts, raised by the Barak Gana Parishad (BGP). The people of Barak Valley allege the state and central governments of neglecting the Barak Valley and depriving them their share of development activities (increased expenditure on infrastructure development, social overheads, etc.) and economic opportunities. Offer of a Regional Autonomous Council for Barak Valley by the state government has not been acceptable to the people. Creation of a separate Barakland is considered as the solution to all the problems permanently.

All these various movements disrupt economic activities to a large extent. Disruption of surface transport links, call of bands, extortion from business

⁷² The Assam Tribune, May 7, 1999.

enterprises, all have the effect of creating a negative economic environment. Besides, the centrifugal forces at play with the assertion of regional identity could very well fragment the state into an Assam for the Assamese, a Bengali Assam for Barak valley and a Tribal Assam.

2.4.3. Insurgency

The prevalence of militant activities is seen as the cause or effect or both, depending on the viewpoint, of the state's economic backwardness. The feeling firmly ingrained in the Assamese psyche that the centre have systematically neglected the state's development needs and instead exploited her vast natural resources has been one of the cause of discontent which found expression in anti- government activities. The failure of the government to detect and deport the foreign nationals due to inherent judicial processes left a feeling of having been betrayed not only by centre but also by their leaders/ politicians. This resulted in the emergence of insurgent groups who claimed to provide justice to the indigenous population via armed confrontation with the govt. A stable law and order situation, vital for fostering both secular change and gradual growth, and tapping the state's natural resources are therefor lacking. Lacking in entrepreneur- friendly atmosphere, investors and businessmen have shied away from the state. Transport network have been a target of the insurgents; so also the tea and the oil sector- two of the revenue earners of the state. Justification for such acts are the 'desire for socialism' and desire for liberation of ethnic groups from the bounds of others. The claim is to end the exploitation of the 'have-nots' by the 'haves'. The desire for socialism is born of the fear that

resources of the state will flow out of the state with no returns coming to it.

The tea industry has been one of the prime target of the insurgents for the reason that most of the large tea estates are owned by outsiders and engage skilled labourers from outside (the region). Therefore most of the profits, it is felt flow out of the state, and limited opportunities available to the locals. This discontentment has manifested itself in activities against the industry, and extortion of huge sum of money. The security of the tea industry has therefore remained a sensitive issue. Security measures is in the form of a special tea security force – The Assam Tea Plantation Force, unique in the country having a strength of 2000 armed personnel with 97 tea estates under its protection. As a result while some large estates are now remote controlled from outside, some of the planters like Tata Tea and tea packeters Brooke Bond, Lipton and Hindustan Lever, have shifted their area of operation to outside the state and region.

Public sector units under threat are closing down too. For eg. ONGC in Nagaland have suspended operation. It also face threat from United Liberation Front of Assam (ULFA) who have threatened to disallow oil extraction. This follows the passing of the new Oil Field (regulation and development) Amendment Bill in 1998 which makes changes in royalty payment for attracting FDI in oil extraction. This is borne out the fear that this valuable resource will be pumped out of the state. The targeting of transport lines –oil pipelines, rail lines and road bridges is an attempt to stop resource moving out of the state as well an attempt to draw attention of the state and central govt. to their demands.

Democratic processes within the state are disrupted. Boycotting of the same has paralleled frequency of Lok Sabha elections by the major insurgent outfit of the state –ULFA. The stand of the outfit is that “ elections will be acceptable only if these are held in an independent Assam”.⁷³ The heavy deployment of Army is perceived as robbing the state of its independence.

Observations and Generalisations

Assam exhibits unique distribution pattern of geographical phenomena. Physiographically it contains the Brahmaputra valley and the Barak valley with their fertile active flood plains, old alluvium plains, piedmonts & structural plains, and the hills on Karbi Anglong and North Cachar. Brahmaputra and Barak rivers are the main drainage systems with huge catchment areas which includes other states of the North east too. They have shaped the life and economy of the people of the state, supporting intensive wet cultivation as well as plantation agriculture. The annual floods caused by these rivers are also responsible extensive damage to crops, lives and property and general poverty of the people of the state. The climate as experienced in the state is humid tropical as influenced by summer monsoons. High rainfall, high relative humidity, uneven distribution of rainfall and long overcast skies particularly during the monsoon season are conditions which greatly influence agriculture within the state. Assam falls within agro-climatic zone III of India. The state is further divided into eight agro-climatic subzones on the basis of variation in relative humidity, and average temperature. Each of the subzones exhibits

⁷³ The Telegraph, 30th April, 1990.

distinctive humidity-rainfall conditions. The biodiversity within Assam is remarkable. The state is a rich reservoir of genes of traditional grain crops as well as commercial and potential commercial crops. 28% of the total hydel power potential, and 0.5% of the country's coal lies within Assam.

The state therefor has rich resources for development. The resources identified include fertile alluvial soils in the flood plains of rivers Brahmaputra and Barak favorable for foodgrains particularly paddy and jute cultivation, undulating land covered with old alluvial soils favorable for tea cultivation as well as a range of horticultural crops, and the hills favorable for horticultural crops and livestock raising. The agro climatic sub zones are therefor characterised by potential for two to three successive crops of paddy, oilseeds, jute, pulses, or tea, and fisheries in the marshes and derelict water bodies of the flood plains. These geographical factors form the bases policy formulation in agriculture within the state.

Huge water resource from the mighty river Brahmaputra and river Barak, and their tributaries places the state in a very favorable position with regard to hydro electric potentials, irrigation and inland fisheries. At the same time it is one of the riches states in terms of fossil fuels such as petroleum, natural gas, and coal. The state therefor has vast potentials for power production.

Of great significance too in the consideration of policy formulation for agricultural development is the state's biodiversity. They offer immense potentials for developing the natural germplasm bank or gene pool for evolving new strains. Biotechnology application by the government research centres and stations within the state, of some select varieties have already yielded new

strains. Specifically strains of rice, tea and jute are developed suited to local physical conditions. But the major concern here is that these research centres are public undertakings and therefor face privatisation in future.

These geographical factors provide the basis of policy decisions for production functions. At the same time, a set of geographical circumstances influences the operation of development policies. Uncertainty of monsoons, recurrent floods, limited nature of transport network, and limited nature of resource utilisation, particularly power, and exert considerable influence on policy operations and the outcome of policy implementation.

The resources considered were the basis for economic prosperity of the state during the Colonial period. The British saw these potentials, evolved numerous policies in order to exploited them to the maximum possible. The state was therefor amongst the developed provinces of British India. They developed transport network-waterways, railways, and road to a lesser extent, to facilitate exploitation of these resources. In the process they opened up the inaccessible parts of the state. This in consequence was responsible for the large stream of immigrants which was encouraged by the British through a number of policies.

Much demographic changes occurred as a result. This also changed the economic geography of the state considerably by way of commercialisation of agriculture. Tea plantation and cultivation of jute changed the cultural landscape of much of Assam. The migrants too introduced new techniques in agriculture, particularly intensive cultivation. This was an era of relative economic prosperity of the state.

The post independence period changed this situation. Disruption of the transport links with the rest of the country which resulted in loss of markets in Bangladesh, higher freight rates, and inconvenience of trans-shipment etc. closed the economy of the state and the region. This period saw a regression of the economic. High unemployment and poverty levels, low net state domestic product and low per capita income, low levels of industrialisation and low agricultural productivity along with low levels of infrastructure development marked the post independent economy of Assam. The malaise of a slowed down economy and imbalances in development –intra regional and intra sections lies in the failure to recognise the geographical characteristics and the geographical entity of the region while making policy decisions for the region. Inevitably attendant problems followed. Disparity in socio- economic conditions emerged as a consequence of such policies of development amongst sections and population groups. This nature of socio-economic development then resulted in phenomenon of nativism and regionalism. Conflicts intensified due to competition for resources, competition for economic and political powers and identity crises. These internal conflicts and their violent manifestation inhibit the development of entrepreneur friendly and investment conducive environment. Nor is the rise of nativism and regionalism favorable for a free market economy. Such situation also endangers the state's role as a geostrategic region and would result in losing much of its globe influencing characteristics and functions.

CHAPTER III

Evaluation of State Policies on Agriculture

1950 to 1990-91

3.1 Introduction

The geographical position, physical characteristics and historical development of any region generally tend to have profound influence on the economy of the region. But often the critical omission of consideration of geographical factors in policy decision and in the operation of the same, have resulted in the failure to exploit any region's vast natural resources.¹ The distance between the markets in mainland India and producing centres in Assam, the rainfed ecological conditions of the state agriculture, and socio-cultural characteristics of the farming communities with their distinct preferences, aspirations and attitudes demand specific treatment in any development policies. However, the basic fact bearing on Indian (and state) Agricultural -policy- is that the operational decision on production, marketing and consumption are made by many individuals with less than the required awareness of ground realities of geographical and socio economic conditions. Consequent has been a retarded economic growth and imbalances in growth within the state.²

¹ Prescott, J.R.V., 1968 : *Geography of State Policies*, London, p.11.

He accords high priority to consideration of geographical factors in policy formulation, and in policy operations.

² Retarded growth of poor regions may, with a great deal of reason be attributed not to exploitation, but to the failure to exploit their rich natural resources for mutual benefit. Historically this has been the most critical omission.

This has been the reason that the experience of five decades of planned development has been highly disappointing. The 'trickle down' effect and the expectations of all round development failed miserably. Therefore it becomes essential to analyse the policies for development of this sector. Imperative is analysing the role of geographical factors in the development process and emerging geographical pattern consequent of development (or policies).

At the beginning of the century the agricultural policy in the country and the state, had a colonial bias. The emphasis was on exporting food and raw materials to Great Britain. Increases in production were through expansion of area under cultivation. In Assam, it was to increase production of tea through expansion and improvement of area under tea cultivation. To encourage tea cultivation considerable tract of wasteland were granted by the British government. Passing several special rules in easy terms and conditions did this. Areas not favourable for tea cultivation was given away to landlords-mauzadars, who collected revenue for the government from the cultivation of these lands which were leased out to adhiars.

The policy thrust in agriculture changed after independence. The policy that was adopted in the country after independence had begun to take shape earlier in the wake of Bengal famine of 1943. To strive for self sufficiency, national food security had become the overriding goal of the national policy on agriculture. To this end were all related policies and programmes of development formulated, and (partially) implemented. In the first ever agricultural policy statement issued by Government of India in January, 1946, ten objectives were stated. This included "increasing production of foodgrains,

improvement in methods of production of industrial raw materials and export as well as securing remunerative prices to the producer as also fair wages to agricultural labourers". Therefore in the post independence period, a number of related policies such as-production policy, land reforms policy, agricultural price policy, hydraulic policy, etc. were spelt out in the initial and in the successive plan periods.³

The agricultural policies followed in the state during the last 50 years can be considered broadly under three phases.

-Agrarian Reforms - The main thrust of the policy in the state in the initial stages was agrarian reforms. Mid 1960s to 1970s witnessed several agrarian reforms. In the rest of the country it was also a period of development of major irrigation projects and establishment of input related industries, such as fertiliser plants.

-The second phase saw policy initiatives aiming at agricultural research, agricultural education & extension, input supply and price support. As a strategy to increase production, development of minor irrigation projects within the state was aimed at.

1980s, the second sub-phase, saw agricultural policies lacking direction. The same growth and development strategies were continued during this decade. Considerable increase in subsidies and support was the trend national agricultural scenario as a result of pressures from interest group. This trend was also marked in the state agriculture.

- the third phase, the current phase is experiencing major changes in policies in agriculture which began in the 1990s.

³ National Commission on Agriculture, Report of, Part I, Policy and Strategy, 1948, p. 62.

The present analyses is on select aspects of state agricultural policies- on land reforms, production, input supply, agriculture infrastructure, and research and technology development and its dissemination.

3.1. Patterns of land holding

The need for thorough changes in the agrarian structures and rural society as a prerequisite to agricultural development was recognised in India in the early 1950s. But even after more than 2 decades of implementation of agrarian reforms great imbalance still exist in distribution of land. Agrarian structure in the state is still characterised by operational landholdings, which are predominantly marginal, submarginal and small holdings and a system of tenancy cultivation still existent. 'Operational land holdings' is land, which is used wholly or partially for agricultural production and operated as a single technical unit, by one person, alone or with others. It could also be either wholly owned or let on rent in which case there is existence of land tenancy. Land holdings in the state have been categorised as –i).submarginal and marginal holdings under 1 hectare size; ii).small holding between 1 hectare to 3 hectare size; iii). moderately smallholding between 3 and 4 hectare sizes; iv). medium size holding between 4 to 5 hectare; v). moderately large holding between 5 and 10 hectare size; and vi). large size holding above 10 hectares. The first and the second categories of holding, i.e. below 3 hectares constitute nearly 80% of the holdings covering 60% of the total operational holdings in

the state. Of this 61.52% is below one hectare, and 38.66% below 0.5 hectares.⁴

This is indicative of the fragmented nature of the holdings. Very small and fragmented holdings is characteristic of a high density of population –236 persons per sq. km., and resultant pressure on land. The average size of operational holdings in the state is 1.31 hectares. Large holdings, above the ceiling level of 6.9 hectares are in the hands of only 0.41% of individual cultivators. Large holdings – above 10 hectares size constitute only 0.13%, covering 5.89% of the area. 0.03% of holding above the size of 20 hectare 4.77% of the area have average size of holding of 159.84 hectares.⁵ The imbalance in land holding is evident from table 3.1.

Table 3.1. Number and area of operational holdings by type of holding -
General, 1990-91.

Type	Size class	% of holdings	% of area	Average size
Sub-marginal	Below 0.5	38.66		
	0.5- 1.0	23.86		
Marginal	1.0-2.0	20.86	26.10	1.42
Small	2.0-3.0	8.84	18.92	2.42
	3.0-4.0	4.02	11.84	3.34
Semi medium	4.0-5.0	1.88	6.95	4.18
	5.0-7.5	1.44	7.44	5.85
	7.5-10.0	0.25	1.81	8.13
Medium	10.0-20.0	0.10	1.12	12.74
Large	20.0 and above	0.03	4.77	159.84

Source: Directorate of Economics and Statistics, Assam, 1990

⁴ Calculated from Statistics Handbook, Assam, 1995, Directorate of Economics and Statistics, p.52-53.

⁵ Ibid.

Percentage Change in Number of different sized Individual Holdings
1980-81 to 1990-91

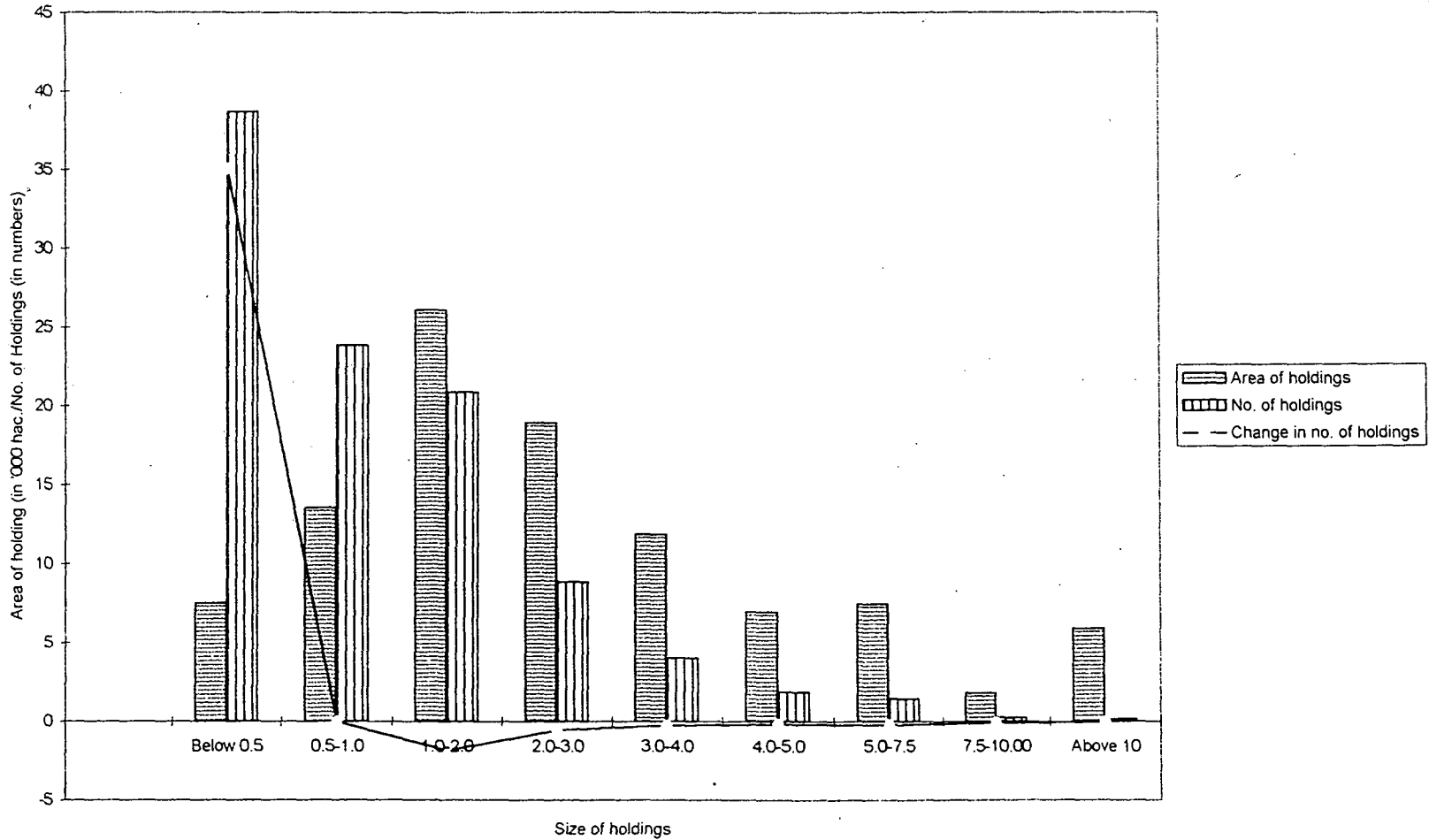


Fig. 11

Table 3.2. Number and size of holding –S.T and S.C.

Size/class	S.C		S.T.		Average size
	% holding	% area	% holding	% area	
0.02-0.5	34.68	7.79	22.96	5.08	0.12
0.5-1.0	26.18	17.52	24.52	12.40	0.66
1.0-2.0	23.78	30.97	29.18	27.56	1.40
2.0-3.0	9.18	18.92	12.80	20.80	2.39
3.0-4.0	3.54	10.35	5.34	12.75	3.33
4.0-5.0	1.34	6.07	2.64	8.45	4.26
5.0-7.5	1.09	5.92	2.00	8.43	5.89
7.5-10.0	0.13	1.11	0.36	2.22	8.23
10.0-20.0	0.04	0.64	0.13	1.31	12.95
20.0 & above	0.01	0.66	0.03	1.03	153.19

Source: Agricultural Census, 1990-91.

Similar pattern of land holding is also noticeable amongst the tribal and schedule caste landholders evident from table 3.2. Scheduled Caste landholders have very small size of holdings- about 60 % have holdings less than one hectare. The tribal landowners are marginally better nearly half of them have average size holdings of 3.5 hectares.

The land holding pattern has not changed much over the years particularly after the land reforms period. Rather the imbalance has widened with the unnatural increase in population. Change in land holding pattern has been in terms of increase in number of marginal and sub marginal holdings. Between 1980-81 to 1985-86, the number of individual operational holdings increased from 2255845 to 2377960 (+122115). But after 1985-86 it decreased. The change in

number of operational holdings can be seen from table 3.3. It is also represented graphically in Fig. 11.

Table 3.3. Percentage change in number of different-size individual Holdings, 1980-81 to 1990-91

Size class	No. of holdings		Area of holdings		Change in holding
	1980-81	1990-91	1980-81	1990-91	
Below 0.5	3.57	38.66	6.99	7.47	+35.09
0.5-1.0	23.86	23.86	13.42	13.55	0.00
1.0-2.0	22.71	20.89	26.12	26.10	-1.82
2.0-3.0	9.37	8.84	18.47	18.92	-0.53
3.0-4.0	4.23	4.02	11.57	11.84	-0.21
4.0-5.0	2.05	1.88	7.23	6.95	-0.17
5.0-7.5	1.61	1.44	7.61	7.44	-0.19
7.5-10.00	0.29	0.25	2.02	1.81	-0.04
Above 10	0.16	0.13	6.54	5.89	-0.03

Source: Agricultural Census, 1980-81 and 1990-91.

Evident from the above table, there has been tremendous increase in the number of submarginal and marginal holdings during the decade. Individual holdings in all other size class registered decrease. This is indicative of further fragmentation of holdings of the above marginal holding. Another disturbing fact, which emerges, is that percentage area under submarginal holdings has not proportionately increased with increase in the number of holdings of this nature.

Districwise variation in average size of operational holdings and also in average size of plots has been found in a study on landholding structures.⁶ Study of 39 representative villages from different districts revealed higher

⁶ Das, M.M. 1995 : *Land Holding Structure: A Problem in Peasant Agriculture in Assam*, Konarak Publication Ltd., New Delhi.

average size of holdings in Upper Assam districts, and Nogaon. In Nogaon average size of holding was found to be 0.37 hectares and in Dibrugarh it was found to be 0.69 hectares.

Tenancy system has been a common system in the state, both in the zamindari system as well as Raiyatwari system. Even within the latter, elements of zamindari were known to appear where the raiyatwari landowners had been at liberty to sublet their land under various terms and conditions.⁷ At the time of introduction of The Assam Land Tenancy Act, 1971, the extent of tenancy found in the different (old) districts were-

Kamrup-5.15%

Sibsagar-2.76%

Nogaon- N.A.

Darrang-6.34%

Lakhimpur-2.76%

Cachar- N. A.

The total rented area (agricultural) was 5.47% of the total operated area. After the abolition of the zamindari system in Assam, the only system of land tenure prevalent in the whole of Assam, except in the jhum areas is the raiyatwari system. This system is also defective for agricultural development and removal of socio-economic injustice. In theory this system admits only two interests of land viz. The government and the owner cultivator, and only one payment, namely, the revenue.⁸ But in practice it is no different from the three-tier

⁷ *ibid.* p.17.

⁸ *ibid.* p. 18.

zamindari system. Thus three distinct classes have emerged in rural Assam viz., absentee landowners, small peasants (owner cultivator) and agricultural labourers.

Figures collected by the Department of Land Records in 1980-82 put the total number of tenancy at 3,18,481 and total area under them at 134950.8 hectares. The total settled area at the time being 2673436.5 hectares, percentage of tenancy by this period had come down to about 5%.

There is still considerable number of leased agricultural land – partly or wholly leased. About 17000 units (holdings) are partly owned and partly leased which are about 5.48% of the total holdings. Wholly leased land amounts to 1.28% and wholly owned – 92.01%.

I. Number and area of operational holdings by Tenancy status (all sizes)

Total holdings	wholly owned self operated	wholly leased –in holding	wholly otherwise operational holding
(a) No.-313000	288000	4000	4000
(b) Area-443000	399000	6000	6000

Partly owned, partly leased in & partly otherwise operated holdings

No.-17000

leased in area-3000

otherwise operated – 10,000

total area -32000

II. Percentage change in number of operational holdings by Tenancy status, 1970-71 to 1985-86.

	Wholly owned Self operated	wholly leased-in holding	wholly other- wise operated
1970-71	71.31	5.47	N.A.
1985-86	92.07	0.01	0.01

Source: All India Bulletin on Agricultural Census, 1985-86.

Considerable increase in the wholly owned and self-operated holdings shows an improvement in the tenancy system. During the period of 15 years, there has been an increase by 20.76% in such holdings. Proportion of leased or partly leased holdings has decreased considerably. This indicates on the one hand, a certain degree of success of the tenancy reforms and on the other hand, the increasing trends amongst cultivators to self operate their land.

Impact of smallholdings on agricultural production -The impact of fragmented and dwarfs size holdings on agricultural production and productivity has been adverse. Mechanisation of agriculture in the state has been extremely slow due to the large proportion of small and marginal holdings and the nature of the holdings. The land holders are either incapable of acquiring and applying modern inputs and exploit the potentials of available technology or else lack the motivation which explains the low levels of productivity. Their ability to subsist without state assistance is absolutely improbable and in the possibility of such a condition will end up losing whatever they possess to the land grabbing commercial farmers and corporate.

3.2. Land Reforms Policy

Myrdal, while stressing the role of agricultural policies in economic advancement had also enunciated land reforms policy as a key factor in agricultural development.⁹ We have also been warned that problems connected with agricultural development are not purely technological but stem from the inegalitarian agrarian structures of rural society. After independence in the initial 3 plan periods an extensive mode of development in line with the rest of the country was aimed at, to strengthen the agrarian structure.¹⁰ Land Reforms was the main thrust of the policy of reducing the vicious circle of low productivity and poverty which starts from the point of low production, and follows with low marketable surplus, low income, low savings and low investment for land improvement.

In the tenant farming areas, this cycle also operates due to lack of motivation since lion's share of the gains of production is usually appropriated by the landowner. It is commonly recognised that among the factors responsible for low levels and small rate of increase in agricultural productivity two is paramount, one factor being the decay of tenurial relations, and dwarf size of farms. Till about 2 decades back, large proportions of farm families suffered from the problems of tenurial uncertainty and exploitation. As evident from the examination from the earlier section, this problem has not been altogether solved and about 8% of the holdings within the state still continue to be wholly

⁹ Myrdal, G. 1971 : *Asian Drama: An Enquiry into the Poverty of Nation* , (Abridged edition), London.

¹⁰ Rajagopalan, V., "Towards Development of Subsistence Farmers: The Need For New Approaches and Strategies" in *Indian Journal of Agricultural Economics*, Vol. 49, No. 1, Jan.- March, 1994, p.7.

The extensive mode of development strategy pursued by the country consisted of strategies for resource development such as land conservation, reclamation, irrigation projects etc.

or partially leased. Large proportion still subsist below the limit of economic viability, as noticed in table 3.1.- the farm size considered below a rational floor level where the individual inputs like bullocks remain under-utilised and cost of production per acre or per unit of output increases sharply and minimum family consumption cannot be obtained.¹¹ Thus the logic of 'land to the tillers' has immense weightage, and herein lies the economic logic of land reforms.¹² A comprehensive Land Reforms policy was formulated under which zamindari system were to be abolished, control and regulate tenancy relations, and land ceiling to be established.

On the recommendation of the Agrarian Reforms Committee or the Kumarappa Committee (1947), the first five-year plan aimed at-

1. abolition of intermediaries between the state and the tiller,
2. tenancy reform to reduce rents, provide security of tenure and give tenants an opportunity to purchase the land they cultivate,
3. fixation of a ceiling on landholding and distribution of surplus land,
4. improvement of the condition of agricultural workers, and
5. co-operative organisation of agriculture.¹³

The policy emphasis was on creating an agrarian economy with high levels of efficiency and productivity through equitable distribution of available land.

¹¹ Khusro, A.M. (1973). *The Economy of Land Reforms & Farm Size in India*, Institute of Economic Growth, Delhi.

¹² Herring, R.J. (1983). *Land to the Tiller*, Delhi, Oxford University Press.

¹³ Report of The Congress Agrarian Reform Committee, 1947.

Also the idea of rationing land through imposition of ceilings on land holdings- has been considered a crucial redistributive measure. Immediately after independence the govt. of Assam enacted the following legislation to bring about the above mentioned changes in land system-

1. Assam Adhiars Protection and Regulation Act, 1948
2. Assam State Acquisition of Zamindari Act, 1957
3. The Assam Fixation of ceiling on land holdings Act, 1956
4. The Assam Non-agricultural Urban Tenancy Act, 1956
5. The Assam State Acquisition Act, 1959.
6. The Assam consolidation of holdings Act, 1960.
7. The Assam Gramin Act, 1961.
8. The Assam Tenancy Act, 1971.¹⁴

The first one was a piece of agriculture land reforms legislation aimed to provide protection, and regulation of adhiars (share- croppers) or tenants of agricultural land paying rent in kind under the system generally known as adhi, chukti, barga, bhag or chukani.¹⁵ The legislation was effected in some areas but after the 8th Act, according to the Report of the Law Research Institute, some landlords with the apprehension of losing ownership right had engaged themselves in ploughing the land (under the provision that if the land is required for personal cultivation, he can retain it).¹⁶ The report also found that several landlords had been letting land to the tillers without giving the right to occupy the land legally. The adhiars come to an agreement that they are selling

¹⁴ Baruah, B.N. (1983), "Agrarian Reforms in India : Assam- A Case Study", Land Reforms, Acquisition & Reforms, Government of Assam.

¹⁵ "Land Systems of N.E. Region-Assam - A Study", Law Research Institution, Guwhati High Court, 1982.

¹⁶ The Assam Land Reforms Commission - Report, September 1981, Law Research: Institution, Guwahati High Court, Government of Assam, pp. 254-255.

their labour to the landlord on payment of a fixed @. Such contracts did not encourage tenants to take any land improvement measure.

The 2nd Act, by abolishing the Zamindari system sought to establish direct relationship between the state and the tenants and thereby take care of such eventualities. The Act empowered the government to acquire all the interests associated with the estates belonging to all the zamindars, lakhiraj and the “acknowledged estates”. These measures of agrarian reforms only partly succeeded in abolishing the large intermediaries – the jotedars and dar-jotedars, reducing the numbers of absentee landlords and conferring ownership rights to certain number of protected tenants or adhiars. There is still a high degree of concentration of landholdings at the top. The landlord – tenant nexus, insecurity of tenure for tenants -at -will including sharecropper still continues.¹⁷

From 1954 to 1972 notification was issued from time to time by the Land and Revenue Department of the state to acquire the interests of jotedars and dar-jotedars. This apparently brought all tenants directly in contact with the state govt. They covered a total area of 109361,4 hectares.¹⁸ Compensation, according to report were paid to the owners (Zamindars/ mouzadars).

The legal and administrative measures undertaken by the state government was class specific and benefited those tenants who happened to be large owners, and because of their relatively stronger social and economic position. The benefits of the tenancy Act did not percolate to the oppressed peasantry and the sharecroppers. In many cases tenants and under – tenants were not

¹⁷ *ibid.*

¹⁸ *ibid.*

eager to exchange their rights for those under the Assam Land and Revenue Regulation (rights of occupancy tenants were heritable and transferable, those of non- occupancy tenants were heritable but not transferable).¹⁹

Regarding ceiling the Act for which , though passed in 1956 and brought into force in 1958, was amended several times (lastly in 1976), the level of ceiling fixed at 6.9 hectares for the state is one of the lowest in the country. Here too though the government reports claimed a total of 612380 acres of land being acquired upto year 1996, and of redistribution of a total of 589102 acres till September 1996, large holders had managed to resort to benami transfers to avoid loss of access land.²⁰ Bulk of the access land acquired was from the tea gardens. But the ceiling Act does not have much significance for the state as very few rural families own land above the ceiling limit. As can be seen from table 3.3, about 60.16% of the land holdings are below the size of less than one hectare – below the level of economic viability (covering only 20.8% of the total cultivated land). 39.9% have between one to 7.5 hectares covering about 71.08% of the cultivated land (1985-86). On the spot study of the impact of ceiling Act by the Law Research Institution (in villages Hajo & Sonapur) revealed very few families owned land above ceiling limit. Besides, the distribution of excess land among the landless-actual cultivators did not take place. The reason was that excess land was not available for settlement to the new cultivators since in most cases there were already cultivating tenants with whom settlement took place. Thus very few new landholders were created.²¹

¹⁹ Task Force' Report, Law Research Institute, Eastern Region, Guwahati High Court, Guwahati. 1973

²⁰ Progress Report of Acquisition/Distribution of Ceiling Surplus Land, State Land and Waste land Development council, Government of Assam, 1997.

²¹ Task Force' Report, Law Research Institute, Eastern Region, Guwahati High Court, Guwahati. 1973.

The distribution of the acquired land also faced problems due to border disputes with neighbouring states, local disputes, inundation by recurrent floods, erosion etc. as also the prevailing instability, which diverted attention away from the distribution process. More significant is the report of the task force of the Law Research Institute, which admitted that there was gap in precept and practice, between policy pronouncement and its actual execution. Also the long period taken in resettlement operation was attributed to too many stages in the operation.²²

On the whole land reforms have not been carried out successfully in the state in the absence of a strong political will, (also because landowners are supporters of those in power) and due of an element of coercion in the implementation. And thus because of the attempts to frustrate the objectives by the socially, economically and politically strong landowners progress has been patchy. In the post liberalisation period with the relaxation of the land regulation and ceiling on land holdings, regression of the situation becomes highly probable. All these exercise on land distribution on the principle of social justice will lose relevance as the new economic order takes root. To begin with land legislation has already been slackened to facilitate (large) farmers/ corporate to adopt market- friendly agriculture and allied activities.

3.3. Production policy

On the production front the policy pursued by the country so far has been one of achieving self- sufficiency in food and creating a buffer stock too (to avoid a

²² *ibid.*

repeat of the experience of 1960s when food had to be imported). But since it was not necessary for each state to be self-sufficient in all agricultural commodities, the state's policy has been to grow crops, which suit the agro-climatic conditions. The state's attention was therefore focussed on efforts to increase production of principle crops like rice, jute, mustard while also introduce cultivation of pulses, wheat and other oilseeds in favourable areas. Centrally sponsored schemes such as Special Rice Program, National Oilseeds Development Program, National Pulse Development Program, etc. were introduced in a number of select Blocks within the state. Such programs were to be supported by improved seeds, chemical fertilisers etc. which were to be distributed through government agencies such as Assam Seeds Corporation, HFC, and Assam Agro – industrial Development Corporation.²³

The centrally sponsored Special Rice Production Program introduced in the state in 1985 covered 37 Blocks; National Pulse Development Project (1986-87) covered districts of Barpeta, Sonitpur, Kamrup, Nalbari and Jorhat. The National Oilseeds Development Project was in 12 districts. Earlier, during the 4th plan period which coincided with the Green Revolution (it did not take place in Assam) the state undertook program of Intensive Area Development Program (IADP) in 162 identified Blocks, IAAP (Intensive Agriculture Area Development) in 80 Blocks, while the HYV program was superimposed on these blocks.²⁴

²³ Fifth Five Year plan, Draft, Planning and Development Department, Assam, Sixth Five Year Plan, Draft, Planning and Development Department, Assam.

²⁴ The Progress Of Important Plan Schemes Including Those Having Bearing on 20-Point Programme, Review of, Department of Agriculture, Government of Assam, 1987-88.

Thus a policy aiming at intensive development of select areas and select crops supposedly under most favourable conditions of water availability, institutions and infrastructure was followed. Obviously, with such intensive efforts production of foodgrains increased inspite of being overshadowed by frequent floods (except for 1988–89, 4 years of devastating floods when production of rice and pulses fell heavily. An effective flood control measure has yet to take shape). Yet production fell short of the fixed targets in the absence of an adequate input support system, inadequate irrigation facilities and other agricultural infrastructure.

Intensive efforts were to be continued in the following plan periods with emphasis on appropriate technology, HYV practices, expanded input support and spread of irrigation. Efforts were made also to provide the farmers with location specific technology by field trial stations. HYV program, multiplication/ distribution of seeds, distribution of fertilisers, plant protection practices thus became an essential feature of each plan period. The culmination of each plan period saw the non-realisation of the target of total foodgrains production, and in some cases of even jute, oilseeds etc. Table 3.4 brings out the gap between physical target and actual achievement in food grains as well as some major crops.

Table.3.4. Crop production- performance of agriculture.

(in lakh tonnes/bales)

Crops	1985-86		1989-90		1994-95	
	Target	Achievement	Target	Achievement	Target	Achievement
Rice	30.80	28.53	35.00	27.95	41.53	32.79
Food-grains	33.3	30.35	38.25	29.55	44.30	34.90
Oilseeds	2.07	1.67	3.12	1.88	2.80	16.40
Sugar-cane	28.00	24.40	33.13	16.66	25.00	15.05
Jute & mesta	10.40	11.78	10.48	8.29	11.30	9.50

Source: Directorate of Agriculture, Khanapara, Assam.

Policies towards uniform development for all districts were absent during 1962-63 to 1988-89. The result has been districtwise imbalance in growth in agriculture in terms of area, production and productivity (table 3.5). During the period from 1961-62 to 1989-90, the annual rate of increase in area has been very small-1.11%. Relatively, area under summer rice have increased more-by 10.61% annually than Autumn or winter rice.²⁵

²⁵ Phukan, U., 1991 : "Agricultural Development: Distribution of Gains and Inter-District Analyses", Agro-Economic Research Centre for N.E. India, Assam Agricultural University, Jorhat, Table A-3, p.91.

Assam Crop Production-Performance of Agriculture

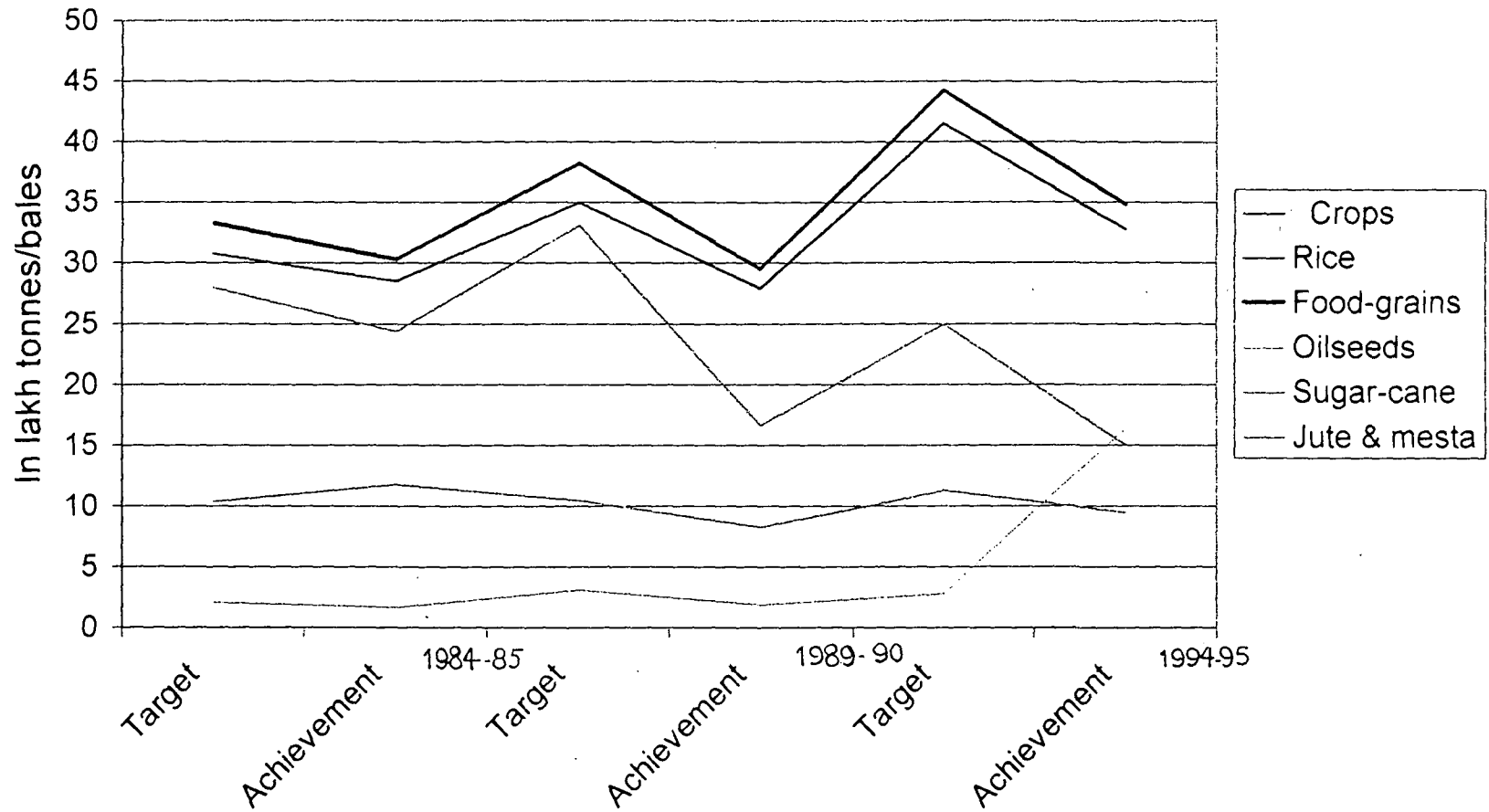


Fig. 12. :

Table 3.5. Districtwise (old) percentage annual change in area, production and yield of rice, 1962-63 to 1988-89.

Districts	Percentage annual change		
	Area	Production	yield
Goalpara	1.39	1.58	0.14
Darrang	0.79	1.25	0.37
Kamrup	0.61	1.81	1.02
Nogaon	1.08	2.05	0.74
Sibsagar	0.47	1.64	1.03
Lakhimpur	2.56	3.19	0.36
Cachar	0.15	1.16	0.96
Assam Hills	9.98	13.98	1.03
Assam	1.11	2.01	0.06

Source: Agro-economic Research Centre for North East Region, AAU, Jorhat. Districtwise,

As evident from the table,

- The growth in area under rice was maximum in the hill districts-an annual increase of 9.98%.
- In the plain districts, Lakhimpur and Dibrugarh together had the maximum increase in area under total rice-2.56% annually.
- The lower Assam districts of Goalpara, Dhubri, Kokrajhar and Bongaigaon which together formed the old district of Goalpara registered 1.39% annual increase in total area under rice.
- In all other districts, the percentage annual increase was less than 1%.
- Maximum annual rate of increase in area of rabi (summer) rice during this period has taken place in the old district of Kamrup which registered a rate of increase of 52.04% annually.

- Decline in area of the crop was registered in Sibsagar and Lakhimpur (old districts).

In other crops, significant increase in area occurred in case of oilseeds, pulses, wheat and cotton. Significant increase in area of –

- pulses occurred in Goalpara, Sibsagar and Lakhimpur. In these districts annual rate of growth during the same period (1962-63 to 1988-89) was 6%, 5.08% and 6.47% respectively.
- cotton occurred in Darrang, Nogaon, Lakhimpur and Cachar-141.22%, 155.74%, 104%, and 193.58% annual growth rate respectively.
- in all districts area under rapeseed and mustard increased during the same period.
- increases in area under wheat also occurred particularly in Nogaon, Darrang and Lakhimpur districts.
- growth in area of almost all these crops was very small in all the other districts.²⁶

Districts where negative growth in area was registered was in Kamrup and Goalpara that too in cotton growing areas. In case of jute area, except in the old districts of Sibsagar and Assam Hills, in all other districts growth in area was minimal or negative. Negative growth occurred in Kamrup, Darrang, Nogaon, Lakhimpur, and Cachar.

As part of the production policy High Yielding Variety-chemical fertiliser-irrigation package of program was adopted within the state, but only since the eighties. It was also marked by restricted area coverage and restricted crops.

²⁶ Ibid., Tables A-5-12.

Largely responsible was the limited area under irrigation- one of the requirement for the H.Y.V technology. Also the target crop was paddy, though H.Y.V. wheat, oilseeds and pulses were also introduced in parts. Thus by mid 80's 43% of the area under H.Y.V. crops were covered by paddy -an area of 10.16 lakh hectares.²⁷ By mid 90's this figure rose to 22.50 lakh hectares- i.e., 70% of total the area under H.Y.V.²⁸

Trend in H.Y.V. paddy adoption as seen in table. 3.6. highlights that district wise, area under H.Y.V. (paddy) have been highly irregular- a reflection of irregular adoption and constrains due to limited irrigation facilities.

The table highlights that districtwise,

- lower Assam have registered more area coverage- Barpeta, Nogaon, Kamrup ranking 1st, 2nd, and 3rd in this respect. Sonitpur, Golaghat and Darrang, follow in that order.
- districts of upper Assam have been slow in adoption of this technology. They rank somewhere between 15 to 20 in H.Y.V. area coverage.
- southern districts including the tribal/hill districts of Karbi Anglong and N.C. Hill districts have very small area coverage.
- districts of Barak valley districts have been neglected/ overlooked in this respect.

²⁷ Agriculture and Allied programme- Annual Plan 1987-88 - Reviw of Progress, Department of Agriculture, Government of Assam, p.14.

²⁸ Agricultural Development in Assam- Report, 1998-99, Department of Agriculture, Govrnment of Assam, p.9.

Table.3.6. Districtwise area under H.Y.V. paddy as percentage of total cropped area.

Districts	1987-88	1993-94	1996-97
Lakhimpur	33.05	18.99	
Dhemaji		15.04	20.62
Sonitpur	28.14	25.01	32.46
Tinsukia		9.48	22.38
Dibrugarh	27.02	23.72	23.57
Sibsagar	22.69	27.41	26.12
Jorhat*	26.77	26.20	24.95
Golaghat		36.17	25.16
Nogaon**	32.93	34.77	62.76
Morigaon		35.42	57.63
Nalbari	20.34	34.59	41.10
Barpeta	27.14	36.49	35.11
Darrang	29.02	31.87	27.38
Dhubri	15.32	16.91	20.54
Kokrajhar	31.66	13.45	17.79
Bongaigaon		13.57	24.28
Kamrup	25.96	40.84	36.19
Goalpara	30.78	18.74	28.20
Cachar	41.83	32.25	25.63
Karimganj	28.39	39.25	43.43
Hailakandi		50.96	41.88
K. Anglong	34.56	42.12	42.19
N.C. Hills	27.02	16.42	16.71

Source: Directorate of Agriculture, Assam.

The production policy of raising production through production efficiency has made only a very modest impact on productivity, but mainly of principal crops like rice, mustard oil and jute. In all the major crops, yield rates increased very

marginally during the same period. In jute, yield rate increased considerably in Darrang –by 20.19% annually despite decrease in area. Increase yield rate of the crop was very small in all other districts.

Production levels in rice increased from 1633 million tonnes in 1960- 61 to 3270 million tonnes in 1990- 91 and to – 3383 million tonnes in 1997-98. This increase can mostly be accounted for by increase in area under the crop. In fact, during the period 1962-63 to 1988-89, annual yield rate was negative in case of Autumn rice in Kamrup, Darrang and Goalpara.²⁹ Significant increase in yield rate during this period occurred only in Sibsagar and Nogaon where the annual rate of increase was 1.33% and 2.65% respectively. In case of summer rice too these two districts alone registered rise in yield rates of about 3.03% in Nogaon and 1.48% in Sibsagar. And between 1991 to 1997 productivity of total rice has increased only marginally from around 1308 kg/hectare to 1359 kg/hectare.³⁰

Even in case of other food grains like wheat, and pulses, production and productivity though increased relatively is still low. Steps towards higher production and productivity through introduction of HYV seeds have not yielded the desired results. Though each five year plans emphasised the need for improvement in agricultural sector, the priority given to it in the state was much below that given to social services or community development. Throughout, it figured third in the list of priorities, receiving only about 15%-20% of the total state plans provision, despite being the most important sector of the state economy.

²⁹ Phukan, U., op. cited., Table A-4, pp.92-96.

³⁰ Agricultural Development in Assam, Report of, cited op., P.4.

The unnaturally high increase in population has offset the efforts to attain self-sufficiency. Rather, a shortfall in the total production and the increasing requirement of these food grains thus have compelled the state to procure from outside over the years.

3.4. Policy on inputs

3.4.1. Seed policy

The HYV program necessitated a progressive policy for the seeds sector, better seeds being the single largest contributor to increasing agricultural productivity.³¹ The National Seeds Corporation (NSC), was founded in 1963. The basic objectives envisaged in the formation of NSC was to provide regulatory services of seed certification, seed quality control, seed processing, packaging marketing and training in various aspects of seed production.³² Subsequently, state seed corporations were set up to meet the requirements of seeds in different regions. Thus seed multiplication and marketing activities were under the control of governmental agencies. Since these agencies could not meet the seed requirements, an urgent need was felt to formulate a national policy and effectively implement it. Therefore the National Seed Policy (NSP) was formulated and implemented in 1975 with financial assistance from World

³¹ In the national scenario, the tremendous increase in foodgrains production from about 50 million tonnes in the initial years after 1947 rose to 170 million tonnes in 1991-92. This increase was primarily due to use of HYV seeds that responded to irrigation, chemical fertiliser, pesticides and intensive management practices.

³² Shetty, K.P.V., "Quality Seeds: Private Initiative to the Fore" in *Survey Of Indian Agriculture, The Hindu*, 1992, P.123.

Bank.³³ Characteristic has been numerous Acts in the past – Seeds Act (1966), Seed Rules (1988), and Seed Control Order (1983), etc. Under the Seeds Act (1966) as on September 30, 1995, 2237 varieties of HYV seeds was released.³⁴ But the policy framework of the country on seed/ planting material hitherto had been regulatory with excessive legislation. It had been restrictive rather than progressive, inward looking and bureaucratic rather than entrepreneurial.

Within Assam, non availability of quality seeds in abundant quantities has often been cited as one the factors lowering productivity of crops. Almost the entire requirement of wheat, jute, pulses and vegetable seeds are procured from the outside the state. Even in case of traditional crops like paddy and mustard, it is not self-sufficient. This is despite the fact that in keeping with the seeds program of the country, the state had taken up seed production program by way of setting up seed farms, expansion of existing farms as well as seed testing and certification.³⁵ Foundation Seed Farms of the Assam Agricultural university (an establishment of the Indian National Agricultural Research System-NARS) have been engaged in production of breeder seeds. Seed farms in the following stations were set up to produce and supply breeder seeds, viz.

- 1.Kokilabari in Kokrajhar district for rice, soyabean and horticulture,
- 2.Shillongani, Nogaon for jute and rice,
- 3.Tokowbari, Nogaon for oilseeds, pulses and rice,
4. Titabar, Jorhat for rice³⁶

³³ Ibid. P. 123.

³⁴ Rai, Mangala. "Crucial Role For Certification" in *Survey of Indian Agriculture, The Hindu*, 1995, p.165.

³⁵ Draft five-year plans, and Reports of Five Year Plans, Directorate of Agriculture, Guwahati.

³⁶ Annual Report, Directorate of Extention Education, Assam Agricultural University, Jorhat, 1996, p.2.

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³³ Ibid. P. 123.

³⁴ Rai, Mangala. "Crucial Role For Certification" in *Survey of Indian Agriculture, The Hindu*, 1995, p.165.

³⁵ Draft five-year plans, and Reports of Five Year Plans, Directorate of Agriculture, Guwahati.

³⁶ Annual Report, Directorate of Extention Education, Assam Agricultural University, Jorhat, 1996, p.2.

High yield rates were obtained wherever the farmers adopted these high yielding seeds. Comparative analyses of yield rates of beneficiary and non beneficiary farmers showed that the beneficiary farmers, by adopting the H.Y.V. seeds of sali paddy and the related technologies have enjoyed additional production up to 1040 kg. per hectare. Similarly, additional per hectare gains recorded winter and summer vegetables were more than Rs. 4000/-. Such efforts have however not been of success much as the certified seeds from these seed farms have not altogether been able to replace the farm-saved seeds. The insufficient quantity supplied by the supplying agencies is generally held responsible for such a condition.³⁷ As a result dependence on outside sources for various seeds other than paddy and mustard continues.

The internal liberalisation as essential to integration with the market economy has adverse implications for this aspect of farming. Not just the reduced role of state agencies in seed subsidies and seed supply but also the patent regime depresses the peasant population. Inability to procure branded seeds year after year in case of reduced internal intervention could only imply increased poverty for the peasantry.

3.4.2. Fertiliser policy

Fertiliser policies included regulation of fertiliser prices and providing subsidies, and educating the farmers about fertiliser application and its

³⁷Gogoi, Bharati. 1996: 'Impact of Transfer of Technology by the Directorate of Extension Education in Programme and Non Programme areas', Agro-economic Research Centre for North East India, Assam Agricultural University, Jorhat, pp. 64-65.

contribution to increasing productivity. A strategy of promoting fertiliser consumption by regulating fertiliser prices and providing subsidy was widely followed within the state too as in other parts of the state. Subsidy on fertiliser in the past has been as high as 50% - meant for the weaker sections. However, fertiliser consumption has remained one of the lowest within the country. In mid 80's it was 5.2 kg. per hectare, by the end of the 7th plan (1989-90), fertiliser consumption was only 7.1 kg.³⁸

To improve the situation, a project of imparting fertiliser education to the farmers was undertaken in 1981-82. The Indian government jointly with Britain started the Indo-British Fertiliser Education project-IBFEP in selected blocks in the states of Assam, Bihar, Madhya Pradesh, Orissa, West Bengal and Uttar Pradesh. The focus was on small and marginal farmers, and the attempt was to improve socio-economic conditions of farming community as a result of increased productivity. In the state, in the first phase (1981-86), 4 blocks each in districts of Darrang, Goalpara, Nogaon and Sibsagar were selected for the experiment. Altogether IBFEP covered 16550 hectares in the state. Of these, 8452 hectares were meant for paddy.³⁹ Result, however, was disappointing. Though application of fertilisers in the selected villages in the selected blocks were higher, the effect did not spread to other neighbouring villages. Altogether marginal increase in application was registered only in the two years 1987-88 and 1988-89. But after that again there was a decline in application. Table 3.7 indicates the position during that period.

³⁸ Report of Seventh Five year Plan, Directorate of Agriculture, Guwahati, 1989-90, p.8.

³⁹ Directorate of Extension Education, A.A.U., Jorhat, 1987.

Table.3.7. Fertiliser application in Assam –1985-86 to 1989-90

Year	Total application (*000 tones)	Application kg. per hectare
1985-86	16.72	5.2
1986-87	16.70	5.2
1987-88	23.70	7.1
1988-89	25.46	7.6
1989-90	23.70	7.1

Source: Department of Agriculture, Assam. 1990-91.

The position of the districts in terms of fertiliser consumption can be seen from the table given in Appendix V. Only two districts of Lower Brahmaputra Valley, and Cachar in Barak Valley have relatively higher levels of fertiliser application, though still very low by national standards. What is very significant is the fact that most of the districts where application is very low—less than 10 kilograms per hectare, have large flood prone areas (see fig. 5, chapter II). Apparent from the table is the temporal variation in fertiliser application in the districts. The districts where increase has been registered are—Dhemaji, Tinsukia, Sibsagar, Jorhat, and Cachar. Small increase in application has also been registered in the districts of Sonitpur, Dibrugarh, and Nalbari. In the other districts fertiliser application has remained more or less the same or even declined. The existing difference in fertiliser consumption—spatial and temporal, within the state reflects the irregularity in policy implementation.

Evidently chemical fertilisation application have not gained popularity in many of the districts. Such low levels of fertilisation consumption can be held

responsible for the low yield rate. Fertilisation application has increased during the period under examination in just seven districts while in fact it has declined in as many as eight districts.

3.5. Policy on Agriculture infrastructure development

3.5.1. Policy on irrigation

The national policy on irrigation was to aim at maximum production per unit of area through-

- multi- cropping in areas with ample water resources,
- maximum production per unit of water in regions of medium and low rainfall,
- protection of maximum area possible in drought areas,
- irrigation of maximum area during the rainy season by supplementing rain,
- maximum utilisation of irrigation facilities, and
- conjunctive use of surface and groundwater.⁴⁰

The policy was for command area development for utilization of irrigation supplies. Within the state development of irrigation was secondary to that of power, which together with irrigation shared the plan allotments up to the fifth plan. Sixth plan onwards it was clubbed together with flood control- in both cases development of irrigation received smaller allocation (Appendix IV b). In 1977-78 net irrigated areas was only 295 thousand hectares (10.94%) of the

⁴⁰ "Policy and Strategy", Report of National Commission on Agriculture, Part I, 1978, p. 76.

net sown area which was 2697 thousand hectares. Gross irrigated area was 14.79%.⁴¹

Related to the strategy of H.Y.V.- chemical fertiliser technology, was the strategy of the creation and extension of irrigation facilities in the state as an essential part of this technology. Here the policy was to develop quick maturing minor irrigation. The total irrigation potential created in the state upto 1988-89 is given in table 3.8.

Table 3.8. Irrigation potential created and utilised.

(*000 hectares)

Year	Created/utilised	Minor	Medium	Total
1979-80	Created	239.5	93.96	333.49
	Utilised	88.32 (36.87)	41.07 (43.71)	129.39 (38.79)
1980-81	Created	249.97	94.32	344.29
	Utilised	99.69 (39.88)	51.35 (54.44)	151.04 (43.87)
1981-82	Created	260.02	105.92	365.94
	Utilised	156.99 (60.37)	50.04 (47.25)	207.03 (56.57)
1982-83	Created	273.72	115.92	389.64
	Utilised	141.59 (51.72)	61.47 (53.03)	203.07 (52.12)
1988-89	Created	318.89	113.21	432.11

Source: Department of Irrigation, Statistics Cell, Guwahati.

Note: figures in the bracket indicate percentage utilised.

Facilities created were not uniform through out the state (as evident from table 3.9), and districtwise discrepancy characterised the efforts. Highest concentration of potential created was in Nogaon. This was due mainly to the development of medium irrigation, which covered an area of 55665 hectares of cropland. Evident from the table, relatively higher proportion of facilities is

⁴¹Statistical Handbook, Directorate of Economics and Statistics, Assam, 1980, pp.66-67.

created in the state are power driven tube wells, shallow tube wells and pump sets. Limited and often irritable power availability for agricultural purpose has resulted in underutilisation of these facilities. Also lack of proper field channels have hampered the use of the potential created. The extent of underutilisation during the period 1979-80 to 1982-83 is also evident from table 3.8.

Utilisation of minor irrigation potential created was less than 40% in 1979-80 and 1980-81. Total potential utilised was not even 50% of the potential created. In the following years minor irrigation potential utilised was 60% of that created and the total utilised was also more. However in the following year again only about half the irrigation potential created was utilised. Districtwise too utilization of potential created has been very uneven. Utilization has been more in the lower and central Brahmaputra valley in relative terms.

3.5.2. Policy on Agricultural Credit

Credit mobilisation as a policy towards enabling small and marginal farmers to obtain their inputs for timely application has not been much successful. Per hectare credit availability in the state is very low. It was only Rs. 14/- by the end of 7th plan. Non availability or inadequate availability of credit has been one of the most constraining factor in agricultural development. Lack of adequate finance in agriculture has been responsible for low levels of adoption of new agronomic practices, technology, and distress sale of produce by the farmers. Lack of adequate institutional finance placed majority farmers at the mercy of village moneylenders and middlemen. In 1955-56 the percentage of villages covered by agricultural societies was only 12% as against 68.9% in

Tamil Nadu, 79% in Maharashtra, and 63% in Punjab.⁴² Establishment and development of co-operative societies at the Gaon Panchayat levels was one of the strategies to make credit available to the agricultural sector. In 1956-57 there was 182 agricultural societies. By 1983-84, the number of primary Agricultural Credit societies grew to 2232. However in the next ten years the number of such societies have come down to 1907 by 1995-96.⁴³ Financial institutions such as Assam Co-operative Apex Bank and numerous scheduled, Nationalised commercial banks have also been credit advancing agencies. Total outstanding credit of these banks to the agricultural sector till 1991 was to the extent of Rs. 7721 crores.⁴⁴ Noteworthy, major portion of credit advanced has generally gone to the plantation sector. Besides, credit advanced is through Gaon Panchayat, as Gaon Panchayat Samabhai Samities - GPSS and not directly to the farmers from the Banks. This procedure is reported to cause delays or misappropriation of the funds. This discourages the cultivators to consider availing such credit facilities. Recovery of loans by commercial banks has also been generally very poor.

3.5.3. Agricultural Pricing

Till now no sound pricing policy for agricultural products exist in the state, though at the national level, the Agricultural Price Commission had formulated the policy on agricultural price. Nationally, it was realised that as motivation to

⁴² Reserve Bank of India, 1958.

⁴³ Registrar of Co-operative societies, Assam, 1996.

⁴⁴ State Level Bankers' Committee Meeting, Agenda Notes, State Bank Of India, 1995.

farmers who have incurred high cost of production adopting the new technology must get remunerative prices, which would not only cover the cost but ensure a profit too. At the minimum support price (MSP) fixed from time to time, the government agencies procured the products from the farmers to be distributed to consumers through its public distribution systems (PDS). As per the pricing policy of the government of India the entire marketable produce that is offered for sale is purchased at the MSP rates. Expected to address the question of income security of the farmers by raising and stabilising the price of essential crops, past experiences have not been encouraging. In fact the market failure of the past two –three years point to the failure of this arrangement. It is seen that the support price does not benefit the small farmers at all since they do not have marketable surplus. They constitute more than 60% of the cultivators in Assam; or those who do manage to produce some surplus but cannot hold the produce till off season when price is high as practised by the bigger farmers elsewhere. The lack of adequate storage facilities too have compelled the farmers to dispose of the surplus at unremunerative prices in the absence of government price support. Only at times the state government fixes support price of certain agricultural produce which are marketed by agencies like F.C.I., Jute Corporation and Statefed Ltd. Thus the income fluctuation, leading to an uneconomic pattern of farm investment decision and a general reduction in economic efficiency.

3.6. Policy on Research & Technology, and its dissemination

Linked to the production policy, fertiliser and area extension under irrigation and integrated pest management policy, the strategy of developing and

providing research and development of new and appropriate agronomic practices, and facilitate their field diffusion. The Scientific Policy Resolution adopted by the Government of India in 1958 emphasised that “the key to national prosperity ... lies in the modern age in the effective combination of three factors- technology, raw materials and capital, of which the first is perhaps the most important...”⁴⁵ This applies to agriculture as well. Therefore, the scientific policy and in the field of agriculture should be, among other, to “foster, promote, and sustain, by all appropriate means, the cultivation of scientific research in all its aspects- pure, applied and educational...”⁴⁶ Linkages between research and extension were expected to give a new momentum to achieve the objective of technology development in agriculture. In effect, the country built up one of the largest agricultural research system in the world, with some 30,000 scientists employed in some 49 central research institutes, 30 national research centres and 10 project directors, all functioning under the ICAR.⁴⁷ Within each state, there are a host of zonal research institutions, Kishan Vidhyapiths and Krishi Vigyan Kendras.

Since the late seventies the National Agricultural Research Project and the National Agricultural Extension Project was established for more effective and systematic linkages between research and extension. The ICAR for the NER come into existence in January 1975, with the objectives of-

- raising local competence in scientific manpower,

⁴⁵ “Policy and Strategy”, Report of National Commission on Agriculture, 1948, part I. p.81. and Strategy”, Report of National Commission on Agriculture, 1948, part I. p.81.

⁴⁶ *ibid.*

⁴⁷ India developed a substantial pool of agricultural scientists and qualified manpower by the mid sixties supported by Rockefeller Foundation. A large infrastructure for conducting research and verifying the results of the new HYVseeds was thus built.

- collecting indigenous, cultivated and wild germplasm in crops and animals, their evaluation and utilisation for improvement and preservation,
- develop each area according to its potentials through research in food crops, fruits, vegetables and other economically viable crops and animals.

The Assam Agricultural University, Jorhat, and Khanapara, and a number of research stations were set up to carry out research program. The Assam Agriculture University (A.A.U.), and the zonal research institutions- Regional Research Stations receive central aid to undertake need based research such as the Tea Research Institution (Tocklai), Rice Research Institution (Titabar), Regional Agricultural Research Station for Jute (Shillongani). Agricultural Research and Education altogether had received an allocation of Rs 26.30 crores during the 7th plan, while the expenditure of Rs.41.29 crores had far exceeded the allocation. These stations were completed only during the 7th plan period. Rs. 135.35 lakh was spend during the 7th plan period.⁴⁸ Allocation for the 8th plan was Rs.230.00 lakhs. These Research institutes have had considerable success in producing new varieties/strains of crops, and in technological innovations. Specific plant varieties- of rice, jute, tea, oilseeds etc by these institutes mentioned in chapter II have been found to increase yield rates tremendously. However, facilities for extending the good research results to the farmers remained limited. Extension services did not receive as much sincere efforts.

Directorate of Extension Education was set up with services the primary function of extension education through four broad organised services. These were Farm Advisory services, Demonstration (transfer of Technology

⁴⁸ Draft Eight Five Year Plan, Government of Assam, 1990-95, p.35.

program), training, and Farm information services. Eleven Field Trial Stations (F.T.S.) were established under the project Agricultural Area Development Program (AADP) to facilitate diffusion of improved farm technology and agronomic practices so developed.⁴⁹ Before that the service of technique of transferring agricultural technology was launched in the state only since 1978. The emphasis of the program at the field level was to train contract farmers on modern farm practices. “Lab. to Land” transfer of technology was to be effected through the Transfer of Technology (T.O.T.) projects integrated in the K.V.Ks with functions of -

- farm advisory services: demonstrations of latest farm technology through “learning by doing”,
- Vocational training of the farmers, farm women,
- In service training,
- On farm research/farming system research.

22 Kishan Vidhyapiths and two Krishi Vigyan Kendras (K.V.K) at Gossigaon (Kokrajhar), and Napam (Sonitpur), in existence in the state prior to 1990, did not succeed much in imparting the required training. In Assam (which was in zone III of the national T.O.T. project), constraints were faced in implementing the extension projects. Fragmented holding, lack of clear title of land, lack of availability of inputs in time, language barrier, and the limited number of K.V.Ks placed constraints to the projects.⁵⁰ Thus the program was not much

⁴⁹ Annual Report, Directorate of Extension Education. A.A.U., Jorhat, 1995-96, p.1.

⁵⁰ Ibid.

successful. These de-motivated the contract farmers from continuing the training program. Continued even in the 8th plan as National Agricultural Extension program, institutional development in terms of manpower and operational framework was reported to be achieved.⁵¹ An Allocation of Rs.2204 lakh was earmarked against the 7th plan expenditure of Rs 1160. To solve the constraints faced by non availability of inputs in time, "Agricultural Growth Centres" under the national 14- point socio-economic program was envisaged. These centres in one block of each district, were to serve as "single window" centre for input distribution, as well as custom service of farm machinery and plant protection equipments.⁵²

3.7. Plan outlay and priorities

The priorities of the state five plans have been at variance from that of the national plans. Top priorities were accorded in the national plans to power, irrigation industries and transport and communication development. In the state plans, social services, co-operatives and development were given priorities at the cost of the very important sectors like irrigation, power, transport and communication. The building up of a solid infrastructure was neglected till very late. Emphasis on improvement of agriculture, considered along with infrastructure, as a strong foundation for industrialisation was not therefore laid till very recently. History and theory have stressed the role of financial surplus

⁵¹ Draft Eight Five Year Plan, 1990-95, Directorate of Agriculture, Assam, p.38.

⁵² *ibid.*

in agriculture in economic development. For countries that have wanted to industrialise, agriculture had been earmarked the main source of resources that could be captured for investment in the emerging new activities. Failure to grasp this doctrine is evident from the priority given to this sector in the state development plans. Top priority were given in the first national plan to irrigation, and transport, and to industries and transport in the second thus a definite step in building a strong industrial base. State's preoccupation on the other hand was with social services and community development during both the plan periods was at the neglect of all others. Plan allocation for all others were relatively smaller than for these two. Table a & b in the Appendix IV brings out the relative proportion of outlay and allocation of the state during each plan periods.

Agriculture received between 13% -around 18% of the total plan outlay, remaining third in the priority. First plan allocation for this sector was 19.00% of the total plan provision, while actual expenditure on it was much less at 17.68% (evident from the table in Appendix IV a). This percentage came down to 13.7% in the next plan and here too there was underutilisation as 13.5% of the total plan outlay was actually spent. As a result the physical target of food grains production of additional 3.83 lakh tonnes was not realised, it increased by on another 2.5 lakh tonnes by the end of the 2nd plan. In the absence of adequate irrigation facilities to the farms agricultural and effective flood control measures, besides others, production failed to pick up even during the 3rd plan. Production behaved erratically, yield of food grains fluctuated between 817 kg/hectare in 1962-63 to 9.89 kg/hectare in 1964-65, and for none of the major crops the output target was realised. Against the target of

additional 4.2 lakh tonnes in food grains only 3.89 lakh tonnes was achieved.⁵³ This despite the increase in outlay in this sector to 20.3%. actual expenditure continued to be lower.

Except in during the second plan, plan allocation and actual expenditure under the head “irrigation & power” was relatively considerable in all the other state plans. However the figures are misleading if we consider development of irrigation alone. Lion’s share of the plan allocation under the head was received by power sector at the cost of irrigation development. Major share went to the development of Umiam hydel project and Namrup Thermal project. In continuation of these ongoing projects the power sector received the first priority in the fourth as well as the fifth state plan. Development of irrigation facilities was mainly of minor irrigation, and major benefits went to few districts of lower Assam as observed earlier. As irrigation continued to be neglected, gap between the physical target and actual achievement in minor irrigation continued, in the efforts of both Agriculture Department as well as irrigation department. The medium/major irrigation projects undertaken in the first two plans –namely the Jamuna, the Sukhla, the Longa irrigation projects remained incomplete even by the fourth plan. Of the fifth plan target of 114 thousand hectare of new areas under minor irrigation, 91.65 thousand hectares of new areas only got minor irrigation potential. Of the target of bringing 66.75 thousand hectares of new areas under medium/ major irrigation, the achievement was only 35 thousand hectares

From the 6th plan onwards separate amount was earmarked for power and irrigation together with flood control received separate allocation. However

⁵³ Plan Document, Third five Year Plan, Assam, 1961-66, pp.30-31.

considering the magnitude of the problem faced within the state both in terms of limited irrigation facilities, and floods, the plan allocation of 14.55% for the 6th, 15.9% for the 7th, and 8% for the 8th plan were very small particularly under the combined head. Both need to be treated separately. This and the somewhat reduced allocation in agriculture and allied activities too kept the target of agricultural production from being realised. While the shortfall in foodgrains production by the end of fifth plan was 2.05 lakh tonnes, by end 7th plan the short fall was to the magnitude of 8.70 lakh tonnes (22.74%) in total food grains.⁵⁴

3.8. Policies in the tea sector

Tea plantation, initiated and developed by British enterprise, the producing units in the form of public limited sterling company, had policies and programs formulated by a Board of directors in London. During this time the concerns of the board of directors were to increase production by way of area expansion. Attractive concessions in respect of grant of land, taxes and low wages were offered.⁵⁵

After independence the policy of the Indian government have been to bring the non-tea area under grant area. It also imposed heavy export duty, excise duty and local taxes on the produce, enacted various legislation and framed status to be implemented by the owners of the tea estates. Various legislation and

⁵⁴ Review of Progress of Fifth, Sixth and Seventh Five year Plans, Directorate of Agriculture, Government of Assam.

⁵⁵ Report of Plantation Enquiry Commission, 1956, Part I, pp. 22-23.

policies were enforced in phases after independence. In the first phase the following were enforced-

- Capital Control Issue Act 1947,
- Foreign Exchange Regulation Act, 1947,
- Export Import Control Act, 1947
- Minimum Wages Act, 1947 and Factory Act, 1948,
- Plantation Labour Act, 1951 and Industrial Development and Regulation Act, 1951,
- Tea Act, 1953.⁵⁶

The CCIA compelled the companies operating in India to obtain official permission for bonus issue and the FERA restricted the earning in foreign exchange. The Acts thus protected the local producers by established ways of restricting foreign competition with the local producers and securing the domestic market for them. As per the MWA, wages in the tea plantation were to be fixed and notified by the respective government from time to time, and the Factory Act were to limit the permissible hours of work of a factory worker. However irregularities in the enactment of these Acts have come to light from the report of the Tea board, particularly by companies operating in Assam.⁵⁷

The Tea Act, 1953 restricted cultivation of tea in India and export of tea from India by foreign companies.

⁵⁶ Banerjee, G. "Structural Changes in Tea Industry" in *"Tea Plantation Industry: Structural Changes"*, Guwahati, 1996, pp.180-183.

⁵⁷ *ibid.* p.180.

The period from 1956 to 1992 marked the second phase of structural changes during which time a new set of legislation and policies were introduced, viz.

Industrial Policy Resolution, 1956;

Company Act, 1956,

Tea (Distribution and Export) Control Order, 1957;

Tea Waste (Control) Order, 1959;

Monopoly and Restrictive Trade Practices Act, 1969;

Foreign Exchange Regulation Act, 1973,

Tea Marketing Control Order,

The various policies as part of the five year plans.⁵⁸

Through the Tea (Distribution and Export) Control Order activities of exporters and distributors were sought to be regulated through a system of licensing. Licenses were to be issued, in compliance with the norms of quality in terms of product and packing, by the Licensing Authority. This had the effect of curbing movement of export and distribution of tea harvested by foreign owned companies. License is required also for maintaining a warehouse having a floor space of not less than 5000 sq. ft – amended in 1983 to not less than 400 sq. metres - for storing, blending or packing.⁵⁹ Presently all godowns irrespective of floor space have to obtain a license. Implementation of the order have not been smooth. Licenses were being granted and refused arbitrarily as also the renewal of licenses. Such irregularities impose restrictions on the producers and exporters.

⁵⁸ *ibid.* pp-184-189.

⁵⁹ Report of the Plantation Inquiry Commission, Part I, 1956, p.247.

3.8.1. Effects of the policies

Significant changes in ownership, management and export occurred as a result of the implementation of Foreign Exchange Regulation Act, Monopoly and Restrictive Trade Practices Act, etc. By the implementation of the former Act, foreign tea companies were to be converted to Indian tea companies with Indian participation of not less than 26% of the equity of the company. Main objective was to prevent private monopoly as well as to regulate the activities of managing agents and to prevent concentration of economic powers. Thus the number of foreign tea companies were reduced to 225 in 1977, as apparent from table 3.10. This accounted for only 1.7% of the total estates, from 508 in 1958.⁶⁰

Table.3.10. Changes in ownership of tea estates from Sterling to Rupee companies by year group.

Year group	Proportions of tea estates by		Changes in proportion		Progressive changes since 1958	
	Sterling	Rupee	Sterling	Rupee	Sterling	Rupee
1958-60	6.2	93.8	-	-	-	-
1961-63	4.3	95.7	- 1.9	+ 1.9	-1.9	+ 1.9
1964-66	3.6	96.4	- 0.7	+ 0.7	-2.6	+ 2.6
1967-69	3.1	96.9	- 0.5	+ 0.5	-3.1	+ 3.1
1970-72	2.6	97.4	- 0.5	+ 0.5	-3.6	+ 3.6
1973-75	2.1	97.9	- 0.5	+ 0.5	-4.1	+ 4.1

Source: Tea Board, Calcutta.

Note: The break up figures relating to Indian owned estates were not available from 1977 onwards because all foreign tea estates were Indianised as per Amended FERA Act, 1973.

Area wise, the foreign owned tea estates too came down from 151 thousand hectares (46.5%) in 1958 to just 108 thousand hectares (about 32.5%) in 1977. The share of production too came down.⁶¹ Table 3.11. shows the details.

Table.3.11. Area and production of tea during 1958 to 1977 (five year interval)

Year	Tea estates in %		Tea area in %		Production in %	
	Foreign	Indian	Foreign	Indian	Foreign	Indian
1958	6.9	93.1	46.5	53.6	52.9	47.1
1963	4.0	96.0	44.0	56.0	48.0	52.0
1968	3.1	96.9	39.4	60.4	43.0	57.0
1973	2.3	97.7	35.4	64.6	41.0	59.0
1977	1.7	98.3	32.5	67.5	38.4	61.6

Source: Data compiled from the records available with the Tea Board, Guwahati.

Note: The break-up figures relating to foreign and Indian owned tea estates were not available from 1977 onwards because all foreign tea estates were Indianised as per the Amended FERA Act of 1973.

Data from 1641 large tea estates showed that the foreign agency houses in 1975 controlled 231 estates representing 14% of total, against 21.8% in 1969, 29.5% in 1965, and 31.9% in 1959. The coverage by these houses was 100 thousand hectares accounting for 28.3% as against 52.45 in 1969, 53.6% in 1965, and 58.8% in 1959. Total production of tea in estates controlled by them was 1,548 thousand kg. contributing 32%. The share of their contribution was 66.7% in 1959.⁶² Thus a tremendous decrease as a result of the policies.

⁶⁰ Banerjee, G. "Changes of Ownership" in *Tea Plantation Industry: Structural Changes*, Guwahati, 1996, pp.119-202.

⁶¹ *ibid.*

⁶² Records of Tea Board, Calcutta. ⁵¹ Draft Eight Five Year Plan, 1990-95, Directorate of Agriculture, Assam, p.38.

The effects of all these Acts, Legislation and policies besides changes in ownership and production, were mergers, state ownership and emergence of corporate sector. Mergers were effected with other companies or formed under new names during the period 1955-77 to economise the expenditure thereby reduce the cost of production and improve the quality of tea. Further, some of the tea estates in Assam and West Bengal were taken over by the respective state governments and 'Assam Tea Corporation' and the West Bengal Tea Development Corporation' were formed to look after these estates.⁶³

Change in ownership had various other consequences. The Indian owners were indebted to banks for purchase of foreign tea estates at high rates of interests. They experienced difficulties in maintaining the estates. Developmental works like extension, replacement, replanting etc. were therefor neglected. Failure in timely payment of wages strained the labour- management relation affecting production.⁶⁴ The policy of export regulation through licensing via the Tea (Regulation of Export Licensing) Order, 1984, have had a very adverse effect on exports. The order was basically to check under- invoicing (export at lower unit value of tea). But while trying to plug leakage of foreign exchange due to lower unit price, volume of export have been affected. In this background, any measure, which may affect the volume of exports, should be viewed with great circumspection.

⁶³ Banerjee, G., op. cited, p.202.

⁶⁴ Report of Plantation Inquiry Commission, 1956.

3.8.2. Impact on productivity of tea

The changes in area did not have any adverse impact on the yield rate of tea in the foreign controlled estates. Despite the fact that share of area owned by sterling companies declined continuously during the period from 1958 to 1977, yield per hectare showed a steady increase as reflected in table 3.11. The better application of cultivation and cultural practices coupled with expertise in manufacturing methods kept the yield rates of the sterling companies higher than in the rupee companies. The plan periods too saw continued protection of domestic producers. The Tea Association of India, which was set up in 1956 aimed at protecting the interests of Indian tea growers in North East India. All such protections will be removed by year 2003- a reversed trend when foreign companies will be free to operate here. This also has adverse implications for the domestic growers/producers.

Table.3.12. Yield rate by types of ownership during 1958 to 1975.

Year	Sterling	Increase/ decrease	Rupee	Increase/ decrease
1958	1141	-	877	-
1960	1091	-40	870	-14
1962	1154	-9	954	-40
1964	1192	+54	1034	-1
1966	1182	+15	1024	+20
1968	1245	+45	1082	+38
1970	1267	+65	1128	+41
1972	1542	+153	1128	+4
1974	1588	+36	1248	+68
1975	1606	+18	1213	-33

Source: Compiled from records of Tea Board, Calcutta.

Yield Rate of Tea by type of Ownership 1958-1975

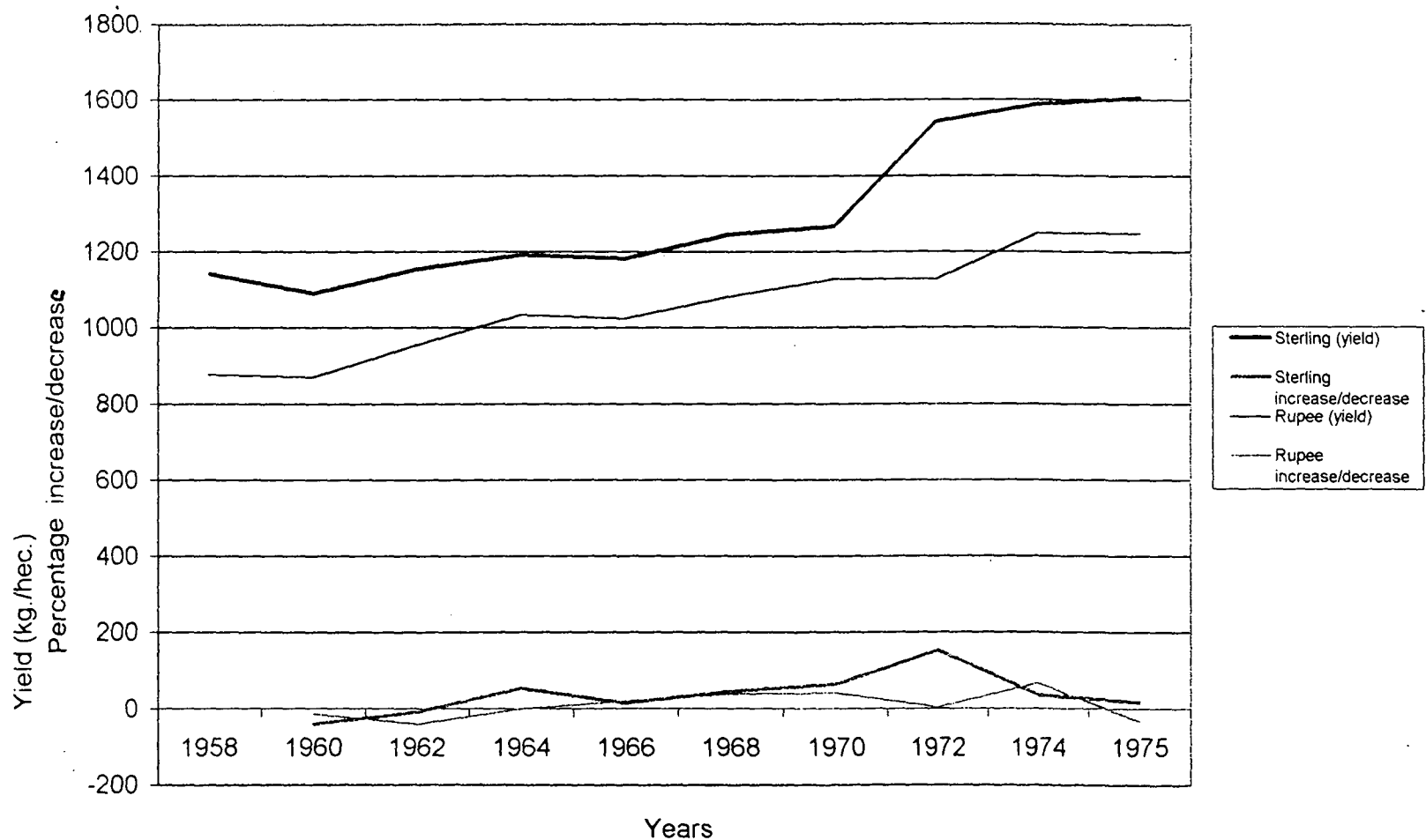


Fig. 13

3.8.3. Role of Policies of Tea industry in Insurgency

It is undeniable that much of infrastructural development particularly transport development within the state was linked to development of the Tea industry during the British period (this has been discussed in detail in chapter II). However such developments were limited to tea growing areas. The transport lines- rail-lines and roadways, connected only the tea gardens to the markets via the river ports on river Brahmaputra. The Brahmaputra waterways too was developed with this sole purpose. Later such lines were extended to the oilfields and coalmines. But the contribution of this profit oriented agro-industry to the general economic development of the state and improving the economic condition of the people of Assam have been minimal. It continues to have very feeble linkage with the local economy. Most of the profits are repatriated and benefits flow outside the state.

Though providing employment to lakhs as labourers, as well as clerical and medical appointments in the tea gardens, the Employment Review Committee of the Assam Assembly in its successive reports made the startling disclosure about the deprivation of local people in the matter of employment.⁶⁵ It is the general believe of the people of Assam that the Indian bourgeoisie capitalist & profit seeking investors have scrupulously maintained their coveted planters' raj in the gardens, reaping enormous benefits. In the process depriving the local economy of its legitimate shares of benefits.

It is these grievances then which people of Assam and more particularly the youths of Assam nurture. These were some of the grievances that fuelled the

student movement- the All Assam Students Union. These were also some of the reasons for the rise of insurgency within the state. This is evident from the fact that it is this industry which is the prime target of the insurgent group – the United Liberation Front of Assam (ULFA). Acts of kidnapping tea garden personals, of demand of huge ransoms, and extortion from the tea estates have been the ways by which the insurgents have been targeting the industry.

Under such conditions of threats the industry is faced with two alternatives. Either to meet the demands of the insurgents, or shift their area of operation outside the state. While a handful were compelled to shift or pull out of the state (such as Tata Tea, Brook Bond, Lipton and Hindustan Livers), many large estates have not only fulfilled the extortion demands of the insurgents, but have also been patronising them. These estates have been found to meet medical expenses of the insurgents, provide them air fare etc. Newspapers and magazines carry extensive reports on the links between tea industry and insurgent groups. This was evident during previous regime in Dispur. Thus the industry that had bred antagonism and resulted in rise of insurgents have also supported them.

⁶⁵ As quoted from Baruah, Bhuben “Assam’s Tea Industry: Myth & Reality” in *The Sentinal*, June 4, 2000.

Observations and Conclusion

Evident from the forgoing analysis is the fact that policies in agriculture adopted in the state were adaptations to the national policies. The main elements of the agricultural policies adopted for implementation within the state were land reforms policies, production policy, input policy, policies for supporting services in agriculture (such as research and development, extension education, credit, etc). But there were no specific policies formulated to address the specific developmental needs of the state agricultural sector. There existed no single integrated agricultural policy, and in case of the state, no clear-cut policies existed. What did exist were strategies to improve each component of the sector separately, without striving for co-ordination amongst these various components of agriculture.

These policies were adopted in phases. In the first phase, Agrarian Reforms was initiated to secure distributive justice in terms of land resources. The imbalances that existed in landholding patterns were sought to be rectified through land Acts. Similarly, the undesirable tenurial system was sought to be rectified too by abolishing Zamindari system, intermediaries, and placing ceiling on landholdings sizes. These acts did not succeed in the intended purposes. Numerous reasons including landlord-tenant nexus, vested interests of Zamindars and politicians, disputes, inundation of land by floods, etc defeated the purpose of land reforms.

Different strategies were applied for increasing production- of different crops, of popularising high yielding varieties of seeds and new agronomic practices, of popularising fertiliser application, and of expanding irrigation potentials.

Irregularities, inherent problems and disparities in the outcome marked each effort. Problems such as inadequate and faulty input delivery system thwarted the effort of increasing productivity through introduction of improved seeds. This problem and the inaccessibility of major rural areas restricted the effects of fertiliser policy. Only few central and upper Assam districts registered relatively higher fertiliser application. Stress was given to increasing foodgrains production, and particularly of rice. The cumulative outcome was shortfall in target of production.

Development of irrigation facilities was not uniform throughout the state. Potentials developed which were quick maturing minor and medium projects such as power driven tube wells, shallow tube wells, and pump sets, were under-utilised. Less than 50% of the potentials created were utilised. Erratic power available for agricultural purpose was mostly responsible for this. Except for jute, which is the next most important commercial crop after tea, any policy on marketing and price for the crops, were not formulated. Even in case of jute the system created was not effective due to imperfect market mechanism and the jute cultivators invariably sold their produce to middlemen at prices lower than the fixed price.

Maximum government role was intended in production and distribution functions. But cumulative effect was limited. Non-implementation of programmes, and/or monopoly of the public sector in the programme operations are apparent. General inefficiency due to such monopoly retarded the programmes. In case of research and technology development in agriculture, and extension/dissemination of the same, there was monopoly of the public sector. This monopoly of the public sector resulted in inefficiency in

the programme of agricultural extension services. Hence much of the benefits of research in new/better crops, agronomic practices etc. did not reach the farmers. Sustained use/adoption of new technology also did not occur in the absence of poor extension services.

In the plantation sector, the government with the purpose of protecting the domestic planters and exporters introduced policies of control and regulation. The effect of all these policies was mergers, changes in ownership and production. At the same time yield rates came down. The policy of the estate owners, of repatriation of revenue earned from the industry, first by the British, and later by the Indian outside the state gave rise to discontentment. This, and the appointment of persons in capacities other than mere workers, earned wrath from the militants.

Considerable influence exerted by the prevailing geographical conditions on policy operation within the state is apparent although they did not exert as much influence on the policy decisions for development of the sector. Unlike the highly homogenous ecosystems of irrigated areas, the entire state demonstrates a highly diverse agro-ecology of a rainfed environment. The HYV technology designed exclusively for risk-free irrigated conditions, therefore bypassed the ecologically harsh environment of the state. As a result the state's contribution to rice production remained less than those in the non-traditionally rice producing states like Punjab. The stress on increasing area and yield of rice as the single most strategy to attain self sufficiency in food production was also based on the geographical reality of abundance of rainwater. Wheat or pulses or other foodgrain does not find a physically favourable condition in the wet climatic condition. These crops though could

be cultivated in the dry winter months but require regulated water supply. In the absence of adequate irrigation facilities, this too have been less gainful. Extensive inundation during the kharif season demands a more location specific technology package. Thus the agricultural research centres, more specifically the centre in Titabar, to work towards obtaining varieties suited to flood conditions as well as quick maturing varieties. The efficiency of chemical fertiliser was much reduced due conditions of heavy rains and incidence of floods. The short duration of sunshine and overcast skies too reduced the photosynthetic efficiency of the HYV seeds.

Much physical changes took place also due to the policies of the British. Their policies of opening up the region, of starting tea plantation, of encouraging immigrants to settle in sparsely populated tracts and of introducing jute cultivation, all changed the geographical configuration of the state considerably. The thickly forested areas of Upper Assam gave way to tea estates, well connected by railways to the riverports. Charlands and swampy areas in the districts of Goalpara(old district), Barpeta, Kamrup, Darrang, Lakhimpur gave way to jute cultivation. Also more intensive cultivation practices changed the agricultural scenario of the state. The added impact of the swelling population encroached upon forest and tribal land for the purpose of expanding agriculture and for settlement.

The past policies did not succeed much in improving the agricultural sector, but changed considerably the physical conditions within the state. Forested areas grew smaller; percentage of barren land decreased as also areas under miscellaneous use was brought under crop cultivation. On the whole more areas were brought under the plough.

CHAPTER IV

Analysis of State Agricultural patterns.

4.1. Historical Background

The intrinsic fertility of Brahmaputra and Barak valleys has supported centuries of intensive cropping. Essentially a wet and subsistence farming system, the cropping pattern was dominated by paddy cultivation. It remains so even today. Farming here exhibits uniqueness. The uniqueness emanates from the co-existence of subsistence wet paddy cultivation with modernized, commercialised tea plantation and the most primitive Jhum cultivation. Each geopolitical development within the region brought considerable change to the farming system. Much change occurred with the coming of Ahoms. They developed the technique of growing rice through irrigation and terracing.¹ They were also responsible for the introduction of Sali paddy mainly in the low-lying areas, which were found to be more productive. Sali paddy cultivation became dominant cropping practice among the Ahoms. However it was confined to Upper Assam. Ahu and Boro (flood resistant) paddy cultivation continued to be prevalent in Lower Assam.²

The second significant change in agriculture in the state occurred with the British occupation of the region, and the discovery of tea in the jungles of Upper Assam. At the time of the British occupation of the region, as Mills

¹ Guha, A. 1968. *Medieval N.E. India; Polity, Society & Economy*, Occasional Papers No. 19.

² Guha, A. 1966 : *Ahom Migration : Its Impact on Rice Economy of Medieval Assam*, Artha Vijayana, Vol. 9, No. 2, pp. 135-136.

observed, farmers were prevented from raising more than one crop throughout the year.³ They were unable to protect their farms against drought or inundation. The discovery of tea gave an altogether new turn to agriculture. Keen to establish a commercialised agricultural economy, from which they would derive maximum economic benefits, “a prosperous plantation sector was carefully organised ...”⁴ However tea plantation did not affect the rice cultivation carried out by the indigenous farmers.

Another significant change in the agricultural scenario was brought about by the colonisation scheme of the Britishers as already noted in chapter II. This scheme brought immigrants from high density areas of East Bengal who came and started jute cultivation in the wastelands and marshes. Prior to this cultivation of jute was unknown to the indigenous Assamese. Jute cultivation therefore started on a commercial basis by the Britishers with the help of these immigrants

Impact of immigration on agricultural patterns- Migration not only changed the demographic characteristics of the state as noted in chapter II, the process also brought profoundly changes to the agricultural patterns. Migrant farmers, largely peasants from E. Bengal settled in major parts of the valleys and took to crop cultivation. Frequent floods and heavy population pressure on agriculture in the home country, and vast virgin fertile land in the new destination had provided the incentives to the immigrants. These agrarian colonisers, along with plantation laborers began to colonised large tracts of the Brahmaputra and

³ Mills, A.J.M. 1980 (rev.). *Report on Assam, 1853*, Delhi, p. A1-4.

⁴ *ibid*

Barak valley.⁵ They settled down in the 'char lands' of Goalpara district. After 1911 these settlers spread to other parts of Brahmaputra valley - particularly to 4 lower and central districts-Goalpara, Kamrup, Darrang and Nowgong.⁶ These migrant cultivators who went to the marshy and fallow lands started jute cultivation in these areas. Consequent was change in crops cultivated, cropping pattern, cropping sequence, as well as in production and productivity. An examination of the proportion of area under jute reveals that the districts with high concentration of peasant migrants have higher proportion of jute acreage. The districts -Dhubri, Goalpara, Kokrajhar, Bongaigaon (earlier, formed part of Goalpara), Barpeta, Kamrup, Nogaon and Darrang have relatively higher percentage of area under jute (table.4.5, fig. 18). These are the districts where there is largest concentration of immigrant settlers. Districts with relatively more areas under jute (1998-99) are in lower Brahmaputra Valley and some central districts. These districts are Dhubri (7.8% of the total cultivated area of the district), Morigaon (4.54%), Goalpara (4.02%), Bongaigaon (3.2%) and Darrang (3.2%) (table 4.4). Nogaon has about 2.94% of the total cultivated area of the district under the crop, Kokrajhar - 2.7%, Barpeta - 2.47% and Kamrup - 2.39%. In comparison, other districts have less than 2% of cultivated land under the crop.

⁵ This began with the initial settlement on Goalpara district and extended eastward across the valley with each successive wave. Migration was also encouraged by the British to settlers in the sparsely populated parts by offers of land on specially favorable terms. After 1911, the vast and sparsely populated valleys attracted migrants from the overpopulated areas of E. Bengal, particularly from the Mymensingh district. The Census Report of 1931 indicated the source of this influx to be Mymensingh and Sylhet district. See Gopalakrishnan, R. (1991) : "Politics of Migration" in *Political Geography of India's North East*, Vikash Publishing House Pvt. Ltd., New Delhi, pp. 117-119.

⁶ Gopalakrishnan, R. (1991) : "Politics of Migration" in *Political Geography of India's North East*, Vikash Publishing House Pvt. Ltd., New Delhi, pp. 117-121.

These same districts too have relatively higher proportion of area under other cash crops such as oilseeds (particularly rapeseed and mustard). Districts of lower Brahmaputra valley- Dhubri (10.00%), Kokrajhar (11.54%) (earlier part of Goalpara), Bongaigaon (11.08%), Darrang (10.6%), Morigaon (10.9%), and Lakhimpur (11.06%), Dhemaji (13.55%) in Upper Assam are districts with more proportion of total cultivated areas under oilseeds. Most other districts have less than 7% of the total cropped area under this (table.4.5). Significant increase in area under pulses too was registered in Goalpara, Darrang, Nogaon, and Cachar. Productivity of crops is higher too in these lower and central districts in comparison to the districts of upper Assam.

Similarly, use of better agronomic practices is notable in these districts. For example these districts have relatively more areas under irrigation, as well as relatively more fertiliser application. Fertiliser application within the state is highest in Nogaon at 14.5 kilograms/hectare, followed by Cachar-16.28 kilograms/hectare. Fertiliser application is much lower in other districts (table in Appendix V). Cropping intensity is also higher in Barpeta (175%), Dhubri (171%), Kokrajhar (168%), Nogaon (160%) and Karimganj (earlier part of Cachar- 173) as evident from table 4.1.

Thus range of crops cultivated, cropping pattern and cropping sequence, were consequent of these historical developments. They also reflect the diverse agro-climatic conditions, topographic features, social, demographic and economic condition of the people.

4.2. Land use pattern

Efficiency in land use is a factor contributing to economic growth. In the high density Brahmaputra valley land is becoming a scarce resource whose demand exceeds the supply, and the use to which it is put is becoming more complex. The competing demand for its use for other non agricultural activities have made further expansion of agricultural land impossible, while putting more pressure on the current agricultural land. Of the total geographical area of 78,48,000 hectares, 42,24,682.7 hectares are agricultural land, i.e. about 53.83%. Forest covers about 25.27 % of the total geographical area.⁵

Agricultural land use in the state is categorized as gross cropped area, net sown area, kharif area, rabi area, double cropped area, plantation and fallow land. 4633403.6 hectares of land is gross cropped which includes net sown area and area sown more than once (double cropped). Net sown area is 31,86,381.8 hectares, or about 40.62% of the gross cropped area, while area sown more than once is about 32.49%. About 1.39% is fallow land-points to the more intensive use of land as pressure on land increases. These fallow land includes the agricultural land those land which have been cultivated earlier but at the time of reporting, lie uncultivated during both the seasons i.e. rabi and kharif. Figure 14 (a) shows the distribution pattern of different categories of agricultural land use in the state.

A considerable percentage of land is also not available for cultivation, which includes barren land, pastures and grazing, and also marshy, swampy land

⁵ Statistical Handbook, Directorate of Economics and Statistics, Assam, 1997, pp. 62-63.

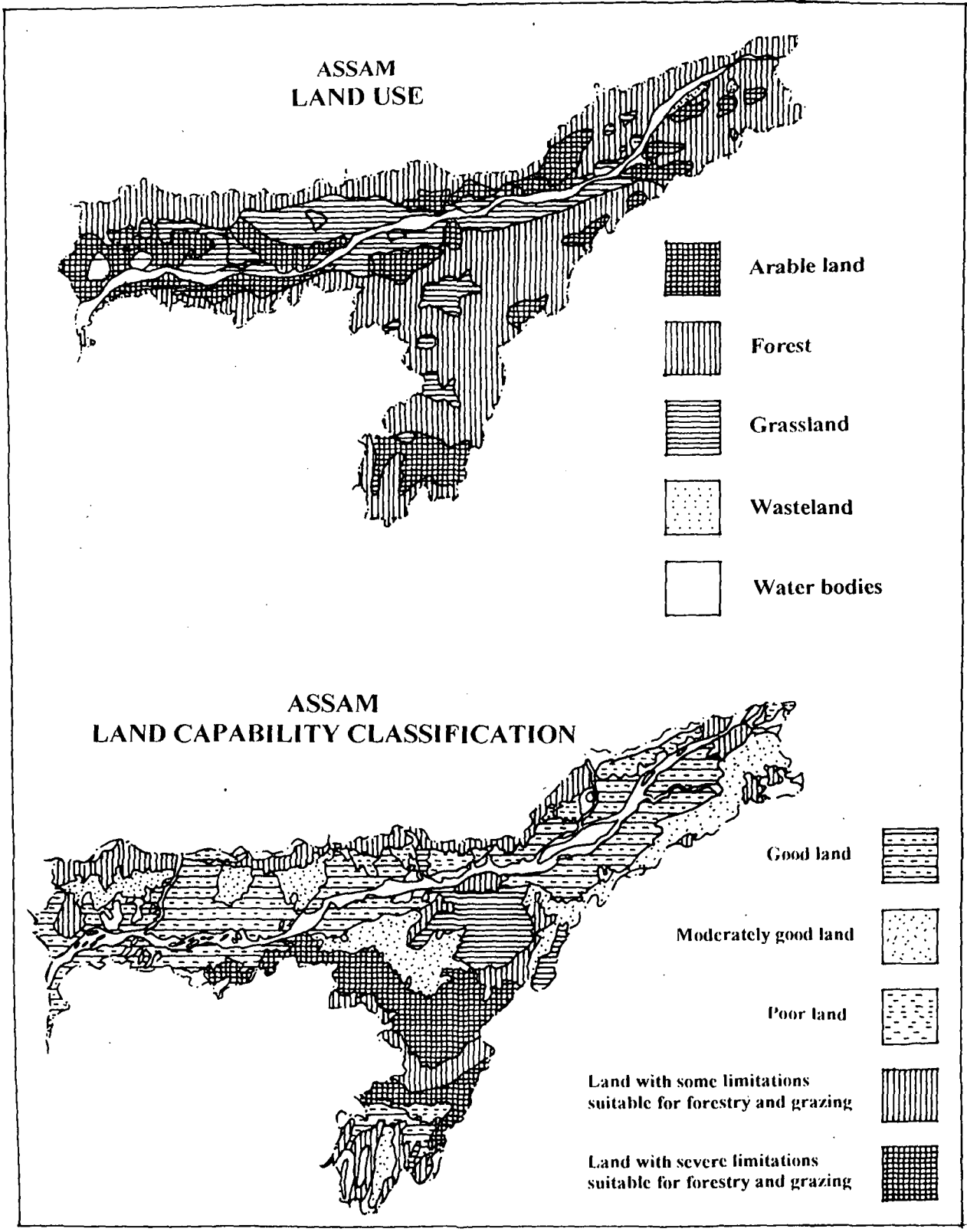


Fig. 13

which remain water-logged, with water hyacinth vegetation. Of the total agricultural area, again 32% are land devoted to plantation – which includes besides tea areas, also land used for crops such as coconut, arecanut, and fruits. Generally with the exception of tea cultivation of these other crops are confined to the homesteads.⁶ Fig 15 presents the agricultural land use in Assam.

Largest proportion of land is given to cultivation of kharif crops. In the state as a whole, 65.31% of the total agricultural land is devoted to cultivation of kharif crops such as sali paddy, boro paddy, and jute. This percentage varies for the different districts. The three districts of Goalpara, Karbi Anglong and Kokrajhar have the highest percentage of kharif area- more than 90%. Dibrugarh, Sibsagar, Tinsukia, Karimganj and Jorhat are the districts where area under both kharif as well as rabi crops area relatively less.⁷ The reason is obvious – much of the agricultural lands in these districts are utilized for tea plantation. In areas ravaged by floods during the kharif season, cultivators have devoted relatively considerable areas to rabi crops too- an useful alternative to withstand the flood damages. Thus in Barpeta, proportion of area under rabi crops is more than those under kharif crops. Bongaigaon, Dhubri, Kamrup and Karbi Anglong too have considerable area under rabi crops. Limited irrigation facilities in the districts of Dhemaji, Dibrugarh, Hailakandi, Goalpara, Golaghat, Jorhat, Sibsagar, Sonitpur, Lakhimpur and N.C.Hills have been responsible for very low proportion of area under rabi crops – in all these districts less than 30% of the total cropped area is under rabi crops. The two hill districts i.e. Karbi Anglong and N.C. Hill district, have very small

⁶ Land Use/ Land Cover Maps and Reports of Assam, Assam Remote Sensing Centre, Guwahati, 1990

⁷ *ibid.*, pp G-14, K-11, N-14, U-13, and W-13.

proportion of area under cultivation. Reasons are obvious – the large hilly and forested tracts where cultivation is difficult. In Karbi Anglong, only 13.97% of the district's total 10,00,257 hectares of land are identified as agricultural land. This is confined to the plains of Dhansiri, Kopili and Jamuna where sedentary agriculture is practised. This whole area is also double cropped because of flat terrain, alluvial soil, and assured irrigation. Forest covers about 43.64%, and 42.38% are jhum land. In the N.C. Hill district, percentage of agricultural land is even less – only about 1.29% of the district's land area of 489792 hectares. About 59.68% are jhum land of which again at the time Landsat-TM data obtained (October 1986 and April 1987), only 6.03% were currently under shifting cultivation and 53.65% were abandoned jhum land. Forest covers another 38.55% of the land. Area under agriculture in all the plain districts is large. In most districts more than 70% of the total geographical area is under agriculture.⁸

Table 4.1. Agricultural land use in Assam.

(as percentage of gross cropped area)

<i>Area</i>	<i>Percentage</i>
Net sown area	40.62
Kharif area	65.31
Rabi area	38.51
Double cropped	32.49
Fallow	1.39
Plantation	32.02 (% of total agricultural area)

Source: Land Use/Land Cover Maps and Reports of Assam,

Assam Remote Sensing Application Centre, Guwahati.

⁸ *ibid.*

ASSAM

Agricultural land use

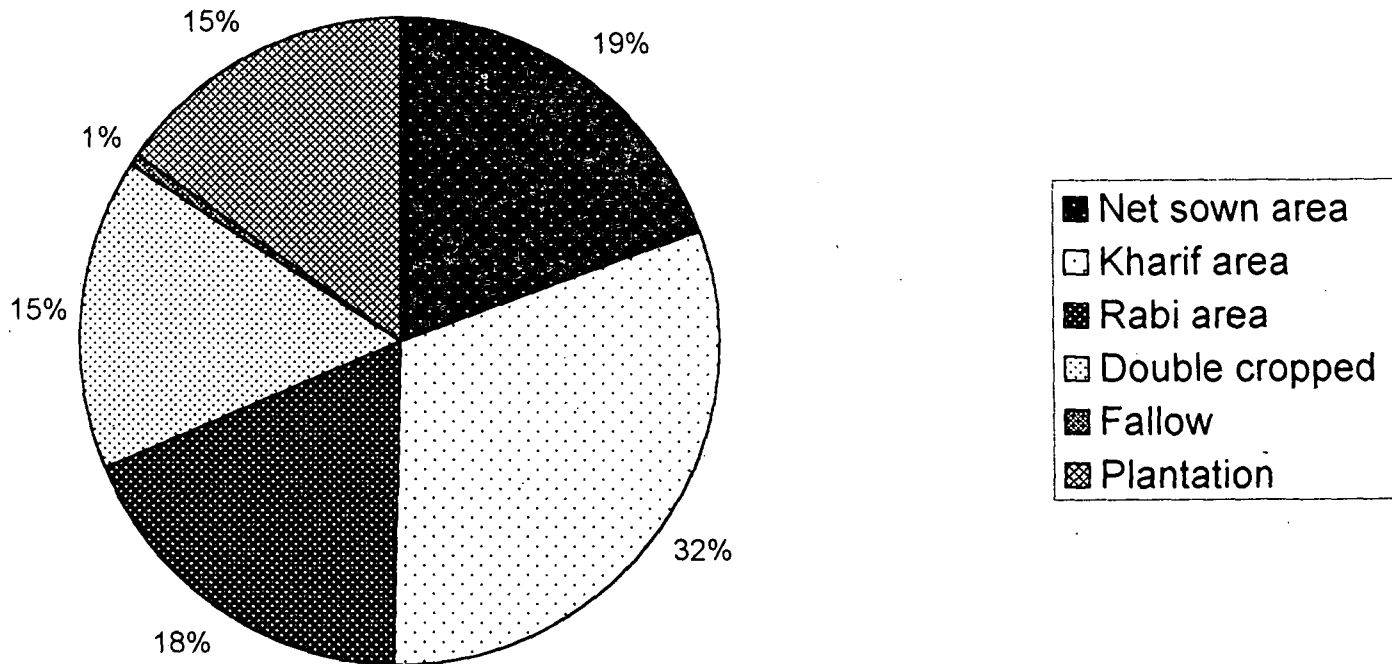


Fig. 15.

Table 4.2. Districtwise agricultural landuse.
(percentage of gross cropped area)

<i>District</i>	<i>Net cropped area</i>	<i>Kharif</i>	<i>Rabi</i>	<i>Double cropped</i>
Barpeta	94.32	71.69	80.3	57.68
Bongaigaon	88.43	87.09	67.6	55.12
Cachar	75.22	54.14	38.49	17.40
Darrang	77.19	70.74	38.92	32.47
Dhemaji	81.80	81.80	10.48	10.48
Dhubri	87.05	77.82	71.85	62.62
Dibrugarh	41.90	38.28	10.53	6.91
Goalpara	90.84	90.84	27.19	27.19
Golaghat	64.99	54.90	23.74	13.66
Hailakandi	54.80	35.03	19.77	19.77
Jorhat	67.74	59.36	29.85	21.47
Kamrup	89.85	85.97	57.05	53.17
Karbi Anglong	93.95	93.95	89.57	89.57
Karimganj	53.70	49.70	29.04	25.04
Kokrajhar	94.71	92.99	87.06	85.35
Lakhimpur	74.50	73.34	24.91	23.75
Morigaon	66.40	73.20	44.85	30.01
Nagaon	87.71	83.00	52.73	48.02
Nalbari	83.34	79.12	51.59	47.37
N.C. Hill district	100	100	27.78	27.78
Sibsagar	52.94	49.20	10.90	7.17
Sonitpur	79.94	72.68	17.18	9.93
Tinsukia.	29.78	27.64	13.83	11.69

Source: Land use/land cover maps and Reports of Assam,
Assam Remote Sensing Application Centre, Guwahati.

Comparative study of the patterns for the years, 1978-79, and 1981-82 with the present pattern of landuse within the state reveals significant changes. With high demand for land, percentage of barren land and uncultivated land have been utilised, so also the cultivable wastelands (table.4.3). Proportion of fallow land has decreased. The percentage of fallow land have decreased over the same years from 1.45% in 1978-79 to 0.89% in 1993-94 in case of fallow land other than current fallow. Current fallow land too has declined from 1.28% to

0.94% and uncultivable land from 8.2% to 6.81% respectively.⁹ Probability is that these lands have been brought under the plough. Area sown more than once has almost doubled from 7.98% to 15.06% from 1987-88 to 1993-94. Net cropped area has increased from 33.76% to 35.45%. This indicates an intensification of land use. Earlier studies have revealed the increase in net sown area by 7.08 lakh hectares between 1950-51 to 1975-76.¹⁰ On the whole, total cropped area has increased by 8.88%—from 41.63 to 50.51%.

Table 4.3. Percentage change in land use pattern in Assam-1978-79, 1981-82 and 1993-94.

Land use	1978-79	1981-82	1993-94
Forest	25.27	25.27	25.65
Land put to non-agri. Use	11.22	11.64	13.03
Barren and un-cultivable	19.65	19.62	18.21
Permanent pastureland other grazing land	2.36	2.34	2.01
Land under misc. trees crops not included area	3.26	3.14	2.71
Cultivable waste	1.77	1.32	1.16
Fallow other than current fallow	1.45	1.07	0.89
Current fallow	1.28	1.12	0.94
Net area sown	33.76	34.46	35.45
Area sown more than once	7.87	9.60	15.06
Total cropped area	41.63	44.06	50.51

Source: Statistical Handbook, Assam, 1980-81, 1981-82, 1993-94, 1995-96.

⁹ Calculated from data on classification of area of Assam obtained from Statistical Handbooks, Assam, 1980, 1994 and 1995, pp. 50-51, 50-51, and 62-63.

¹⁰ Das, M.M., 1984. "Peasant Agriculture in Assam: A Structural Analysis", Inter-India Publications, New Delhi, p. 51. A steady increase in net sown area was noted by Das since 1951-52 onwards which he attributed to pressure of agricultural population. Increasing population and limited scope for alternative occupation is also held responsible for the shrinking size of per capita agricultural land.

Assam

Change in Land use pattern 1978-79 to 1993-94

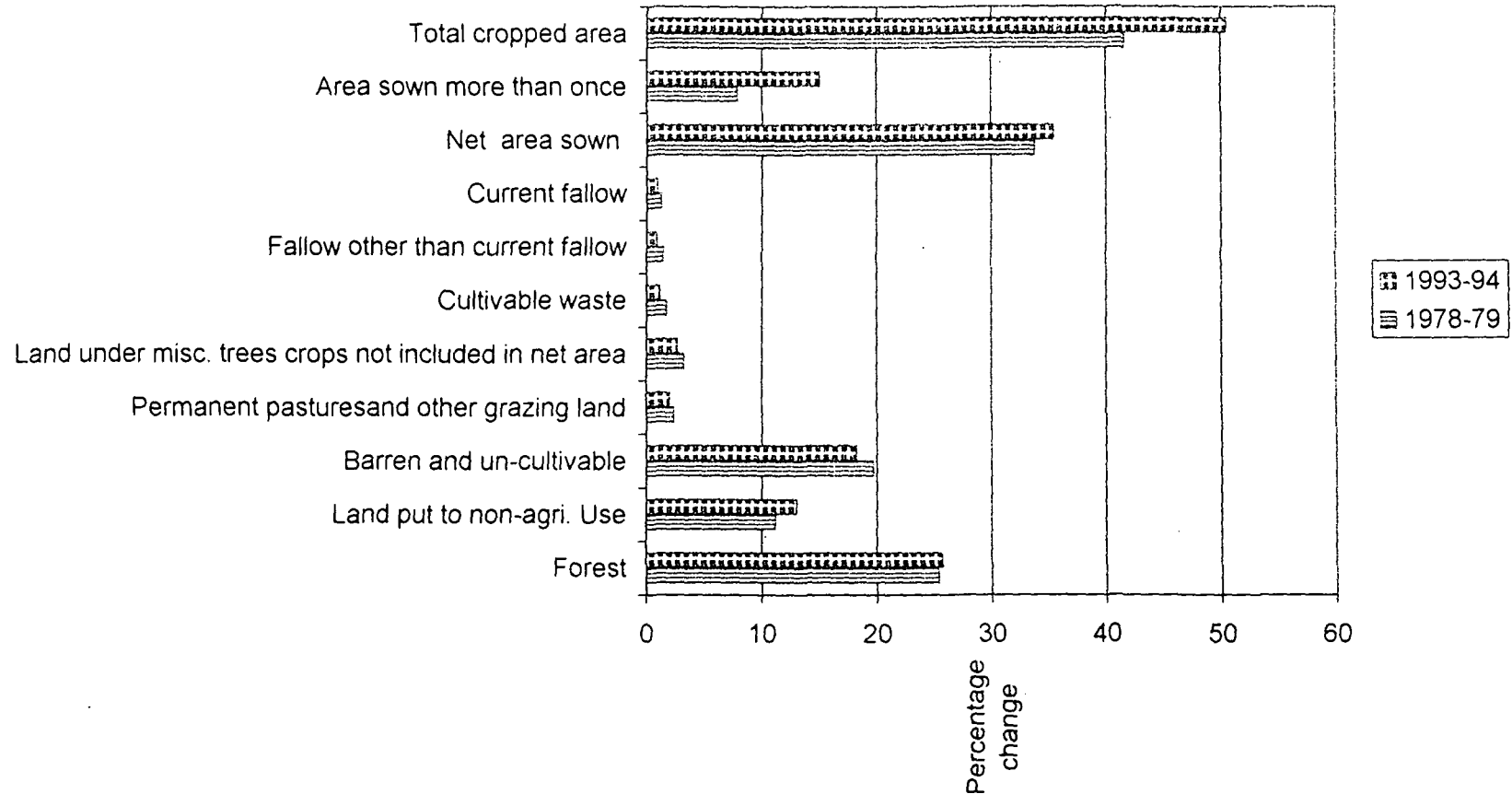


Fig. 16.

Shifting cultivation areas have been identified as current shifting cultivation areas and abandoned shifting cultivation areas. Current shifting areas includes all those areas used for jhum during the current year. Abandoned shifting areas refer to those areas which was used for jhum during the previous years. Shifting cultivation does not exist in most plain districts of the state. A very small proportion of area is under shifting cultivation in the districts of Cachar- 1.65%, Hailakandi- 3.29%, Jorhat- 0.74% ,Kamrup- 0.26%,and Karimgunj- 0.21%. However, in the two hill districts of Karbi Anglong and N.C. Hills area covered by shifting cultivation forms a major category of land use. In these two districts, proportion of area under shifting cultivation is much more – in Karbi Anglong 6.31% Of the total geographical area of the district was reported to be currently under jhum or shifting cultivation while 36.06% was abandoned jhum land. In N.C Hill district 6.03% was under current shifting cultivation while 53.65% was abandoned jhum land. Thus jhum land covers nearly 60 % of the total geographical area of the district.¹¹

4.3. Cropping Intensity

The underutilization of agricultural land in the state is evident from the pattern of cropping intensity. Cropping intensity refers to the number of crops raised on a field during an agricultural year. As a whole cropping intensity which had picked up from 115.57% during 1970-71 to 145% by 1985-86 declined to 142.46%. Though cropping intensity had increased from 100% -115% in the seventies to 120%-130%.¹² On an average for most districts by mid eighties, it

¹¹ Land Use/Land Cover Map and Reports, Assam Remote Sensing Application Centre, Guwahati, 1990.

¹² Das, op. cited, pp. 89-90.

declined in considerably in the next seven to eight years. Considerable decline occurred in the districts of Kamrup, Dhubri, Nalbari, Darrang, Tinsukia and Karbi Anglong. Percentage change in cropping intensity during the period from 1985-86 to 1993-94 was negative in these districts. Cropping pattern remained more or less the same during 1985-86 to 1993-94 in the district of Cachar, a change of only about 78%. Small decline in the pattern in Sibsagar -0.05%, Jorhat (-0.85%) and Tinsukia (-0.50%). In Dhemaji, and Goalpara, cropping intensity increased by more than 25%. In Lakhimpur and Karimganj by more than 30% indicating a considerable increase in cropping efficiency. Districts of Nogaon, Sonitpur, Golaghat, Dibrugarh too showed increased intensity.

Districtwise pattern of cropping intensity - Cropping intensity has been recorded as the highest in the districts of Karbi Anglong and Kokrajhar. In Karbi Anglong 59.57% of the gross cropped area is double cropped i.e. 197% cropping intensity. The obvious reason is that total agricultural land is only 13.97% of the district's total land area- confined to the three river valleys of Subhansiri, Jamuna and Kopili. Thus this limited land is used more intensively. In Kokrajhar, 85.35% agricultural area is double cropped. Barpeta Bongaigaon, Dhubri and Kamrup have more or less half the gross cropped area as double cropped, between 20 to 30% in Darrang Goalpara Karimganj, Jorhat, Lakhimpur Marigaon and N.C. Hill district. Dibrugarh records the lowest percentage cropped more than once i.e. about 6.91% only. Cachar, Dhemaji, Hailakandi, Sibsagar Tinsukia and Sonitpur too have very small areas cropped more than once. The pattern of cropping intensity which emerges is-

- high intensity, above 170% -three districts
- moderate intensity, 170%-134%-six districts

-low intensity, below 134% -fourteen districts.

Cropping intensity in 1993-94 was 143% in the state as a whole. It was 145% in 1985-86 and 115% in 1970-71. It was found that a positive correlation exist between rural population density and cropping intensity.¹³ Evidently, increase in rural population leads to decrease in per capita net sown area and this loss is sought to be offset by raising more than one crop from the same plot of land. Evidence is the overall increase in the intensity of cropping during the two decades when population increased by 53.26%. Intensive utilisation of land has been the only effective method of meeting the food requirement of the increasing population, in a situation where horizontal expansion of agriculture has very little scope and other means of increasing production have not been very successful. Inter district variation in cropping intensity as can be observed from the table, reflects the land use efficiency of the farmers given the limited land resource and the rise in population. Area/ districts with an intensity of less than 130% are considered as “weaker areas” in respect of agricultural economy.¹⁴ Thus most of the districts still continue to be weak areas. In fact the land use efficiency has deteriorated in the last 7-8 years or so as evident from the decline in cropping intensity (table 4.4).

¹³ Das, M. M., (1984) : “*Peasant Agriculture in Assam: A Structural Analysis*”, Inter-India Publications, New Delfi, pp. 89-93

The Pearsonian correlation coefficient between the density of rural population and the area sown more than once as a percentage of net sown area was found to be 0.69. This was tested for significance at 5 percentage level and found to be 4.27. The test proved that there exists a significant correlation between population pressure and intensity of cropping. Thus he found districts with high rural density also register higher percentage of area sown more than once.

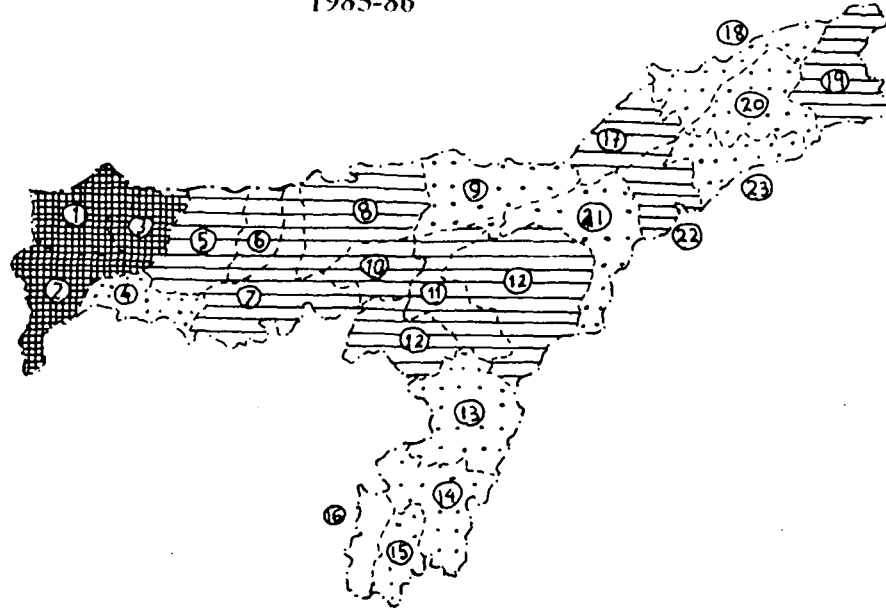
¹⁴ *ibid.*, p.88.

Table. 4.4. District wise cropping intensity.

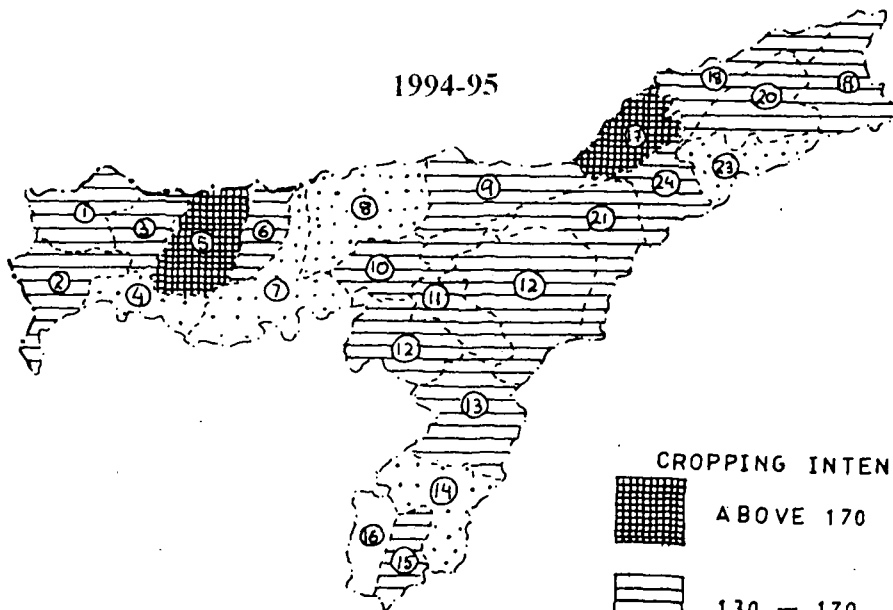
Old districts	Cropping intensity	New districts	Cropping intensity		% change (over 1985-86)
	1970-71		1985-86	1993-94	
Goalpara	107.83	Goalpara	100	129.11	29.11
		Dhubri	171.94	153.00	-11.02
		Kokrajhar	190.12	168.60	-11.32
		Bongaigaon	174.76	155.67	-10.92
Kamrup	140.88	Kamrup	159.18	123.33	-22.52
		Barpeta	161.51	175.54	8.68
		Nalbari	156.84	132.00	-15.83
Darrang	122.36	Darrang	142.06	129.32	-8.97
		Sonitpur	112.42	139.88	24.42
Nogaon	109.69	Nogaon	154.75	160.66	3.82
		Morigaon	134.09	137.5	2.54
Sibsagar	102.52	Sibsagar	113.54	113.49	-0.05
		Golaghat	131.71	130.64	-0.81
			121.01	140	15.69
Lakhimpur	101.78	Lakhimpur	131.87	172.63	30.91
		Dhemaji	112.81	141.17	25.13
Dibrugarh	102.16	Dibrugarh	116.47	132.54	13.79
		Tinsukia	139.24	138.54	-0.50
Cachar	118.18	Cachar	123.13	124.10	0.78
		Karimganj	146.6	173.77	18.53
		Hailakandi	100	134.78	34.78
Karbi Anglong	116.67	Karbi Anglong	195.33	139.23	-28.20
N.C. Hills	100.00	N.C.Hills	127.78	135.71	6.21
Assam	115.57		145	142.46	-1.75

Source: Land use/land cover maps and Reports of Assam, Assam Remote Sensing Centre, Guwahati; Directorate of Economics and Statistics, Assam.

ASSAM CROPPING INTENSITY 1985-86



1994-95



Districts

1. Dhubri
2. Kokrajhar
3. Bongaigaon
4. Gaolpara
5. Barpeta
6. Nalbari
7. Kamrup
8. Darrang
9. Sonitpur
10. Morigaon
11. Nogaon
12. K. Anglong
13. N. C. Hills
14. Cachar
15. Hailakandi
16. Karimganj
17. Lakhimpur
18. Dhemaj
19. Tinsukia
20. Dibrugarh
21. Golaghat
22. Jorhat
23. Sibsagar

CROPPING INTENSITY

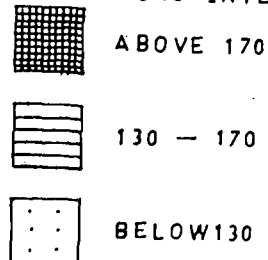


Fig. 17

4.4. Cropping pattern, major crops and crop sequence.

The cropping pattern – the proportion of area under different crops at a given point of time-are closely influenced by the geo- ecological, historic, socio-economic and institutional factors. Availability of irrigation facilities, supply of seeds, fertilizers, and market also encourage the extension in Aerial strength of certain crops in any given region. The fertile alluvial soil, high temperature and humidity conditions, with favorable moisture regime had encouraged the concentration of rice cultivation in the state. The cropping pattern within the state is as follows-

- winter/sali paddy, covering 47.18% of total cropped land,
- autumn/ahu paddy, covering 16.43% of the total cropped land,
- oilseeds, covering 8.82% of the total cropped land,
- summer/boro paddy, covering 4.7% of the total cropped land,
- jute, covering 2.54% of the total cropped land

Rice is the major crop in acreage occupying on the whole about 68.31% of the cropped area and is the 1st ranking crop, comprising the major kharif crop as also cover rabi cropland in certain districts. 78.15% of the gross cropped area in 1996 –97 were under food grains, and 71.93% of this gross cropped area were under rice cultivation.¹⁵ Three crops of rice – Autumn, Winter, and Summer rice is cultivated in the state. Winter or sali rice -a kharif crop cultivated during July to December, is the main crop occupying 17.43 lakh hectares of area i.e. 47.18%. Autumn or ahu rice cultivated during March to

¹⁵ *A Report on Agricultural Development in Assam-1998-99*, Department of Agriculture, Government of Assam, pp.1-2.

July, too occupy considerable proportion of area- 6.07 lakh hectares or 16.43% in 1997-98. Summer or boro rice cultivated during November to May, on the other hand occupy relatively small area –only about 4.7%.¹⁶ Table 4.5 gives the districtwise area coverage of three major crops-rice, jute and oilseeds.

Jute is the second ranking crop in the western and central districts such as Dhubri, Kokrajhar, Darrang, Goalpara, Barpeta and Nagaon. On the whole it covered 2.54% of the gross cropped area of the state in 1997-98. Figure 18 (a) shows the geographical distribution of jute areas within the state. Evident from the figure (and table 4.5), districts of Lower Brahmaputra valley viz. Dhubri, Bongaigaon and Goalpara have relatively more proportion of area under the crop. Districts of Upper Assam, and Barak valley have very small proportion of area under the crop. The third ranking crop in terms of acreage after winter and autumn is oilseeds occupying 8.82% of the gross cropped area. It is in fact the major rabi crop. Here again, the districts of Lower Brahmaputra valley, particularly Dhubri, Kokrajhar, Bongaigaon, Nalbari and Barpeta show favorable proportion of area coverage with more than 10% of the total cultivated area of the respective districts under the crop. Dhemaji and Lakimpur in Upper Assam too have relatively more proportion of area under oilseeds. Amongst oilseeds rapeseed and mustard is by far the most important, cultivated in about 92% of the oilseeds area. Almost the entire area under this crop is rainfed. The geographical distribution of areas under oilseeds is also shown in Fig. 19 (b). Pulses cover 270 hectares of kharif area and 1110 hectares of rabi cropland i.e. a combined 3.49% of the gross cropped area of the state.¹⁷

¹⁶ *ibid.*, p.4

¹⁷ *ibid.* p.11.

Table 4.5. Districtwise area under rice, jute and oilseeds (1998-99)
(area in '000 hectares)

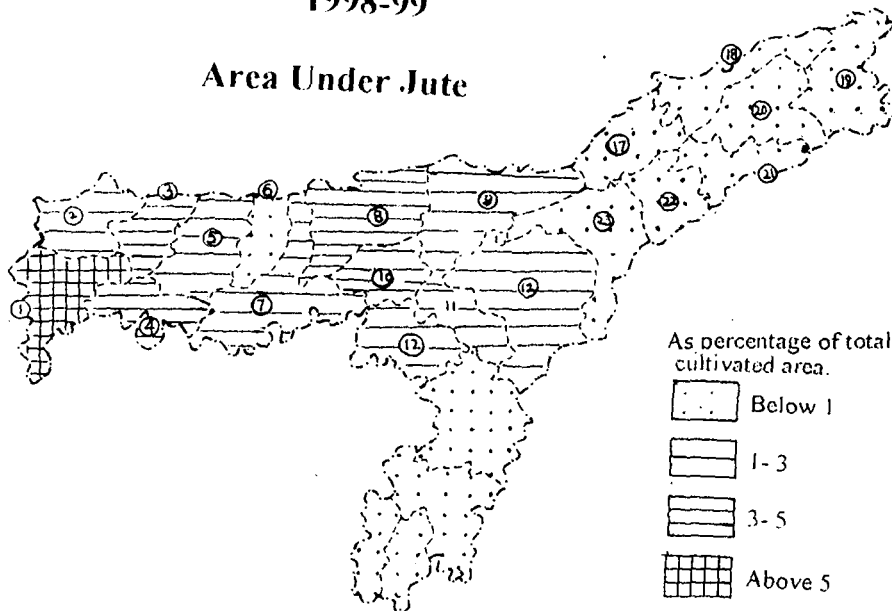
Districts	Rice		Jute		Oilseeds	
	Area (in hec.)	%	Area (in hec.)	%	Area (in hec.)	%
Cachar	101490	73.01	61	0.04	1548	0.66
Hailakandi	41773	67.37	20	0.03	908	2.08
Karimganj	73876	69.69	65	0.06	261	0.81
Gaolpara	66614	65.31	4105	4.02	5505	4.80
Dhubri	133392	59.28	17750	7.8	22506	10.00
Kokrajhar	93877	64.74	3926	2.70	16730	11.54
Bongaigaon	94887	62.84	4831	3.20	16727	11.08
Kamrup	171590	77.29	5313	2.39	19045	8.58
Nalbari	141333	71.38	1800	0.91	15050	7.60
Barpeta	185958	57.57	8000	2.47	30944	9.58
Darrang	15655	58.19	8600	3.20	28513	10.6
Sonitpur	141427	60.18	2914	1.24	26861	11.43
Nogaon	238484	62.10	11274	2.94	28229	7.35
Morigaon	109417	82.89	6000	4.54	143909	10.90
Jorhat	80364	49.61	78	0.05	13090	8.08
Golaghat	81088	48.27	923	0.55	7378	4.39
Sibsagar	88593	55.37	57	0.04	2854	1.78
Lakhimpur	99621	60.74	620	0.38	18140	11.06
Dhemaji	50384	52.48	175	0.18	13010	13.55
Dibrugarh	83356	49.91	15	0.01	12603	7.55
Tinsukia	64108	48.20	14	0.01	8329	6.26
K. Anglong	110214	60.89	2023	1.12	20146	11.13
N. C. Hills	11677	30.72	138	0.36	2705	7.12

Source : Calculated from data obtained from Directorate of Economics and Statistics, Government of Assam, for the year 1998-99, and Statistical Handbook, Assam, 1997, p. 63.

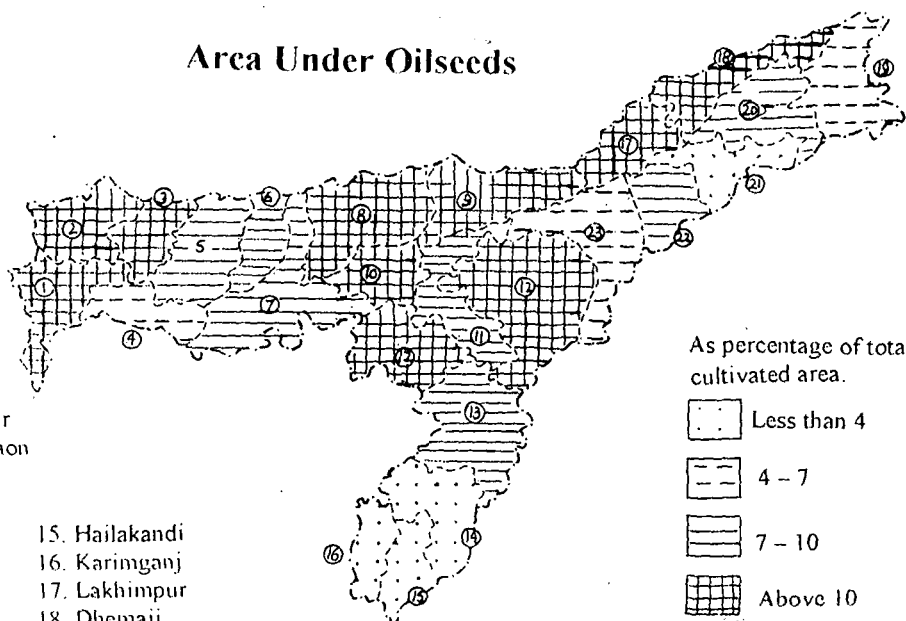
Among the food grains besides rice, pulses, wheat and maize are cultivated in small areas. Wheat occupies only about 1.00 lakh hectares, which are about 2.71%. The crop is cultivated in the riverine tracts. The clayey nature of the soil in major part of the state does not favour the cultivation of this crop. Lack of irrigation facilities also limits the cultivation of this crop. Maize as one of the important foodgrains crop is concentrated to the hill areas only.

ASSAM 1998-99

Area Under Jute



Area Under Oilseeds



- | | |
|----------------|----------------|
| 1. Dhubri | 15. Hailakandi |
| 2. Kokrajhar | 16. Karimganj |
| 3. Bongaigaon | 17. Lakhimpur |
| 4. Goalpara | 18. Dhemaji |
| 5. Barpeta | 19. Tinsukia |
| 6. Nalbari | 20. Dibrugarh |
| 7. Kamrup | 21. Sibsagar |
| 8. Darrang | 22. Jorhat |
| 9. Sonitpur | 23. Golaghat. |
| 10. Morigaon | |
| 11. Nogaon | |
| 12. K. Anglong | |
| 13. N.C. Hills | |
| 14. Cachar | |

Fig. 18

Horticultural crops have very small share of acreage in all the districts. Of the meagre 3.6% of the cultivable land in the North East under horticulture production, Assam's share is 43%. It amounts to only about 1% total cultivated land within the state and about 6.37% of the total geographical area of the state.¹⁸ By and large practised as non-commercial enterprise by farmers in their homesteads the crops generally grown are bananas, pineapple, papaya, jackfruits, mango, lichi amongst the fruit crops and arecanut, coconut, potato, ginger, onion, turmeric, and vegetables. The cultivation practices are not modern enough to ensure high productivity. Therefore the products do not make any impact on the market. Considerable gap also exist between gross production and net availability due to heavy post harvest losses.¹⁹ Markets for quick dispersal are not readily available because of which a substantial quantity of the products goes waste every year. It is estimated that the wastage will be about 20-25% of the gross fruits and vegetable produced.²⁰ This has so far discouraged the farmers to take on commercial cultivation.

Although rice is the first ranking crop in terms in terms of area and production, is cultivated in varying combination with oilseeds, pulses, wheat, jute and potatoes. In Goalpara, Kamrup and Darrang altogether five crops are grown in combination in which rice ranks first. In Nagoan six crops are grown – earlier five crops were grown. In the rest of the district 3- 4 crops are combined.²¹

¹⁸ "Horticultural Productions of the N.E. Region" in *Export Potential Assessment of Horticultural & Floricultural Production in North East Region*, APEDA, July, 1998, pp.3-5.

¹⁹ *ibid.*

²⁰ *Export Potential Assessment of Horticulture and Floriculture Products for the North Eastern States*, APEDA, 1998, prepared by Tata Consultancy Limited, 1998, p. 4-5.

²¹ Das, *op. cited*, p. 67.

Impact of the existing cropping pattern and cropping intensity - The bias of cropping pattern towards foodgrains production and particularly towards rice has affected the extension of commercial crops. Remunerative crops such as jute, and oilseeds have very little area coverage. This means that the farmers are deprived of the gains from cultivation of these crops. Value added products of these crops have a large market. Crop combination pattern also highlights the greater importance of paddy cultivation. Cultivated in varying combination with crops such as oilseeds, pulses, jute and wheat, much of the resources for production of these crops are allocated to paddy cultivation. This reduces the productivity of the other crops. Reallocation of their resources among alternative and profitable crops would have brought economic efficiency since economic efficiency is a function of the crop mix farmers chooses. The trend in increased acreage under foodgrains and shrinkage in acreage under cash crops – oilseeds, jute, fruits etc. also in exhibit the inability of farmers to respond to changes in prices of these commercial crops. Apparent is the economic inefficiency of the farmers.

4.5. Production and Productivity

Foodgrains-Paddy - Production and productivity of crops in the state is at lower levels compared to the country in general even for crops like rice which is the major crop cultivated in over 80% of the annual cropped area. Production was low at 33.83 lakh million tonnes for the year 1997-98 though above the target of 25.26 lakh million tonnes.²² Productivity of this crop during the same year

²² *A Report on Agricultural Development in Assam, 1998-99*, Government of Assam, Department of Agriculture. p.4.

was 1356 kilograms /hectare as against around 1741 kg./hectare for the country.²³ In fact an examination of the figures from 1992-93 points to overall decline in productivity levels though it had been rising for autumn (ahu) rice and summer (boro) rice. Productivity of winter or sali rice fell from 1496 kilograms/hectare to 1439 kg./hectares in 1997-98, while that of that of summer rice rose marginally from 1645 kilograms/hectare to 1797 kilograms/hectare. Productivity of ahu rice too rose marginally from 982 kilograms/ hectare to 1000 kg./hectare. The low productivity of season wise rice has been attributed in case of winter or sali rice-mainly to-

- the weather conditions particularly excessive rainfall
- overcast skies and floods due to which there is low response of the crop to chemical fertilisers
- delay in sowing and transplanting
- low photosynthetic efficiency
- at times even drought like situation.²⁴

Even in case of ahu or autumn rice-

- heavy rain at the time of harvest
- water stress in the early part of the cropping season
- the non availability of suitable variety for direct seeded condition,

are considered responsible for the low productivity. For the summer crop i.e. boro rice lack of irrigation has been the major constrain in expansion in area under this crop and the reason for low productivity. Inadequate farm power,

²³ Ibid. p4.

In comparison, the productivity of rice is higher even in states like Orissa where it is 1363 kilograms/ hectare, in West Bengal it is 2085 kilograms/hectare and in Punjab it is 3427 kilograms/hectare for the same year.

²⁴ Ibid. p. 5

non availability of fertilisers in proper time, small and scattered land holdings and inadequate credit for investment are other reasons for the low productivity of rice in the state.²⁵ The state is therefore not self sufficient in rice production and to meet the demand of the large population it has to procure the grain from outside the state. The quantity procured in 1990- 91 by the FCI was 5755 metric tonnes and by STATFED was 1397 metric tonnes. In 1996-97, 862.435 metric tonnes of rice was procured by the FCI while that by the later was nil.²⁶

Non-foodgrains-Jute - Productivity of jute, the second important kharif crop of the state is also very low and has also been declining. It declined from 2,011 kilograms/hectare in 1992-93 to 1720 kg / hectare in 1997- 98. Area under the crop had marginally increased from 93000 hectares to 95000 hectares.²⁷ Table 4.6 gives the area and trend of productivity during the period 1992-93 to 1999-98.

Table 4.6. Area, production and productivity of jute

Year	Area ('000 hec.)	Production-(lakh bale)	Yield (kg. /hec.)
1992-93	93000	10.03	2,011
1993-94	76000	6.67	1,598
1994-95	91000	9.25	1,832
1995-96	89000	8.44	1,715
1996-97	94000	8.03	1,537
1997-98	95000	8.87	1,720

Source: Indian Jute, vol. I & III (A Bulletin of Jute Manufacture Development Council, Calcutta.)

²⁵ Ibid.

²⁶ Food and Civil Supplies, Guwahati.

²⁷ Indian Jute, Vol. I & II, Calcutta., 1998-99.

To examination of districtwise growth or decline in jute cultivation, Index number of area, and productivity of the crops in each of the districts for the years 1995-96 and 1998-99 have been found out taking 1989-90 as the base year (Table 4.7).

Table 4.7. Index number of area and yield of Jute-districtwise (Base 1989-90)

Districts	Area		Yield	
	1995-96	1998-99	1995-96	1998-99
Cachar	100	101.6	113	104.17
Hailakandi	130	40.00	113.65	104.17
Karimganj	88.9	72.22	113.65	104.17
Goalpara	107.89	108	136.67	108.59
Dhubri	96.68	87	84.75	93.1
Kokrajhar	53.58	43.62	125.91	119.54
Kamrup	74.45	72.18	140.71	113.3
Nalbari	77.91	53.94	156.48	144.5
Barpeta	71.11	67.56	73.81	75.67
Darrang	98.54	84.31	90.86	75.67
Sonitpur	73.07	74.71	76.30	84.08
Nogaon	128.60	95.90	150.76	112.46
Morigaon	110.97	100.5	158.11	155.00
Jorhat	65.71	44.57	113.65	104.17
Golaghat	22.78	54.61	54.61	140.80
Sibsagar	37.13	54.28	113.65	104.17
Lakhimpur	48.27	85.51	102.10	72.40
Dhemaji	55.07	54.51	54.51	104.17
Dibrugarh	80.00	33.33	113.65	104.17
Tinsukia	33.33	15.55	113.65	104.17
Karbi Anglong	102.55	99.36	99.36	104.17
N. C. Hills	84.24	83.63	83.63	104.17
Assam	93.50	83.05	113.65	104.17

It can be seen from table 4.7. that area under jute cultivation has declined in almost all the districts of Brahmaputra valley with the exception of Goalpara. In the Barak valley too, only Cachar district have registered increase in area under the crop. In Nogaon area under the crop had increased during 1995-96 above that of the base year but in the following years it registered tremendous decrease- by 1998-99 the index number of area was only 95.90 (Base year 1989-90=100). Productivity levels have declined in six districts – Dhubri, Barpeta, Darrang, Sonitpur, Jorhat and Lakhimpur in both the reference years. In many districts the yield rates increased during these years over the base year. But in many of these districts, yield rate showed decline over that of 1995-96. These districts are-Cachar, Hailakandi, Goalpara, Kokrajhar, Kamrup, Nalbari, Nogaon, Morigaon, Jorhat, Sibsagar, Lakhimpur, Dhemaji, Dibrugarh, Tinsukia, Karbi Anlong and N. C. Hills. Golaghat in the only districts which registered consistent increase in yield rate- 125.82 in 1995-96 and 140 in 1998-99 over the base year.

Reasons for low growth/decline - Reasons for the decline in jute production and yield lies in the problems faced by the jute cultivators. Inadequate marketing facilities and un-remunerative price of raw jute, non-availability of certified seeds in proper time, inadequate water at the right time for retting process and lack of consuming industries within the state are factors affecting production and productivity. In fact it transpires that the first two factors has been most responsible for discouraging farmers from expanding and investing in jute cultivation.²⁸ Besides, a number of problems ails the jute sector. Firstly, functional deficiencies exist in the marketing structures of raw jute and the

²⁸ Sanyal, A.N., "Growers Still Under Buyer's Mercy" ,in '*Survey of Indian Agriculture, The Hindu*', 1992, p.75.

cultivators have a weak bargaining position, taken advantage of by the chain of intermediaries. This imperfect market mechanism along with the costly field and post harvest operations leaves the cultivators (mostly peasants) at the mercy of the middlemen. Secondly, lack of proper infrastructure and marketing system, and the high fluctuations in the market price compel them to sale their products at very low prices despite the fact that MSP (minimum support price) is fixed every year by the government. Thirdly, the system of advancing loan by the village middlemen-creditors makes the growers obligatory to sale the bulk to them at a much lower price.²⁹ Hence the fixing of MSP does not help them under such defective systems. Deprived of remunerative price, there was report of raw jute being burnt. As a consequence jute cultivators have dwindled. The recession in the world market has made matters worse. The Jute Corporation of India set up in 1971 had over the years built up a network of purchase centres within the state too as in other growing states. The ineffective functioning of the corporation and the purchasing centres has defeated the entire purpose of its existence. The lack of motivation thus can be held responsible for the low yield of jute within Assam, which is only about 1300-1400 kg. per hectare as against the all India average of 1500-1600 kilograms/hectare.

The problem is made more complex by the absence of retting process and upgrading fibre quality. The result is the non-estimation of the value of fibre and hence low prices to the sellers. Not only at the raw material stage, but also jute manufacturing, the forward linkage, suffers severely from disruption of raw jute production and supply (discussed in detail in the chapter V).

²⁹ *ibid*, pp. 75-76.

Oilseeds - Oilseeds production and productivity within the state has registered significant growth. During the years from 1962-63 to 1988-89 production levels have more than doubled along with increase in area under oilseeds particularly rapeseed & mustard. Yield rate too increased in all the districts. However since 1990-91 onwards the performance of oilseeds have not been very satisfactory. Productivity increased by to only 596 kg./ha. during 1997-98 from 506 kg./ha. during 1992-93.³⁰

Area under oilseeds has not increased significantly and in some districts even decrease in area has been registered. Area under the crop decreased in the districts of Cachar, Karimganj, Goalpara, Jorhat, Golagaht, Lakhimpur, Dibrugarh and the hill districts (Table 4.8).

Though increases in area under oilseeds have been registered in a number of districts yield rates have fallen in more districts. Darrang, Nalbari, Dhubri Hailakandi, Morigaon, Dhemaji, Sibsagar Tinsukia etc. are the districts where area under oilseeds has increased. But yield rate has fallen considerably in many of these districts. For example in Darrang in has fallen to as low as 83 (Base 1988-89=100). Cachar, Lakhimpur, Morigaon, Dibrugarh, Sonitpur, Kamrup, have registered increased yield rate above that of the base year (1989-90). In the other districts it has remained more or less the same. Thus the efforts to popularise cultivation of this crop within the state through programs such as National oilseeds Development program has not been too successful. Most of the oilseed crops are grown during the rabi season and thus one of the major factors of poor results has been nonavailability or inadequate irrigation

³⁰ Reports of Agricultural Development in Assam, 1992-93 and 1998-99, Department of Agriculture, Government of Assam.

facilities. Besides, incentives such as price incentives in the form of a higher price to cover the cost of inputs (as prevailing in states like Punjab, Haryana, Maharashtra etc.) are too available to the farmers here.

4.8. Index No. of area and yield of oilseeds, (Base 1980-90=100)

District	Area		Yield	
	1995-96	1998-99	1995-96	1998-99
Cachar	34.61	58.74	101.44	99.17
Hailakandi	142.68	143.9	93.64	65.79
Karimganj	139.28	93.09	69.15	20.15
Goalpara	56.29	63.63	51.15	58.34
Dhubri	138.87	143	86.47	110.30
Kokrajhar	85.60	105.9	76.75	65.13
Kamrup	125.64	120.22	108.83	120.20
Nalbari	120.79	125.20	89.24	98.07
Barpeta	172.42	180.00	93.54	100.90
Darrang	110.68	110.68	77.05	83.13
Sonitpur	124.88	104.80	117.80	166.73
Nogaon	91.51	114.00	87.82	103.57
Morigaon	176.80	128.89	135.29	165.40
Jorhat	144.00	77.19	110.70	101.30
Golaghat	150.17	98.63	56.33	40.87
Sibsagar	157.90	160.36	77.35	71.26
Lakhimpur	179.50	84.90	133.80	123.36
Dhemaji	109.55	134.00	42.54	47.41
Dibrugarh	127.77	95.52	144.00	132.74
Tinsukia	65.80	54.31	78.94	75.83
K. Anglong	56.16	59.66	107.8	109.66
N. C. Hills	N.A.	N.A.	N.A.	N.A.
Assam	115.21	106.00	93.46	99.37

Source: Directorate of Economics and Statistics, Assam.

High value oilseeds such as Sunflower oil, groundnut etc have not gained popularity. In terms of area coverage, rapeseed & mustard are predominant. Despite efforts in the form of demonstration program, response of the farmers have been lukewarm partly due to supply of poor quality seeds and the fact that ready market for these oilseeds are absent within the state.³¹ Also, appropriate varieties of these crops to suit the agro-climatic conditions within the state is not available yet. Only in the district of Nogaon, cultivation of sunflower has been taken up on commercial bases.

4.6. Patterns of input consumption.

Production is a function of inputs- mix and production techniques. Here what has been more responsible is not so much the economic efficiency with which farmers choose their input- mix and production techniques, but their economic ability to do so. Small and marginal farmers' ability to apply the desired input - mix is very limited. Coupled with this are the poor institutional and infra-structural facilities for agriculture such as irrigation power supply & credit facilities to the farm sector.

4.6.1 Fertiliser application - Improved and modernised input utilisation by the farmers is one of the lowest in the country. Fertiliser application in the year 1995-96 was only 13 kilograms/hectare per hectare as against 75 kilograms/hectare in the country as a whole. The figure is much higher in the developed states of the country. In Punjab fertiliser application per hectare

³¹ State level Report on Crop Cutting Experiments, Statistical Wing, Department of Agriculture, Government of Assam.

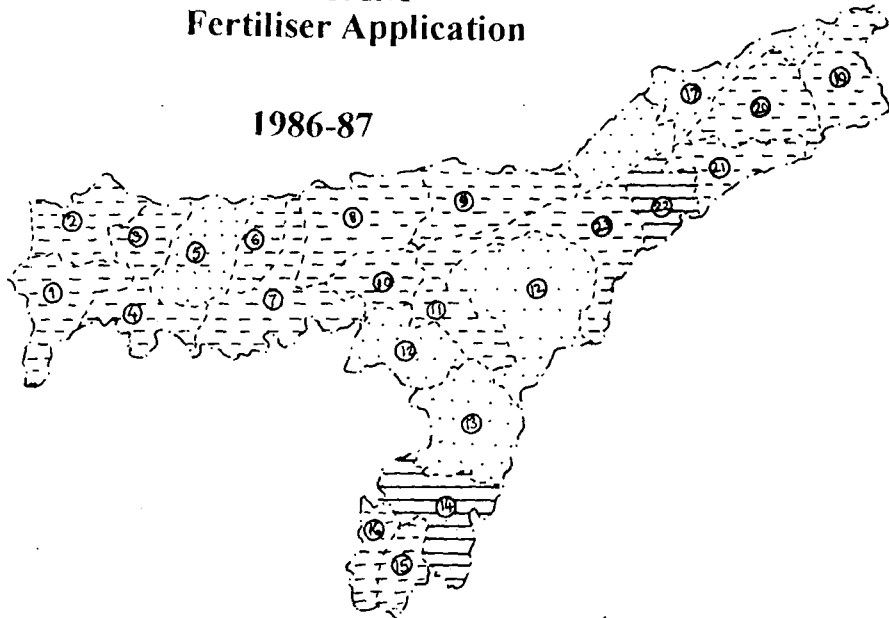
during the same year was 167 kilograms/hectare and in Haryana it was 124 kilograms/hectare. Even in states with holdings smaller than those in Assam, application was more for example, in Orissa it was 25 kilograms and 19 kilograms/hectare in Tripura.³² The low levels of fertiliser application is despite the high subsidy levels on fertilisers which is 50% for all fertilisers and even 100% for certain others. Evidently the strategy for increasing fertiliser consumption through various measures such as increasing number of sale points, providing storage facilities, popularising bio-fertiliser through demonstrations, granting incentives for increasing fertiliser use has not been successful.

Over the years, however the application level of fertiliser has increased slowly and steadily. Two decades back the total fertiliser application was only 1.12 kg per hectare. In terms of quantity it has increased from 12877 tonnes of total chemical fertilisers in 1982-83 to 29871 tonnes in 1993-94, and to 32343 tonnes in 1996-97. Table 4.9 presents a break-up of the seasonwise consumption of different fertiliser during the periods from 1992-93 to 1996-97. Fig. 19 presents the district-wise pattern of fertiliser application for the period from 1986-87 to 1996-97.

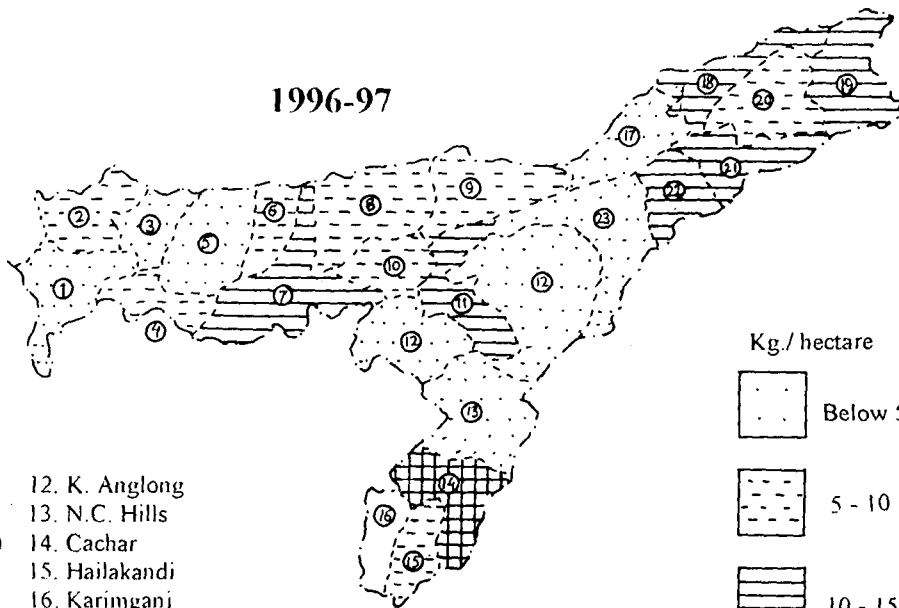
³² CMIC, 1996.

ASSAM Fertiliser Application

1986-87



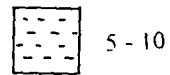
1996-97



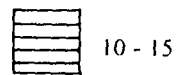
Kg./ hectare



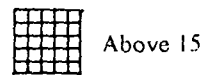
Below 5



5 - 10



10 - 15



Above 15

Districts

- | | |
|---------------|----------------|
| 1. Dhubri | 12. K. Anglong |
| 2. Kokrajhar | 13. N.C. Hills |
| 3. Bongaigaon | 14. Cachar |
| 4. Goalpara | 15. Hailakandi |
| 5. Barpeta | 16. Karimganj |
| 6. Nalbari | 17. Lakhimpur |
| 7. Kamrup | 18. Dhemaji |
| 8. Dibrang | 19. Tinsukia |
| 9. Sonitpur | 20. Dibrugarh |
| 10. Morigaon | 21. Sibsagar |
| 11. Nogaon | 22. Jorhat |
| | 23. Golaghat |

Fig. 19

The scarcity of fertiliser during peak season has been one of major reasons for low fertiliser consumption. This scarcity is created in the remote areas due to transport bottleneck, and due to inadequate storage facilities fertilisers are not available to the farmers as and when required. Besides, the fertiliser-mix of N.P.K (Nitrogen- Phosphorous- Potash) can be applied only in areas with adequate irrigation facilities. The poor economic condition of the farmers, the financial constraints faced by the state institutional agencies are also responsible for low consumption.³³

Non availability of quality and HYV seeds coupled with lack of adequate irrigation facilities and total lack of power consumption in farming practice are reasons for low productivity and is caused by socio- economic condition. Though in large parts agriculture is rainfed, yet regulated water supply to the crops is vital particularly during the dry winter season (rabi season). Non availability of irrigation facilities during the dry rabi season is one reason for the cropping system in major parts to be mono-cropped. In the state the programme for development of irrigation was not taken seriously until the realisation of the fact that it is essential for diversification of cropping and increasing crop intensity. At the same time problem has been faced because data on irrigation has been most unreliable.

³³ State level Report on Crop Cutting Experiments, Statistical Wing, Department of Agriculture, Government of Assam.

Table 4.9. Season wise -Fertiliser consumption in Assam .

Year	Season	N	P	K	Kg./ha.
1992-93	Kharif	9875	3461	3443	
	Rabi	9125	1387	1683	
	Total	19000	4848	5126	8.50
1993-94	Kharif	19096	3125	2787	
	Rabi	10775	2131	5257	
	Total	29871	5257	8044	12.00
1994-95	Kharif	11901	1748	3350	
	Rabi	10479	2111	7424	
	Total	22380	3859	10774	11.00
1995-96	Kharif	11522	2966	6064	
	Rabi	12143	2487	13959	
	Total	23665	5453	20023	13.00
1996-97	Kharif	15505	3069	4874	
	Rabi	16652	2770	12941	
	Total	32157	5839	17815	14.20

Source : Directorate of Agriculture, Government of Assam.

Within the state as per the 1996-97 report by state Department of Agriculture, 1,64,100 hectares – which is only 3.54% of the gross cropped area, were under irrigation. Of these, irrigation facilities to cover 72,000 hectares were provided by the irrigation department, 57,100 hectares by the agriculture department and 37,000 hectares, i.e. 22.54% of the total irrigated area were by private sources.

Spatial variation in irrigated cropland is distinct. Goalpara register the highest percentage of irrigated cropland- 38.48%. Kamrup has 33.59% irrigated area.

the rest of the districts have extremely small percentages of irrigated areas. districts of Upper Assam have the lowest percentage of irrigated areas.³⁴

4.7. Plantation sector

The plantation sector is dominantly the tea sector which comprise the largely organised plantation as well as the small growers. In 1994 there was a total of 848 registered tea gardens. India inherited this labour intensive industry as a legacy of British rule. Tea plantation within the state began with the cultivation of tea on commercial lines by the British- attracting British capital and imported labour. Prime agricultural land was utilised for tea plantation. The formation of Assam Tea Company in 1839 ushered in the era of commercial plantation of tea. Sprawling over nearly 2,28,260 hectares it is still the single largest employer directly employing 7 lakh people and deciding the lives of nearly 9 lakh of the dependants- it employs approximately 900 mandays per year per hectare. It produces more than 410 million kilograms a year which is 53% of the country's production and 22% of the tea produced globally.³⁵ The sector contributes nearly Rs 155 crores to the state exchequer by way of agricultural income tax, which is besides the amount earned from the sale of tea both in domestic as well as international markets.³⁶ Thus it is the single largest important economic activity of the state.

³⁴ Das, M.M. 1995 :*Land Holding Structure: A Problem in Peasant Agriculture In Assam*, Konarak Publishing Pvt. Ltd., Delhi, pp. 90-92.

³⁵ Tea Statistics, Tea Board Of India, 1997.

³⁶ *ibid.*

Prior to independence, a liberal policy in production functions, marketing and export had greatly benefited the industry- making it one of the foremost revenue earners. Even in immediate post independence period, it was one of the largest foreign exchange earner of the country. However, the various policies of the government of India aimed to protect the interests of the domestic planters and manufacturers brought about major changes in ownership, production and productivity, as apparent from the analysis in the preceding chapter.

Over the years the number of tea estates have increased, but the production and yield rate have stagnated – production have stagnated at around 425 million kilograms during 1996 and 1997, while yield rate have fallen from 1870 kg. per hectare in 1996 to 1864 kilograms per hectare in 1997 (table 4.10).³⁷

Table 4.10. Area, Production and Yield of tea in Assam.

Head	1985	1986	1987	1995	1996	1997
Area* ('000 hec.)	215	222.6	225.7	226.8	227.2	228.7
Production (million kg.)	352.5	335.4	363.7	402.6	424.8	425.4
Yield (in kg./hec.)	1639	1507	1611	1779	1870	1864

Source: Tea Digest, 1997. Area under tea excludes area of small growers not registered with Tea Board.

Tea gardens in India can be broadly classified into the following type of ownership, as stated by the Plantation Inquiry Commission of 1956

1. Smallholdings, which may be anything from 1 to 100 acres, owned by proprietors. These again may be sub-divided into-

³⁷ Tea Digest, Tea Board of India, 1997.

- (a) Those where only cultivation of tea is carried on and green leave is taken to the neighbouring factory.
- (b) Those where both cultivation and manufacturing of tea are undertaken.
2. Estates/gardens over 100 acres which are owned by proprietor (Indian or non- Indian) having facilities for manufacturing of tea.
 3. Estates/ gardens owned by liability companies registered in India with Rupee capital (controlled by Board of Directors, whether Indian or non-Indian). This again is sub-divided into public and private limited companies.
 4. Estates/ gardens owned by limited liability companies with Rupee capital and managed by managing agents (having mixed board of Indians and non-Indians).
 5. Estates/ gardens owned by limited liability companies registered in United Kingdom with sterling capital.³⁸

Almost all the small tea growers carry out only plantation and green leaves are collected from them by middlemen for sale to the factories. There has been a meteoric rise in the number of small tea growers but most of the gardens have not registered with the Tea Board. Only 659 small gardens have been registered with the Board till 1999, covering an area of 2281.63 hectares. Productivity levels in these small gardens are not satisfactory in comparison to those in South India. The following table (table 4.11) brings out the yield rates in the districts of Assam and in some parts of South India.

³⁸ Report of The Plantation Inquiry Commission, 1956, Part I, p. 23.

Table 4.11. Average yield rates in during 1991

Assam		South India	
Districts	Yield (kg./hec.)	Districts	Yield (kg./hec)
Darrang	2,016	Coimbatore	2,906
Gaolpara	1,696	Madurai	3,259
Lakhimpur	1,962	Nilgiris	3,225
Kamrup	1,304	Chickmangalur	2,285
Dibrugarh	2,077	Hassan	2,603
Nogoan	1,516		
Sibsagar	1,476		
Cachar	1,150		
Hill. Districts	1,004		
Total Assam	1,700		

Source: Tea Statistics, Tea Board, Calcutta.

Yield rates in Assam is almost half that of the yield rates the gardens of South India. Except in the districts of Dibrugarh and Darrang where the yield rate is above 2,000 kilograms/hectare, small gardens in the other districts show very low yield rates. In comparison yield rates exceed 3,000 kilograms/hectare in the gardens in South India.³⁹ The reasons lies behind the fact that small growers in South India have better access to the latest technology which were provided by the field advisory wing of United Planters' Association of Southern India - UPASI. A comprehensive package of training in all aspects of tea husbandry soils conservation, plant protection techniques and upkeep of equipment, plucking pattern and finance and credit facilities have brought higher yield rates. In these parts of the country, the Tea board has been spending Rs. 5 lakh a year on the package. UPASI deployed the entire laboratory network, scientists, research scholars and arranged regular visits of officials to the gardens of the trained growers to keep alive the line of

³⁹ Tea Statistics, Tea Board, Calcutta.

communication and other follow up programs.³⁹ Subsidies and loans provided by the Board has helped in the rejuvenation and improvement of gardens and secure inputs-high yielding cloned varieties, and plant protection equipment. Assistance in marketing of green leafs by setting up factories in the co-operative sector has also helped immensely. Small growers in Assam do not receive all these facilities. Training programs are inadequate, follow up programs is not carried out sincerely. Subsidies and loans provided are inadequate too. Reasons for this also lies in the fact that to receive these facilities the small growers have to register themselves with the Tea Board.⁴⁰ Many of the small growers in Assam do not get themselves registered due to a number of reasons. The procedure of registration and application for permit is lengthy. Submission of necessary land documents in support of ownership over the land proposed to be planted, survey map of the area, soil analyses report from the Government soil testing laboratory are the procedures which makes the growers avoid getting themselves registered. The absence of title deeds for the land is also a major reason for non-registration.

These registered small growers alone have been able to take benefit of the subsidy provided by the Board. The rest of the eight to ten thousand small growers are unable to take benefit of the subsidy scheme since they are not registered with the Board. Registration procedure need to be simplified for the remaining small growers to avail of the benefit, and also to enable them to participate in the training programs undertaken by AAU and ABITA specifically of these small growers. During the two years -1997 and 1998

³⁹ Banerjee, G. (1996), "New Horizons in Tea Production -Role of Small Tea Growers With Special Reference to Assam" in *Tea Plantation Industry: A Structural Analyses*, Guwahati, p. 357.

⁴⁰ *ibid*, p. 358.

altogether 155 trainees were given training in the districts of Sonitpur & Lakhimpur (35 trainees), Dibrugarh (35 trainees), Tinsukia (35 trainees), Golaghat & Nogaon (25 trainees), and Jorhat & Sibsagar (25 trainees).⁴¹ The districtwise distribution of small growers, 1999, is as follows.

District	No of small growers regd.	Area (in hectares)
Golaghat	193	566.53
Sibsagar	75	218.96
Dibrugarh	100	328.66
Tinsukia	78	301.16
Jorhat	64	150.69
North Lakhimpur	8	32.58
Sonitpur	58	155.27
Dhemaji	1	8.95
Darrang	11	67.98
Kamrup	1	7.23
Cachar	12	58.96
Karbi Anglong	35	325.37
Nogaon	12	43.45
Morigaon	7	7.35
Kokrajhar	1	4.01
Nalbari	1	1.93
Barpeta	1	1.51
Dhubri	1	1.04

Source: Tea Board, Guwahati.

⁴¹ Tea Board, Guwahati, 1999.

The possibility of non-plantation sector being affected by an increasing number of small tea growers cannot be overlooked. Number of small tea growers has been rising. The favourable conditions being created under the policy of free market, and government incentives, further growth of this sector in the near future is certain. The conditions, which will prove favourable, are-

- the opening of new markets across the border,
- new routes, which will greatly reduce, freight rates

Probable therefor is the utilisation of agricultural land earlier devoted to foodcrops. Certain number of small cultivators too will shift to tea cultivation, provided they have economic sense. This also suggests more intense competition for land, more prime land devoted to tea cultivation, and possible reduction in peasant agriculture in these areas.

Observations and Conclusion

The distinctive characteristics of agriculture within the state that emerges from the forgoing analyses are firstly a highly diverse agro ecology of a rainfed environment. This ecologically harsh environment proves ineffective the development strategy of the HYV- fertiliser package. Overcast skies and relatively less hours of sunshine affects the photosynthetic efficiency of the HYV varieties. Sheet erosion in the flood plains due to inundation removes the soil as well as reduces the efficiency of chemical fertilisers.

Secondly, the predominance of peasant agriculture, and the continuing expansion of this sector within characterise the state agriculture. The number of

smallholdings has been increasing and worse still, the size of these holdings is decreasing. Indicative is the further fragmentation of holdings- result of increasing pressures on land.

Thirdly, an agricultural landuse pattern that is characterised by underutilisation of this valuable resource. Less than half (40.62%) of the agricultural land is sown more than once. Underutilisation occurs mainly during the rabi season due to nonavailability or inadequacy of irrigation facilities. Spatial variation of this phenomenon is evident. Only six districts- 5 in Lower Brahmaputra Valley and one hill district i.e. Karbi Anglong, have more than 50% of agricultural areas under double cropping. Spatial and temporal variation in cropping intensity, and favourable pattern in this regard in the lower and central Brahmaputra valley is identifiable.

Fourthly, predominance of foodgrains in the cropping patterns, particularly rice. Three crops of rice, grown in different seasons, take up three fourth of the total cropped area of the state. Of much concern is the fact that even the small percentage of areas under non foodgrains and commercial crops like oilseeds and jute are either declining or registering very small increase over the years. Till mid nineties there was a general increase in area under jute and oilseeds but since then, a general trend of decline is noted. This phenomena goes against the hypothesis that farmers will shift to cash crop farming to benefit from liberalised economic policies. This also strengthens the hypothesis that the struggle for survival eclipses all other concerns for the peasants.

Horticultural crops have a very insignificant proportion of area under them. Evidently cropping pattern is not market oriented. A definitely more favorable

pattern would be one which is commercial crop dominant. Commercial crops such as oilseeds, jute and other fibre crops (ramie), tea and horticultural crops need to be given more weightage. Therefor any new Agricultural policy must be appropriately oriented towards development of these crops.

The tea sector too has stagnated over the years. But the number of tea estates has been on the rise. Number of small tea growers has also been rising. But the yield levels of these small growers are much below the yield levels of small growers in south India. Constraints faced by them include lesser accessibility of the latest technology, inability to avail of the government assistance. The later constraint arises due to non-registration of many of the small growers, procedure for registration being lengthy. Removing the numerous constrains is crucial for this sector to participate proactive in the free market economy. There is also a strong case for reduction in unemployment levels amongst the youth by expanding the scope of small tea gardens and thereby possibly containing insurgency.

CHAPTER V

Economic Reforms and policy changes in recent times and their impact on agriculture.

The prevailing agricultural patterns suggest the need for structural changes in the strategy for development within the physical frame of the state. Constraints placed by natural conditions such as excessive inundation for most part of the year, high humid condition as well as dry winter/rabi months and soil erosion in the hills requires serious considerations while formulating policies for agricultural development. The related nature of the physical conditions call for an integrated development policy for this sector. The ongoing development strategies within the state dealt with various components of agriculture in isolation from each component and in isolation from the ground physical realities. This was largely responsible slow growth in agriculture.

The policy thrust of the last 4 decades (1950-51 to 1990-91) was towards achieving self- sufficiency in foodgrains production by increasing production and productivity. This was sought to be achieved by a strategy of intensified cropping, adoption of H.Y.V crops, and increased application of chemical fertilisers with Research & Technology backup. Thus the policies, as seen from the foregoing analyses, were aimed at increasing area under H.Y.V. crops, more particularly of paddy- through subsidised seeds or their distribution. A fertiliser policy that aimed at providing subsidised chemical fertilisers-NPK (nitrogen, phosphorous, and potash). However the policy was flawed as the right chemical fertiliser-NPK mix or a correct time methodology

of application was not followed. Technology dissemination failed to reach the desired levels not just due to lack/inadequacy of supporting infrastructure but also due to absence of fine-tuning of the laboratory- developed technology to field conditions. Even the policy towards creating and providing irrigation facilities-basically through minor and medium irrigation failed to bring satisfactory results. It was marked by districtwise and cropwise disparity. More facility was created in lower and central Brahmaputra valley to the neglect of upper Brahmaputra valley and Barak valley. Cropwise too area under rabi paddy received more facility. It was also marked by underutilisation of the potential created. The underutilisation was partly due to inadequate and often-interrupted power supply, which hindered the running of power driven Tube Wells and Shallow Tube Wells. Till the last decade, an integrated pest management strategy was lacking. Policies aimed at post- production systems such as efficient markets did not receive serious consideration nor did a definite policy of agricultural output pricing.

Government assistance, control and regulation of production and distribution was characteristic of the development strategies. Subsidies-product specific and non-product specific were an integral part of the planned programs. Product specific subsidy, which includes the support price to specific crops, had, within the state, been limited to jute crops and tea only. There has been no support price for any other crop within the state. On the other hand, non-product specific subsidies which includes subsidy, fertiliser, irrigation, electricity, and credit subsidies had been provided to the farmers. Subsidy rates had ranged variously over the different years and plan periods, being around 50%in case of fertilisers (particularly to SC, ST and small and marginal farmers) to even 100% for electricity consumption in agriculture. Subsidy on

seeds had fluctuated from year to year, while 100% subsidy was provided to the farmers affected by floods. Subsidy too has been provided on pesticides, and on hire/purchase of farm machines. However such incentives failed to motivate the farmers to adopt better inputs or agronomic practices due to problems and constraints faced. Constraints noted, besides the geographical factors, were –

- an inadequate and inefficient input supply system, which includes non availability of-
- timely irrigation supply to the fields,
- timely supply of seeds, fertilisers, etc.,
- timely support with services of agricultural technology and improved implements;
- difficulty faced in obtaining credit,
- Socio – economic conditions of peasants such as small and uneconomic holdings, and illiteracy limiting the adoption of new agronomic practices.

Thus the single largest private sector of the country's economy depended heavily on government action and planning.

These policies though did not succeed in transforming the agricultural sector in terms of development, nevertheless changed considerably the geographical configuration of the state. Changes in landuse pattern have occurred. Area sown more than once has increased by 15.06% (noted in Chapter IV, pp.189-190). Slowly area under double cropping has increased too, though this occurred mainly in six districts of lower Brahmaputra valley. Increase in area under oilseeds has been registered. Small changes in area under pulses were

also discernible. Still more areas are devoted to rice cultivation. Riverine tracts are being devoted to oilseeds and wheat cultivation. Percentage of wastelands- both cultivable and uncultivable, have shrunk.

The basis for future reforms in agricultural policies must lie, firstly, in the geographical location of the state. This is, in the present context of a liberal trading environment translates as potentials for trade with neighbouring countries. It is favourably located for cross border trade with these countries. This suggest a policy shift from foodgrains production and policy orientation towards development of commercial agriculture with stress on increasing production of oilseeds, jute, horticultural crops; and of allied activities such as pesiculture/fisheries, sericulture, etc. The second basis for reforms therefor, concurrently with the first, is the favourable agro-climatic conditions and the biodiversity of the state. Production of a wide range of commercial crops and their cross-border marketing provide the base from which an economy aspiring to globalise can take off.

5.1. Policies since 1990-91

5.1.1. Production policy

The immediate post liberalisation period did not witness any significant change in agricultural development policies. In fact the state government has no clear-cut policy for agricultural development. The broad policy remained the same - that of attaining self-sufficiency in agricultural crops. The 8th plan (which

coincided with the second phase of liberalisation in the country) development strategies were formulated as per the recommendations of the L. C. Jain Committee.¹ Keeping in mind the slow rate of growth, the L.C. Jain Committee gave development recommendation for the state. The committee suggested four integrated packages for adoption in which agriculture, irrigation, flood control, etc. constituted the first package. So far as agriculture and irrigation was concerned, the recommendation was for -

- Reduction in dependence on procurement of food grains and oilseeds from outside by increasing production, improving the input delivery system,
- establishment of an Agricultural Development Board for giving unified command,
- Research for development of a short duration HYV paddy,
- Development of plantation and horticulture,
- installation of 12,000 shallow tube wells per year during the 8th plan,
- completion of ongoing two major and 7 medium irrigation projects within the plan period.²

5.1.1.1. Stress on Food grains Policy – This stress was as a measure to reduce dependence on procurement of foodgrains and oilseeds from outside. The situation from the beginning of the 8th plan has been that production of foodgrains in the state primarily depends on production of rice, that too, particularly of sali rice- winter and autumn rice. Requirement of rice within the state by the terminal year of the 8th plan was estimated at 41.53 lakh tonnes

¹ L. C. Jain Committee recommended- (i) Installation of 60,000 STW During 1991-96; (ii) construction of Tipaimukh & Pagladiya dams; (iii) improvement of drainage; (iv) reorganisation & reactivation of Brahmaputra Board; (v) improve operational efficiency of ASEB; and (vi) preparation of a perspective plan for inland water transport.

² Draft Eight Five Year Plan, Assam, 1990-95, p. A-10

which included, besides those for human consumption, grain for seed requirement, for animal and poultry, and wastage in storage and transport. However scope of increasing production through increase in area under sali(kharif) paddy is very limited. Increasing production of the crop through H.Y.V. too is limited- no semi-dwarf H.Y.V. for sali paddy so far been recommended.³ Thus the emphasis during the 8th plan had been on rabi (summer) rice cultivation and of short duration variety suitable for post flood situation. However the target in increasing area, production and productivity of the same was not achieved as evident from table 5.1.

Table.5.1. Performance in rice production in Assam, 1993-94 to 1997-98.

Year	Season	Area		Production		Yield
		Target	Ach.	Target	Ach.	
1993-94	Autumn	6.45	6.36	6.20	5.87	937
	Winter	18.10	17.97	27.26	25.58	1443
	Summer	1.79	1.28	2.90	2.19	1708
1994-95	Autumn	6.45	6.46	6.54	6.19	973
	Winter	18.10	17.08	27.30	24.77	1472
	Summer	2.00	1.32	3.47	2.13	1615
1995-96	Autumn	7.40	6.25	7.00	5.16	839
	Winter	18.60	17.60	27.00	26.23	1513
	Summer	2.00	1.55	3.80	2.51	1619
1996-97	Autumn	7.40	6.20	6.25	5.20	853
	Winter	18.60	17.36	30.67	25.16	1467
	Summer	2.20	1.72	4.24	2.92	1701
1997-98	Autumn	6.00	5.80	6.07	5.98	1000
	Winter	18.00	25.20	17.43	24.71	1439
	Summer	4.00	6.56	1.76	3.14	1797

Source: Department of Agriculture, Government of Assam.

³ *ibid.*, p.A-13.

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Source: Department of Agriculture, Government of Assam.

³ *ibid.*, p.A-13.

The table highlights that

- The temporal changes in yield rates are considerable. In fact decline in the yield rates of rice, particularly of Winter and Autumn rice is evident.
- Production of these crops fell short of the target,
- Area under the crops have no increased as targeted, rather they have fallen short of the targets.

Despite the emphasis on increasing area, production and productivity in rabi rice, production and productivity in this crop too declined over the same period.

Reasons for poor performance - The poor performance in cases of winter rice was mainly due to physical factors. Low response to chemical fertilizers due to excess rainfall, uneven rainfall in the early part of the season which caused delay in sowing and transplanting, low photosynthetic efficiency due to overcast skies, and floods and prolonged inundation had been the factors responsible. In case of autumn rice, the poor performance was due to both physical factors and inadequate input delivery system. The non availability of suitable variety, along with incidence of high infestation of weeds, heavy rainfall at the time of harvest which damage the crop resulted in low production and productivity. In the absence of adequate irrigation facilities, water stress in the early part of the season was also responsible for low performance. In case of rabi rice, the problem basically has been inadequate irrigation, input delivery system and inadequate research back up.⁴

⁴ Report on Agricultural Development in Assam, Directorate of Agriculture, Government of Assam, 1998-99, P.5.

Production and productivity of rabi rice was to be increased through increase in area under irrigation. Till the terminal year of the 7th plan a total of 46,000 shallow tube wells only were installed against the potential of 5,45,000 numbers. Thus the strategy was to install at least 12,000 shallow tube wells (S.T.W.) during the plan period annually to ensure an additional irrigated area of at least 1.50 lakh hectares. However by 1995-96-four years of the 8th plan, an additional 7079 STW only were installed against the total target of 60,000.⁵ The number of pump sets distributed during this period was 3570.

5.1.1.2. Other Foodgrains - Specific development strategy of rabi grain crops other than rice continued to be ignored. Production of crops such as wheat and pulses therefor registered negative growth. Production of pulses had stagnated over the last two plan periods due mainly to the unfavorable physical conditions within the state. The state requirement by the end of the 8th plan was worked out to be about 4.77 lakh tonnes. But production was only 75000 M.T. only. The area, production and productivity of pulses in the state during the 8th plan was as follows.

	1992-93	1993-94	1994-95	1995-96	1996-97
Area (‘000 hec.)	117	119	120	118	131
Production (‘000 M. T)	55	63	65	63	75
Average yield (kg./ha.)	475	528	542	534	578

⁵ ibid, P.21.

Reasons for low productivity were-

- adverse physical condition of the acidic soil and climatic condition,
- non availability of improved seeds,
- high humidity and lack of storage facilities,

have kept productivity at low levels. Productivity rose only marginally from 542 kg. per hectare in 1994-95 to 578 kg. per hectare in 1996-97.⁶

Table 5.2. Productivity of major crops.

(kg./hectare)

Crops	1994-95	1995-96	1996-97
Rice	1338	1354	1336
Wheat	1290	1187	1332
Pulses	542	534	578
Oilseeds	567	560	551
Jute	1832	1715	1537

Source: Directorate of Economics and Statistics, Assam, 1997-98.

To increase production of rice, the present strategies (9th plan) are-

- To cover vast low and medium productive land under irrigated ecology,
- Cover vast mono-cropped areas in high rainfall region with quick maturing irrigation project to enable raising a second crop.
- Tactical crop planning to avoid crop losses,
- Agronomic manipulations to achieve higher yield, and
- Increasing farm power from the present level of 0.3 H.P. per hectare to 1 H.P. to intensify and diversify cropping system,

are other strategies towards increasing production and productivity during the 9th plan. During 1996-97 and 1997-98 a total of 6738 STW covering 12,650

⁶ Directorate of Economics and Statistics, Assam, 1997-98.

hectares of cultivated land, and 592 LLP covering 2368 hectares were installed. During these two years, farm mechanization was increased by distribution of 2200 power tillers during 1996-97 and 1754 power tillers during the following year. Target area under HYV rice is 22.50 lakh hectares by the terminal year of 9th plan from 14.05 lakh hectares in 1994-95.⁷

5.1.1.3. Oilseeds - Performance in oilseeds, as seen earlier has been very slow. During the period from 1992-93 to 1997-98, area under these crops increased only by 3%, production by 10% and productivity by 6.6%.⁸ Unfavorable physical condition was found to be mainly responsible for this. Thus a policy of maximum stress of kharif oilseeds having limited potentials due to weather conditions is realised. The stress is on increasing area under groundnut in the flood affected char areas after floods, introducing sunflower and groundnut in non-traditional areas and increasing productivity through implementation of productive technology evolved by AAU and ICAR.⁹ A holistic approach to oilseeds development is aimed at. Also, a clear-cut policy for a strengthened input support system, infrastructure, marketing and price support can only encourage the cultivators to improve the production performance of these crops.

⁷ Report of Agricultural Development in Assam, Directorate of Agriculture, Assam 1998-99.

⁸ *ibid.* p.12.

⁹ *ibid.*

5.1.2. Policy on inputs

5.1.2.1. Input availability-Seeds.

The problem of non-availability of quality seeds in adequate amount, discussed in chapters III and IV, continued to persist. Except for rice and mustard, the shortfall in the production of certified seeds of major crops continues. Besides, availability of quality seeds as and when required by the farmers is another constraint in the absence of proper storage facility. High humidity condition makes carrying over seeds to the next season impractical. Thus from year to year the farmers depend on the state, who in turn procure from outside.

Attempts at production of quality seeds within the state continues to be undertaken by the public sector. Institutions such as the State Farms Corporation (SFC) and State Seed Corporation (SSC), function with the objective of providing regulatory services of seed certification, seed quality control, seed processing, packaging, seed marketing and training in various aspects of seed production. Within the state altogether 52 Departmental Seed Farms, 12 Seed Farms of the State Seed Corporation and 12 Agricultural Farming Corporation have been engaged in production of certified seed. The enforcement of Seed Act, 1966 from Oct. 1969 was for this objective. Thus seed multiplication and marketing activities have been under the control of government agencies. National Seed Policies in the past had this *raison d'être*.

The policy reforms on seed production and distribution can have adverse effect on the performance of agriculture.¹⁰ But there are two ways of looking at this

¹⁰ "New Seed Policy" Announced by the central government in 1988 was with the idea of allowing plant varieties available in the international market to enter India, and also to boost the efforts of plant breeders in developing superior varieties which can compete globally.

issue. Reforms translated into privatization /leasing out public sector agencies could while on the one hand further marginalise peasant farmers, or on the other hand could make seed availability easier. Competition due to entry of MNCs in the seeds sector could have the positive impact of easy accessibility of quality seeds to the farmers, but at the same time possibility of in rise in price of quality seeds is inevitable. Small and marginal farmers face another problem. Under the UPOV (International Union For Protection of New Varieties of Plants) farmers managing to purchase quality seeds from any of the branded MNC's for one year cannot retain back a part of the harvest for sowing successive crops.¹¹ However, it is expected that given the economic conditions of the state's farmers the state's role in this sector will not diminish. An Amended Seeds Act or the new Bill on 'Plant Varieties and Farmers Right', 1999 cannot be taken full benefit of by the farmers/breeders of the state without the state agencies help due to the conditions of the said Bill. The conditions for registration seeking patent of new breeds will be done only after it is established that the variety is stable for a considerable period of time within which their variability, uniqueness, and stability is tested. Other conditions required for registration are-

¹¹ Kumar, Shailendra, "Drafting For Plant Breeders' Rights", The Economic Times, October 29, 1995.

UPOV was formed in 1961 for the coordination of Plant Breeders' Rights for member countries. Twenty-two countries are its members. The 1978 convention of UPOV exempts 'essentially derieved varieties' from patent obligations. Dr. M.S. Swaminathan (father of green revolution) is of the opinion that this exemption is favorable for countries like India as it is in the interest of the small farmers. The 1991 convention of UPOV, on the other hand is believed to be more in favour of agri- business companies as it removes this exemption. The purpose of this convention is to ensure that the member state of the Union acknowledge the achievements of breeders of new varieties, by making available to them an exclusive property right. This is to be on the basis of a set of uniform and clearly defined principles. To be eligible for protection, the varieties have to be- distinct from existing, commonly known varieties; sufficiently homogeneous; stable; and new in the sence that they must not have been commercialised prior to certain dates established by refernce to the deate of the application for protection.

-a certain prescribed quantity of the seeds, which is to be deposited with the National Gene Bank (NGB) of the National Bureau of Plant Genetic Resources (NBPGR)

- such deposited seeds should be freely available to the researches for developing new varieties.
- It can also be used for multiplication under the compulsory licensing scheme by the government. The authorities can decide whether there is enough material (seeds) available in the market for the public or not. Then alone will it grant licenses for other to manufacture it.
- compulsory certification of the material (seeds) is necessary for sale in India and Abroad:

Evidently much time, costs and paperwork is involved. This could act as a deterrent to the prospective plant breeders.

5.1.2.2. Fertiliser policy

The situation regarding fertiliser application did not improved by the turn of the decade. Fertiliser consumption which was only 7.1 kg. per hectare by the end of the 7th plan (1989-90), in the 8th plan rose only to 14.2 kg. per hectare. In 1997-98 the figure stood at 18.20 kg per hectare.¹² The target by end of 9th plan (2001-02) is for 50 kg. This is much lower than the level of consumption reached by other state. By 1990-91 W. Bengal consumed 90.3 kg. per hectare, Andhra Pradesh 133.2, and for the country as a whole it was 72.4 kg/hectare.¹³

¹² A Report on Agricultural Development in Assam-1998-99, Directorate of Agriculture, Assam.

¹³ Economic Survey. 1991-92, p.162.

In comparison, the state had registered fertiliser consumption of only 86 kg./hectare in 1996-97.¹⁴ The state is at least 10 years backward in this respect. Districtwise figures pertaining to fertiliser application is even more dismal-per hectare application in some districts has continued to be as low as 2.5 kg./ha. in the plain districts, and in the hill districts it is even lower-0.23 kg./ha. to 0.46 kilograms/hectare. Besides, districtwise disparity in application noted in the earlier plan periods (chapter III, pp.153), also still continues (as can also be seen from table in Appendix V) shows. Evident from the table, in the state's context only one district have relatively high fertiliser application, that too only 15 kilograms/hectare. In the districts of Nogaon, Dhemaji, Tinsukia, Kamrup Sibsagar and Jorhat level of fertiliser application range between 10 - 15 kilograms/hectare. Districts, which have registered marginal increase in fertiliser application during the period 1992-93 to 1996-97, are Cachar, Dhemaji, Sibsagar, Jorhat, and Tinsukia. District where it has declined considerably during the same period is Golaghat, Nogaon, Morigaon, Barpeta, Dhubri, Bongaigaon, Karimganj and Hailakandi.¹⁵

The features that is apparent (from the table in Appendix V) are –

- Increase in per hectare fertiliser application during the period from 1992-93 to 1996-97 has not been significant.
- With the exception of Cachar, districts of central and Upper Brahmaputra valley have higher levels of fertiliser application.

¹⁴ CMIC Report, 1997.

¹⁵ CMIE Report, 1993 and 1999; Statistics Handbook, Government of Assam, 1992-93, 1996-97, pp.72-73; p.77.

-Districts, which earlier had higher levels of application, has registered decline in the level of application.

5.1.3. Policy of input subsidisation

The above picture of low fertiliser application, and of decline in the same has to be seen against the policy of subsidisation. Subsidy in fertiliser in the past ranged from 30% to as much as 50%. Such incentives have not been successful in popularising the use of fertilisers amongst the farmers; fertiliser consumption in the state agriculture remains one of the lowest in the country. Likewise, subsidy given on pesticide in the 8th plan is 25%. Some other inputs on which subsidy granted during this plan period were- (1) bullock drawn agricultural implements-50% subsidy, (2) distribution of power tiller at subsidised rate of Rs.12,000.00, (3) plant protection equipment at a subsidy of Rs. 500.00 each.¹⁶

Schemes of promoting agricultural mechanisation through small tractors distributed on subsidy failed to bring noteworthy change. Virtually no impact of such scheme was observed. Under the scheme of 'Promotion of Agricultural Mechanisation Through Small Tractors', which was a central sector program, only 21 farmers were reported to have availed the benefit till March, 1995.¹⁷ The target was to provide 42 small tractors in 1992-93 and 84 numbers in 1993-94. The scheme of supplying small tractors below 18 PTO H.P. and

¹⁶ Evaluation of Agricultural Development in Assam, 1995-96, Directorate of Agriculture, Government of Assam.

above 18 PTO H.P. at subsidised rates had very low response. Some of reasons were-

- meant basically for the marginal and small farmers, the scheme was not successful with them since the subsidy was of Rs. 30,000/- only against the high cost of the tractors which ranged from Rs. 1,25,000/- to more than Rs. 1,50,000/-. Thus due to inadequate resources the small farmers were not confident enough to apply for the benefit.
- publicity of the scheme was inadequate and few farmers were aware of the scheme.
- another major drawback was that loans were sanctioned mainly to bigger farmers by commercial banks and agencies against the guidelines of NABARD. The prime consideration was the ability of beneficiaries to repay the loans. Eventually most beneficiaries under this scheme were those with more than 4 hectares of land holdings. This was despite the fact that the scheme was meant for farmers having holdings between 2.4 to 3.2 hectares.
- These tractors became more of a liability due to frequent breakdown of the tractors. The soil condition was held responsible for frequent breakdowns. Shortage of expert technical hands for repair in case of mechanical trouble added to the trouble. Shortage of expert technical hands for repair too causes problems. Farmers also faced problems in getting spare part of the tractors. Spare parts are not available within easy reach or are too costly. These acted as a disincentive to expansion of mechanisation.¹⁸

¹⁷ Gogoi, Dr. Bharati, (1995), "Evaluation of Implementation of Central Sector Scheme on Promotion of Agricultural Mechanization Through Small Tractors", Agro-economic Research Centre, AAU, Jorhat, p. 12.

¹⁸ *ibid.* p.47-50

Even in terms of agricultural performance, perceptible change as a result of tractorisation was less evident. While area and yield of kharif paddy increased by 13.83% and 11% respectively, there was decline in area under rabi crops.

Cropping intensity did not change as a result of use of tractors. In fact, in case of beneficiary farms where above 18 PTO H.P. tractors were used, cropping intensity came down from 180% to 161%. Thus the use of tractors alone did not influence the farm performance in the absence of irrigation- these farms did not have any irrigation facilities. However, the number of hired labour declined from 37 to 25, and from 37 to 23 for beneficiary farms using below 18 and above 18 PTO H.P. tractors respectively.¹⁹

Thus the strategy of subsidisation has not improved the situation much. Such incentives have not increased the use of power tillers, or plant protection equipment in the absence of appropriate infrastructure.

5.1.4. Policy on agriculture infra-structure

5.1.4.1. Development of irrigation - Investment in agriculture infrastructure has been predominantly by the state/centre. Particularly in irrigation, during the earlier plan periods large sums were allocated towards the development of this infrastructure. Medium and minor irrigation projects received fund allocation. The amount allocated in the 7th plan was to the tune of Rs 400 lakh for minor irrigation to cover an area of 221000 acres. This @ rose to Rs 2400 lakh by the 8th plan, of which 50% centre's shares. Despite the increase in outlays in the

¹⁹ *ibid.* p.56.

successive plan periods, irrigation potentials created have always fallen short of the target -discrepancy in the target and actual capacity created point to the mismanagement of funds. By the mid 8th plan the total potential so far created was only 477163 hectares. Against this, private investment on agriculture has been very small- in the 7th plan it was only 43000 hectares. Each state development plan earmarked an amount for this purpose. In this too districtwise disparity, continued gap in physical target and achievement, as well as gap in provision and expenditure points to mismanagement. Districtwise, the same trend as observed in case of H.Y.V crop coverage and fertiliser consumption is discernible here- the lower Assam districts, again Nogaon, Sonitpur Barpeta have relatively higher levels of irrigation potential created and utilised. Table 5.3 brings out the districtwise discrepancy.

The significant feature which emerges from the table are-

- Wide discrepancy in potential created. Only two districts- Nogaon and Sonitpur have more than 20% gross cropped area under irrigation potential. This is still very low in comparison to the rest of the country.
- More irrigation potential in general has been created in the districts of lower Brahmaputra valley, comprising the agro-climatic sub zone III, IV & VI.
- Likewise, irrigation potentials created in districts of upper Brahmaputra valley, falling in agro-climatic sub zone II were extremely low. Percentage gross area covered by irrigation potential created upto the year 1996-97 ranged between 3.95% (Tinsukia) to 9.78% (Sibsagar) only.
- Districts of Barak valley were the most neglected (agro-climatic sub-zone VII).
- In comparison the hill districts received more attention, due perhaps to the separate development allocation under the tribal sub plan meant for these

districts: Table (table 5.4) gives the potential created during the 8th plan under the Tribal Sub Plan (T.S.P.) and Schedule Caste sub plan (S.C.P.).

Table.5. 3 District wise total irrigation potentials created.

(figures in hectares)

District	1993-94- potential		1996-97- potential	
	Created	As % of gross cropped	Created	As % of gross cropped
Lakimpur	10111	6.16	10357	6.31
Dhemaji	5225	5.44	5271	5.47
Sonitpur	50346	21.42	51119	21.75
Jorhat	10387	6.41	12121	7.48
Golaghat	11413	6.79	16064	9.56
Sibsagar	15698	9.81	15649	9.78
Dibrugarh	11598	6.94	11189	6.70
Tinsukia	5089	3.82	5377	3.95
Nogaon	82990	21.60	86505	22.58
Morigaon	15318	11.60	15685	11.88
Barpeta	56218	17.40	55505	17.18
Nalbari	16095	8.12	17805	8.99
Darrang	50724	18.85	50319	18.70
Kokrajhar	24233	16.71	21056	14.52
Bongaigaon	6136	4.06	9806	6.49
Dhubri	13872	6.16	14000	6.22
Kamrup	33211	14.95	32680	14.72
Goalpara	11263	11.04	11439	11.21
Cachar	5034	3.62	5377	3.86
Karimganj	524	4.94	2892	2.78
Hailakandi	3521	5.67	3621	5.84
Karbi Anglong	20661	11.41	21870	12.08
N.C. hills	4707	12.38	4996	13.15

Source : Compiled from Records of Irrigation Department, Assam, 1995-96, 1997-98.

ASSAM IRRIGATION POTENTIAL 1995-96.

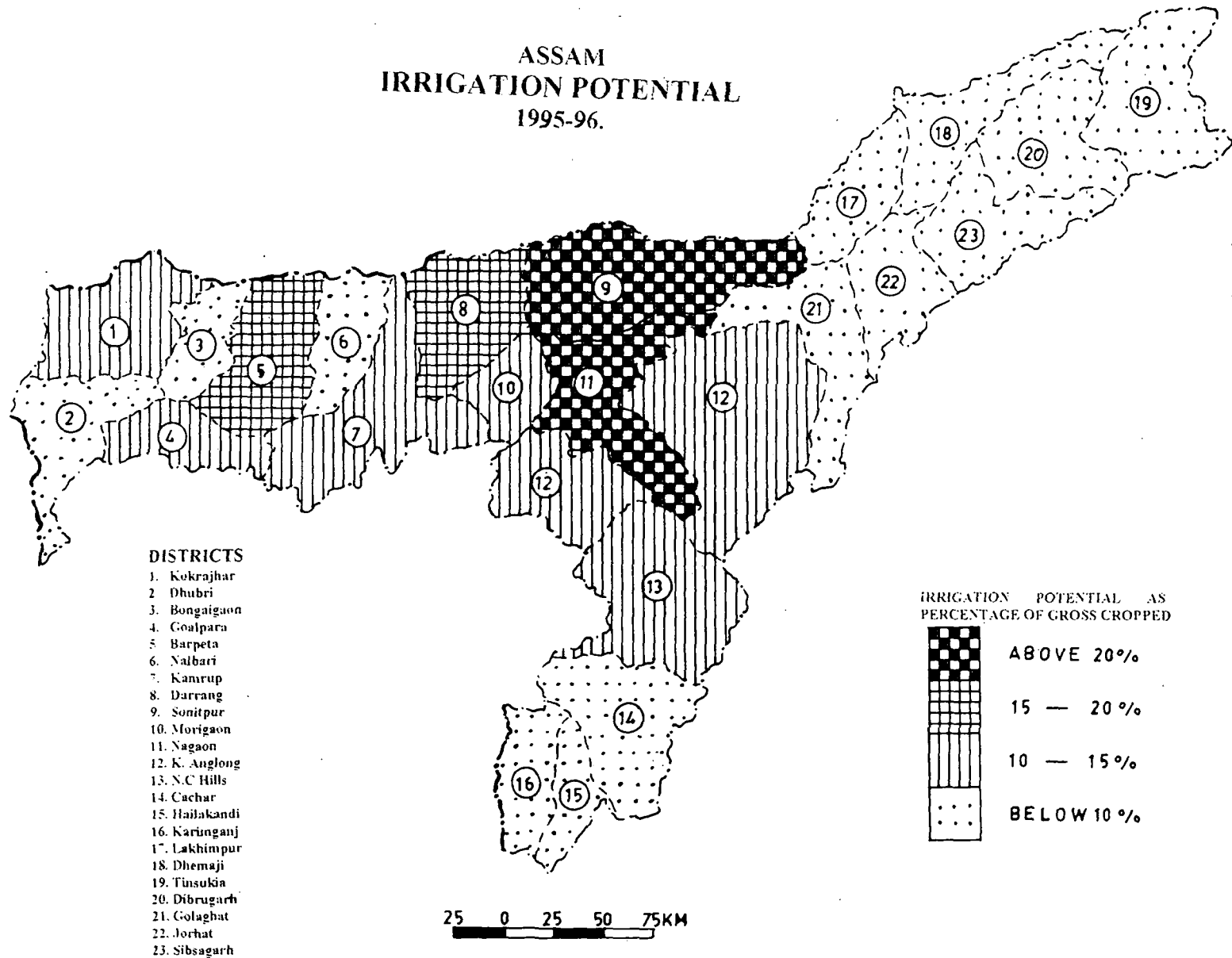


Fig. 20

A significant feature is that potentials created were mostly in minor irrigation. Medium irrigation facility were developed only in districts of Nogaon with 18.64% potential of the total, Barpeta-11.59%, Sonitpur-10.83%, Kamrup-7.05%, Kokrajhar - 3.69%, Dibrugarh-0.34% of the total irrigation potential created. There has been no significant increase in potential created over these two years, in certain cases a decrease is noticeable too.

Table.5.4 Development of irrigation under T.S.P. and S.C.P. (minor irrigation)

Year	Assam		T.S.P.		S.C.P.	
	Target	Achievement	Target	Achievement	Target	Achievement
1992-93	15300	7046	5300	2036	2000	540
1993-94	15850	3250	7500	623	1500	551
1994-95	13100	4054	7500	735	1500	720
1995-96	10300	2227	3000	180	2000	511
1996-97	9000	512	2000	200	1500	50
1997-98	5300	334	2000	18	1000	60

Source: Department of Irrigation, Guwahati, 1999.

The problem is compounded by the fact that the potential thus created is not fully utilized. There is gross under-utilization of the potentials created (Table.5.5). The potentials utilized in 1993-94 were only 1,29952 hectares, i.e., only 27% utilized. And here too the break-up has been in favor of kharif crops where more than 82% of the irrigation potential utilized has been by these crops.

Constraints to underutilisation of the potentials created are –(a) lack of proper field channels for proper distribution of water, (b) inadequate and interrupted power supply, (c) non-availability of water from the source during the crucial cropping period. It is evident then, that under such conditions, even if there was

to be private investment on irrigation, the reason alone of inadequate, often interrupted power supply would render it unfeasible.

Table 5.5. Irrigation potentials created and utilized, 1992-98.

(area in '000 hac.)

Year	Major/medium			Minor		
	Potential created	Cumulative	Utilization	Potential created	Cumulative	Utilization
1992-93	5.553	164.9	97.60	7.58	437.8	117.3
1993-94	7.77	172.7	52.98	3.87	440.9	76.36
1994-95	6.51	179.3	75.59	4.15	444.9	71.65
1995-96	0.84	180.1	33.38	2.26	447.1	61.69
1996-97	Nil	180.1	49.09	0.51	447.7	64.10
1997-98	0.20	181.3	-	7.98	455.7	-
(target)						
9 th plan	6.50	187.7	-	12.84	468.5	-

Source: Department of Irrigation, Government of Assam, Guwahati.

For optimum utilization of irrigation potentials, foremost the power supply has to be regulated and managed. This is again a state controlled sector; 100% power subsidy is given to the agriculture sector in the state. However, due to the interrupted and irregular supply, and small size of farm along with various reasons, power utilization again is very low or nil. The present level of farm power is just 0.3 H.P. per hectare. Privatisation of power supply or private participation in the same has the possibility of improving power supply. On the other hand subsidy need to be continued given the economic conditions of the farmers. Therefor continued role of public sector, along private participation is the possible answer. This will remove the monopoly of the public sector and thereby increase efficiency.

5.1.4.2. Credit support.

It has been noted that poor flow of agricultural credit has been a major reason for low investment and levels of technology adoption as well as the inability of the farmers to obtain inputs in time for timely application. As already noted, per hectare credit availability within the state till the last decade was only Rs. 14/-. Till the last decade scheduled commercial banks, and Regional Rural Banks (RRBs), have not been very successful in providing credit support to individual farmers. The complex transaction procedures involved in these institutions kept the farmers from taking full advantage of these financial institutions. Besides the poor recovery rate from the farmers, bankers are hesitant to advance loans to the small individual farmers. As a result loans have gone mainly to large farmers and tea growers. Figures available for Regional Rural Banks (RRBs) who have provided crop loans during the years 1995-1999 are – Pragjyotish Gaonlia Bank (PGB), Subansiri Gaonlia Bank (SGB), Lakshmi Gaonlia Bank (LGB). The number of crop loans provided by these RRBs have decreased over the mentioned period. The reason for this is apparent- the recovery rate has been very low. Recovery rate further declined in the year 1997 when it came down from 7.88% to just 3.42%.²⁰ The recovery rate was different for different RRBs. It was in comparison higher in case of PGB where the recovery rate 12.71% in 1995 and 17.05% the following year.²¹ However in the following two years amount loaned was not recovered yet. The recovery rate in case of the other two RRBs were very small. SGB recovered only 3.84% and 4.80% in 1995 and 1996.²² No recovery was made the

²⁰ Agenda Notes, State Level Bankers' Cell, State Bank of India, Guwahati, Assam, 1997.

²¹ Agenda Notes, State Level Bankers' Cell, State Bank of India, Assam, 1996.

²² *ibid*.

following two years. Similarly, LGB made very small recovery throughout these years, between 4% to 3.42%. Number of crop loans provided by PGB decreased from 601 numbers in 1995 to 581, 291 and 309 in the successive years. The figures in case of SGB was 11, 27, 57, and 17 crop loans for the corresponding years. In case of LGB, 87 crop loans were provided in 1995 and 52, 30 and 307 crop loans in the following years (SLBC, 1995-1999). Another possible reason for lesser number of crop loans could be the farmers inability to repay and hence non application of fresh loans. Amongst the Commercial Banks, State Bank of India has been the lead bank with the highest share of loan advancement to the agricultural sector. It had advanced a total of 13311 crop loans during 1995, 8109 crop loans during 1996, 15547 crop loans during 1997 and 8238 crop loans during 1998.²³ Loan recovery has been nil (SLBC, 1995-1999). The following table (table 5.6) gives an idea of the loan advancement and recovery rate of the same.

Table 5.6. Crop loan, 1995 –1998.

Rs. in lakhs.

Year	Bank	Number of loans	Amount	% of recovery
1995	RRBs	699	19.99	6.85
	Comm. Banks	13569	25.69	25.97
1996	RRBs	660	33.57	7.88
	Comm. Banks	8275	24.12	17.12
1997	RRBs	378	25.66	3.42
	Comm. Banks	15659	28.91	17.28
1998	RRBs	633	57.6	3.42
	Comm. Banks	11543	583.03	14.66

Source: State Level Bankers' Cell, State Bank of India, Guwahati, 1997, 1999.

²³ Ibid, 1997, 1998, 1999.

Table 5.7. Agricultural advances, 1996-99.

(Rs. in lakhs)

Item	Banks	1996	1997	1998	1999
Agricultural Advances.	RRBs	27895.74	25374.28	135.00	5971.32
	Com. Bank	22071.83	19355.48	21939.52	19891.69
	AAB	1521.09	26535.84	2186.71	2319.97
Percentage advanced	RRBs	142.41	129.54	29.12	28.35
	Com. Bank	13.67	129.54	10.97	28.35
	AAB	9.93		11.53	12.23

Source: State Level Bankers' Cell, State Bank of India, Guwahati. 1997, 1998, 1999.

Recovery rates in case of agricultural advances (other than crop loans) to have not been encouraging. Total amount advanced by Commercial banks were to the tune of Rs. 22071 lakhs during 1996, going up to a total of Rs. 19355.48 lakhs during 1997. In 1998 the total agricultural advances by the Commercial banks were Rs. 21939.52 lakhs and in 1999, Rs 19391.69 lakhs.²⁴

Credit mobilization through Gaon Panchayats –GPSS, and LAMPS (hills) have fallen short of the desired objective. Credit mobilization via the pather parisara samitis (Farm Management Committee) have had mixed result. During 1996-97 rabi season individual crop loans were processed through 6 pathar parisaras only and a token amount was disbursed. Recovery rate was reported to be 100%. Encouraged, in the following year 70 FMCs was adopted and loan amount of 50 lakh sanctioned and disbursed. In the third year-1998-99, individual crop loans are offered through 325 FMCs during the kharif season.²⁵ A relatively better response of loan advancement from the banks to these

²⁴ Ibid, 1999.

²⁵ A Report on Agricultural development in Assam, 1998-99, Government of Assam, department of Agriculture, p.21.

FMCs and not too bad recovery rate suggest that future policies in credit mobilisation needs increased participation of grass root people.

5.1.4. Research and technology, and technology dissemination

Privatization of the public institutions are a threat to the R & D activity in the state; R&D in agriculture to develop quality seeds, new varieties of crops, better agronomic practices, etc. have till date, been carried out by these PSUs with heavy central investment. Its been widely accepted that research & technology is the basis for increasing agricultural productivity. It is also the general opinion that the rate of returns is as high as 50% if research experiments is treated as an investment.

Since the 8th plan new strategies for dissemination of modern technologies was characterized by the involvement of non –governmental organizations – Pathar Parisara samitis or farm management committees (FMCs) in concurrence with 6 Regional Agricultural Research Stations (RARS) within the state. These are in N. Lakhimpur, Shillongani, Gossaigaon, Karimganj, Diphu and Titabar. Transfer of technology through establishment of group contacts at the grass root levels and via farming systems approach is the basis of pathar parisara samitis- formed of groups of farmers. Expected to have spin off effect to the non program areas, the program areas included whole village adoption program, cluster of villages program for training and transfer of technology. Studies reveal that inadequate infrastructure like irrigation and credit facilities

hindered the dissemination of technology.²⁶ Evaluation of the transfer of technology in village Atapam (16 km. south west of Jorhat town), Jamuguri (adjoining AAU, Jorhat), and Kundergaon under the 'Whole village adoption program' brought to light numerous drawbacks in the policy. Demonstration of HYV Sali rice with varieties Ranjit, Bahadur, Moniram and Kushal, Rabi vegetables, HYV Ahu program, and orchard development were undertaken in the farmers' fields. Yield rates increases in case of sali paddy were- 6.3 tonnes and 5.4 tonnes per hectare for the first two varieties respectively, and more than 5 tonnes per hectare for the later two.²⁷ To encourage double cropping, short duration HYV Ahu rice variety Luit, Kapilee and Lachit were introduced. The adoption level of HYV kharif paddy by beneficiary farmers were more than the adoption level of rabi paddy or other rabi crops like vegetables. Chemical Fertilizer application though not new to the villages were not of the right doses. Through the extension program judicious use of this input by using recommended doses and proper type of fertilizers were demonstrated. Comparative analysis of yield rates in beneficiary and non beneficiary farms showed an additional production of 1040 kg per hectare from HYV Sali paddy cultivation. The average cropping intensity of the beneficiary farms were 103 against 102 of the non beneficiary farms.²⁸ Spin off effects of disseminated technology was noticed in non program areas. Non beneficiary farmers also increased use of HYV seeds, increased fertilizer application.²⁹ However the spin off effect was limited. At the same time, continuation of improved

²⁶ Gogoi, Bharati. 1996 : *Impact of Transfer of Technology by Directorate of Extension Education in Program & Non-Program Areas*, Agro-economic Research Center, AAU, Assam, p.72.

²⁷ Ibid., pp.54-55.

²⁸ Ibid., p.56

²⁹ Ibid., p.72.

technology did not happen. Reason was- lack of needed infrastructural facilities like irrigation; lack of credit facilities; poor economic conditions of the farmers; absence of awareness amongst farmers of the comparative profitability and input-output ratio of improved technology. Thus farmers' enthusiasm in such programs has not been sustained. Besides, most of the 22,000 pathar parisara samitis were formed just to procure the power tillers promised by the government and take undue advantage of the credit advancement scheme to these samitis. They did not play a positive role in motivating member-farmers in changing cropping pattern or increasing cropping intensity.

5.2. Policy changes since mid nineties

Mid 1990, i.e., 9th plan onwards, certain changes in the government policy has been -

- Firstly towards reduction or removal of subsidies.
- Secondly, closure of uneconomic facilities.
- Thirdly, an integrated, multidisciplinary farming approach for agricultural growth.

While a clear-cut policy for agricultural growth is still absent, a policy of crop promotion confined to specific, identified crops has been adopted. Crops identified are on the basis of general performance and evaluation of preceding year, those which has showed promising yield, and have potential for area increase. Under the joint effort of Department of Agriculture, Irrigation, etc. the policy is to introduce new system based high value & profitable crops & species.

5.2.1. Reduction/removal of input subsidy

Earlier, the strategy adopted to encourage farmers to take up improved agronomic practices developed by the research institutions to increase productivity was through input subsidization. Inputs were subsidized with a view that the farmers will adopt cheap inputs. However in actual practice this did not happen as these inputs have to be distributed through government machinery which create paper work delays. Non-availability of such inputs has also been due to lack of proper market structure for agricultural inputs. Thus the strategy at present is to abolish subsidy of inputs. Instead, the effort is to make available the inputs to the cultivator's doorstep at a reasonable price. Wherever subsidy continues, it is confined only to specific stated purpose (particularly for introduction of new technology), for limited periods and limited areas. Thus while subsidy on old varieties will be tapered down, those on new varieties will not be extended beyond three years. In case of fertilizers too, general subsidy on inorganic fertilizer have been minimized. Support continues only in case of new strains of bio-fertilizers organic fertilizer and plant growth materials. Here too subsidy is to continue for three years only. Subsidy given on farm mechanisation in the form of subsidy on medium/small tractors and power tiller is also progressively reduced. On the whole the state policy is towards a progressive tapering down of the existing subsidies.

This policy of subsidy removal is in contrast to the national policy of continued subsidization of inputs. As part of the central scheme subsidy continues.

5.2.2. Privatization of state seed farms

Closure of uneconomic facilities is part of the state policy to reduce expenditure and bring effectiveness to public expenditure. Institutions not serving the stated purpose or not being cost effective for three years running are recommended to be closed or face privatization. Privatization of seed farms and progeny orchards earlier held by state government have already been initiated. As an essential condition of the World Bank funded projects, under the Assam Rural Infrastructure and Agriculture Services Project (ARIASP) seed farms and progeny orchards have been leased out to the Private sector. 21 seed farms were leased out to the private sector in 1997-98. The second batch of 15 progeny orchards were offered for leasing out in 1999-2000. The remaining 25 seed farms and progeny orchards with the Agriculture department were also offered for leasing out.³⁰

5.2.3. Agricultural Infrastructure development.

In an effort to streamline irrigation activities in the state and ensure better utilization, the current policy adopted is for entrusting all minor irrigation development works with a single agency—either irrigation department or bringing the department of “Minor irrigation “ under the control of Agriculture department. The earlier system of entrusting irrigation development works to other departments had resulted in un-coordinated developmental work. Also the policy aims at assured supply of power requirements to irrigation and

³⁰ Assessment of Agricultural Component of ARIASP, Krishi Bhavan, Assam, 1999, p. 1.

Rationalization of power tariff. Irrigation as part of the infrastructural component in ARIASP received Rs. 44.08/- crores from the World Bank allocation. The second component of the infrastructural development, PWD specifically rural roads as marketing routes development received the lion's share of Rs. 273.5 crores, nearly 50% of the total ARIASP fund.³¹ This second component aims at removing market (infrastructure) deficiency by connecting villages to the markets.

5.2.4. Agro- climatic Regional Planning

A major shift in development strategy since mid 1990 has been through the reorganisation of agricultural planning through adoption of Agro-climatic Regional planning (ACRP) approach. Initiated by the Planning Commission in 1988, it sought to develop regional perspectives for agricultural growth, diversification and development of agro- processing activities. The objectives was to identify the comparative advantages of different regions and the region specific potentials for growth in order to provide the basis for preparing regional plans.³² The Agro-Climatic Regional Planning Unit in 1989 delineated the country into fifteen regions. The Working Group Zonal Planning Team has delineated entire N. E. India including Assam as zone 3- Eastern Himalayan Region. The state is further subdivided into eight agro-climatic sub-zones

³¹ Agriculture Department of Assam Rural Infrastructure and Agricultural Services Project, Krishi Bhavan, Guwhati, 1995.

³² Rao, V.M., 1996 : "Policy Research for Liberalised Agriculture: Some Illustrative Research Areas" in '*Indian Journal of Agricultural Economics*' Vol. 51, Nos. 1&2, 1996, p. 135.

(table 2.3, p.50). Agro-climatic characteristics of the sub-zones are already described in chapter II. Potentials for each of the sub zones identified, given

The agro-climatic conditions are as follows-

Upper Brahmaputra valley-North (sub-zone I)- cultivation of two crops of rice, mustard and pulses in the young alluvial flood plains; sericulture and horticultural crops in the piedmonts and foot hills, and fisheries in the derelict water bodies.

Upper Brahmaputra valley -South (sub-zone II)- cultivation of two crops of rice, tea, orchards and fisheries in the derelict water bodies.

The Central Brahmaputra valley (sub-zone III)- three successive crops of paddy, oilseeds, jute, wheat, pulses and fish farming in the marshy and wastelands.

The lower Brahmaputra valley, North- west (sub-zone IV)- three crops of rice, oilseeds, pulses, livestock and natural fisheries.

The Lower Brahmaputra valley-North (sub-zone V)- three crops of rice, oilseeds, pulses, livestock, natural fisheries and horticultural crops particularly citrus and pineapples in the foothills and piedmonts.

The lower Brahmaputra valley (sub-zone VI)- comprising Kamrup and Goalpara have potentials of two crops of rice, horticulture, and commercial fisheries.

The Barak valley (Zone VII)- Three crops of rice with the help of irrigation, horticultural crops, spices and commercial fisheries.

The Hill areas (sub-zone VI)- this zone suffers from extensive erosion. Therefor intensive farming by scientific management of soil has to be

followed. The zone possesses potentials for horticulture, and livestock (piggery) rearing.³³

The target guiding ACRP is building up an effective link between the national plan and the plans prepared at the district and sub-district levels during the Ninth Five Year plan. District plans are to be prepared by the Panchayati Raj Institutions (PRIs) at the village, taluk and district levels based on participatory processes involving people's representatives.³⁴ Within the state the Farm Management Committee- pathar parisars samitis- NGOs formed by farmers participating in joint farming program, and representatives from related departments have a major role to play in this process. These samitis, ensures a dominant role for the grass-root people by including three members from the farming community, a secretary who is also elected from the farming community itself, and the chairman of the Gaon Panchayat or his representatives. Others forming members of the samities are one sub-divisional agricultural engineer, one agricultural officer as well as representatives of irrigation department, state electricity board, and concerned bank. Thus the policy is for conversion of the present top down planning into an integrated system with the dominant role being played by the bottom-up process.

Three basic concerns underlying the ACRP approach have significance for the state. Firstly, the focus is on sustained growth of all areas including backward and stagnating areas by activating growth processes utilising area specific resources and opportunities. This means that farmers with low economic status

³³ *Agro-Climatic Planning For Agricultural Development in The State of Assam, Draft outline for the 8th Plan Period*, Assam Agricultural University, Jorhat, 1989-90.

³⁴ Rao, V.M., 1996: "Policy Research for Liberalised Agriculture : Some Illustrative Research Areas" in *Indian Journal of Agricultural Economics* 'Vol. 51, Nos. 1&2, 1996, p. 136.

would now have a chance to participate in the growth process. Secondly, the decision making is transferred to the people's organisations. The third concern, that of identifying comparative advantages and focussing on cost effectiveness and economic viability can apply within the state only when markets begin to function with requisite degree of efficiency.

5.2.5. Constraints to ACRP in Assam

Besides difficulties are already faced due to lack of co-ordination among the different departments—agriculture department, irrigation department, office of sub-divisional engineer, state electricity board, and the bankers. The existing markets within the state do not possess the structural and operational characteristics required for a certain degree of efficiency. These suggest the policy option for effective functioning of ACRP within the state. Firstly, the formation of an integrated department taking in the representatives of the concerned tailored solely for the purpose will remove the problem of co-ordination. The problem of efficient market is sought to be solved through the Assam Rural and Infrastructure Services Project (ARIASP) with funds from World Bank.

5.2.6. Impact of reforms on the jute sector

Another sector of the state's agriculture for which liberalisation, and integration with the world economy could have significance is the jute sector. It too has been a traditional foreign exchange earner, and was listed amongst the top in

the export list. It had contributed to 25% of India's export earnings in the 50's and early 60's. This fibre crop has played a significant role in the agrarian and industrial economy of the eastern region of the country. But in recent years, the traditional market has sharply declined, especially in the industrialised countries-due mainly to increased use of synthetic fibre bags.

The deficiencies and problems earlier identified (in chapter IV, p.207-208) are of functional deficiencies in the marketing structure of raw jute leading to imperfect market, unremunerative and fluctuating prices, operation of middlemen, etc. They continue to hamper growth and development of this sector. The regulated market created by Jute Council of India (JCI) do not function efficiently. Absence of retting process and upgrading fibre quality, consequent non-estimation of the value of fibre continue to fetch low prices to the sellers. Linkages to industries in the past have suffered severely also due to inadequate and often disrupted supply. The cumulative effect has been lack of motivation on the part of the cultivators and therefor declines in area, production and productivity of this otherwise remunerative crop.

Realising the potentials of this sector, the state government declared the Assam State Industrial Development Corporation (ASIDC) as the Nodal Agency for the development of jute diversified products. A MoU signed by the corporation with National Centre for Jute Diversification, Calcutta, is with the intention of studying the prospect and possibilities of jute based industries in the state. To attract entrepreneurs in this sector capital, steps taken include-

- Power and tax incentives have been offered.
- Capital subsidy up to Rs 10 lakh,
- Power subsidy upto Rs 30 lakh, and

- Sale tax concession for 5 years and I. Tax concession for 7 years,

are part of the Industrial Policy for the N. E. Region to attract entrepreneurs to set up any industry within the region. To promote export from the region incentive offered is in the form of land or site with all other infrastructure facilities, to be in the EPIP, N. Guwahati, if they can export 25% of the total product.³⁵

Three private jute units thus came up to take advantage of the incentives. One was a SSU established near Barpeta in 1993 with 25% of the total outlay from the promoters and 75% as loan from the Assam Financial Corporation. However it faced closure after 3 years due to lack of market and working capital.

The second unit, financed by the AIDC was set up at Bijoy Nagar, 30 km. from Guwahati. Assam Industrial Development Corporation (AIDC) provided equity and term loan. The project cost was around 1 crore, with production capacity of 1 million tonne of jute yarn. United Nations Development Programme (UNDP), New Delhi, also provided interest-free loan for 5 years. Debt- equity ratio was considered at 1.5:1. The unit has already received some orders according to the Manager (Tec.) Jute, AIDC. The first phase is for production of yarn only since there is high demand for yarn, but in the second phase the target is to focus on value added products.

³⁵ Assam State Industrial Development Corporation, Guwahati, 1999.

North East Development Federation of Industries-NEDFI has sanctioned the third jute unit/ complex (not yet commissioned), in 1997-98. NEDFI provided about 3 crore of the 5 crore total outlay while 60 lakh is provided by UNDP. Another 50 lakh as equity is provided by AIDC. The remaining about 1 lakh is the promoter's investment. The project would produce yarn, go for processing and weaving. The opening of a branch by the National Council for Jute Diversification at Guwahati is a move to harness the potentials, with the increasing demand for diversified jute products.³⁶

5.2.7. Impact on Horticultural sector.

As already noted (in chapter IV), horticultural sector posses immense potentials for development and export. However cultivation practices of the crops are not modern enough to ensure high productivity. Markets for quick dispersal are not readily available because of which a substantial quantity of the products goes waste every year. It is estimated that the wastage will be about 20-25% of the gross fruits and vegetable produced.³⁷ This has so far discouraged the farmers to take on commercial cultivation.

Reasons for low growth - The state lacks exportable surplus in fruits and vegetables and nor is it self-sufficient. For a population of 2.23 crore in the state the total requirements of fruits and vegetables are 6.98 lakh and 23.41 lakh million tonnes respectively per annum. The annual production of fruits is

³⁶ Ibid.

³⁷ Export Potential Assessment of Horticulture and Floriculture Products for the North Eastern States, APEDA, 1998, prepared by Tata Consultancy Limited, 1998, p. 4-5.

12.29 lakh tonnes and for vegetables 19.62 lakh tonnes only annually.³⁸ The horticultural sector is characterised by low yield rate, which is much below the national average. Responsible for this situation is the total lack of technical improvement. Value addition to the fresh fruits is negligible. The performance of the small scale processing units in the state (there are 22 licensed canning/ processing centres under the Horticultural Development Program whose capacity utilisation is less than 40%) are generally below the desired levels, in terms of phyto – sanitary condition and quality. The training levels and awareness of the export quality criteria is low among the entrepreneurs in these small- scale category and this restricts their operation to the domestic markets only. There is also no Directorate of Horticulture in the state, the Assam Horticultural & Plantation Crops Development Board was constituted but for various reasons remained ineffective. Thus there is a need to make an independent corporate body.

Prospects of development - Interestingly trade relations of the N.E region with the bordering countries particularly with Bangladesh and Myanmar have so far been of horticultural products along with coal, limestone and cement. Thus it forms the only agricultural product to be exported to these countries. Products such as orange (from Haflong), citrus fruits, aniseeds, and vegetables are exported from Assam to Bangladesh via the land customs stations of Sutarkandi, and Karimganj Steamerghat and Ferryghat.³⁹

³⁸ Ibid., P. 5-8.

³⁹ Ibid., p. 4-8.

The high international demand for horticultural products, fresh fruits and processed fruit based products and the fast growing trade in these categories cannot be taken advantage of unless certain problems are taken care of. This includes prevention of loss due to wastage by providing proper transport, a cold storage chain, and offering competitive prices. Increase in output through increase in area coverage and increasing productivity to capitalise on the increasing demand can be achieved through utilisation of marginal, poor and wastelands not suitable for economic cultivation of field crops; and using biotechnology for increased yield.

5.2.8. Impact of policy changes on the plantation sector- tea.

Tremendous changes in the ownership, management, investment patterns and consequently production levels in the past following policy changes by the government in this sector suggest the dynamic nature of this sector. As observed in the preceding chapter (chapter III, pp.168-169), this sector underwent change with the beginning of the era of government intervention and controls. The compelling conditions of seeking permission under the Capital Control Issues Act (CCIA), 1947; the control and regulatory regime of the Foreign Exchange Regulation Act (FERC), 1947, and the Export Import Control Act (EICA), 1947 –all were largely responsible for the withdrawal of many sterling companies from Indian soil. These Acts had established the ways of restricting competition among the foreign companies by securing domestic market for local producers. Consequent of these Act, and the restriction imposed on cultivation and export due to imposition of the Tea Act, 1953, change in ownership and management patterns and mergers occurred. The

process accelerated with the structural development undertaken by the government of India since 1956.

More regulatory measures and controls have marked indianisation of the sector. Regulatory measures and controls are in area extension of plantation, production, marketing and export. It was also marked by price fluctuations and dwindling exports. Through the period from 1956 to 1992-93 this industry has enjoyed competitive advantage having natural endowment, labour pool and economies of scales, and built capacity to innovate and upgrade factor conditions in the industry through sustained and heavy investment. But as already noted earlier the position it enjoyed was possible largely due to the role played by the government in the production and distribution process and in eliminating competition from foreign enterprise. Reduction of government's role in the free trade regime will deprive the advantageous demand conditions of this industry both in the international as well as domestic market. Stiff competition is faced from not only Sri Lanka alone but more from newly emerging tea producers of Kenya and some other African countries.⁴⁰ The greatest strength of India's tea growing enterprise has been the large domestic market. It had become all the more important after the end of the Indo- Soviet barter trade following the break up of USSR Under a free import policy Indian tea will have to compete with tea imported at cheaper price. Kenya and Sri Lanka have small internal consumption, and ship out most of what they grow,

⁴⁰ Ever since the sharp turn around in tea production in Kenya, international proces have taken a turn down. The strong showing by Kenya, and Indonesia have pushed Indian exportes out of United Kingdom and some European countries.

Large quantities of Kenyan tea are also being imported into the U.K. & other European markets where they are packeted for subsequent sale in the Russian & CIS market. Between 15% to 20% of Kenyan tea imported by U.K. Germany & other E.C. are being diverted to C.I.S. which is a vast market. Earlier erstwhile U.S.S.R. was a large importer of Indian tea. (Mohanti, Subhas, "Cheap Kenyan Tea Drives India into a Corner in Western Market" in The Economic Times, May 2, 1998).

and thus can lead to underselling of Indian tea, if their tea enters the country's domestic market. This would undermine the strength of Indian tea by loosing out even in the domestic market. "Cheaper tea"-imported for the purpose of cushioning the impact of rising prices in domestic market have already had an adverse effect.⁴¹ The centre's decision to place tea in the freely importable list for SAARC countries can further have a far reaching consequences for this traditionally competing industry. It is felt by the Indian Tea Association (ITA) that a level playing field is not provided to the Indians with duty free import of tea from SAARC like Sri Lanka and Bangladesh, and reintroduction of excise duty on all Indian teas since this removes all competitive restrictions.⁴²

The industry, already severely affected by dwindling exports, could face dwindling domestic market, which had been the greatest advantage of this industry. From about 45% in 1950's its share in world market has fallen to only about 17.72% in 1997 (Table 5.8). In comparison Sri Lanka's export has picked up from 20% in 1985 to more than 22% in 1997, showing an increasing trend over the years .

Table-5.8. World export of tea : India's position (figures in %)

Country	1985	1986	1987	1995	1996	1997
India	22.52	20.98	20.81	15.50	14.49	17.72
Sri Lanka	20.71	21.32	20.61	21.69	20.94	22.49

Source: Tea Digest, 1997, Tea Board of India.

⁴¹ With the granting of permission to import "cheaper tea" for a period of six months by the Union Commerce ministry during 1997, price of South Indian tea fell. This generated panic amongst the planters who rapidly reduced inventories (The Economic Times, April 22, 1997).

⁴² The Economic Times, May 12, 1998.

The probability of it further declining cannot be ruled out, particularly as the Euro body- European Tea Committee (ETC) has found high pesticide levels in Indian tea. The ETC in its surveillance report for the year 1994-95, had stated that tea in India along with China have the highest incidence of pesticide residue at actual or potentially violent levels in terms of E U limits.⁴³ In contrast countries like Sri Lanka, Kenya, Malawi, Tanzania, Zimbabwe and Indonesia, according to the report maintains low incidence of residue.⁴⁴ The E.U. has been working on issuing guidelines with respect to maximum residue level (MRL) that will be permissible in tea by the year 2000. All producing countries/companies are directed to fall in line with the E.U. norms.

The ETC is particularly damaging to Assam tea. Some of the highest levels of pesticide residue from the use of dicofol has been found, which exceeds the prescribed E.U. limits by 6% (18% for Darjeeling tea). Tea samples tested in 1997 revealed that presence of dicophos residue was as high as 33% in Assam tea (50% in Darjeeling tea). Also substantial presence of residues of DDT, quinalphos, ethion and endosulfan was found. Some Indian researchers have come upon high incidence of pesticide residues beyond levels recommended by the E.U.⁴⁵ They also found the presence of iron filling and nickel in various teas produced in the North East, which fall under the prohibitory list of

⁴³ Mohanty, Subhas, "Euro Body Finds High Pesticide Level in Indian Teas", The Economic Times, October 22, 1998.

⁴⁴ Incidentally in all these countries, with the exception of Sri Lanka, the tea industry are controlled by MNC and European houses. Therefore the report may also be viewed as one of the tools of protectionism.

⁴⁵ A laboratory test conducted by Indian Toxicological Research Centre (ITRC), Lucknow, showed the presence of lead at 9.5 ppm against the permissible limit in United Kingdom at 5 ppm. Presence of ethion was found to be 4.7 milligrams per kg. against the EU limit of 2 mg/kg. Similarly, dicophos was found to be 7.73 mg/kg against 0.1 mg/kg. Indian teas also showed presence of banned items in Europe such as monocrotophos and phostamidon.

Prevention of Food Adulteration Act (PFA). Not only will this drastically affect the export abroad, but domestic market will adversely be affected too. To maintain the competitive edge, such levels must be maintained at the minimum possible.

The industry is likely to face problems from yet another quarter. The labour laws defined by the WTO makes it imperative that the tea sector stop employing child labour. The problem emanate from the fact that the industry employ a considerable number of child labour-more than 5% of the total labour employed; made to work by parents for economic reasons.⁴⁶ Removing them from employment would further depressing the economic conditions of these labour families. The fact that children contribute to the family income is a very important socio-economic aspect of the tea labourers. They face threats from yet another quarter. The import of tea following inter-trade agreement between the SAARC countries and the competition thus faced would force the producers to cut production cost. One measure may be to reduce number of workers employed by the industry.⁴⁷ Retrenchment measures however, worsens the unemployment problem with possible social and political consequences. The recent amendment in the Minimum Wages Act would hardly have any impact on the management to hike their wages. According to the Act Implementation Committee, most of the gardens have violated the provisions of the Tea Labour Act, 1951. Despite mandatory provisions, in Assam the tea management have been exploiting the labourers. Thus social benefits were overlooked by non-implementation of Acts having welfare provisions.

⁴⁶ The figures of child labour is not obtainable due to obvious reasons.

⁴⁷ Gordia, Prfull, "The cost of Globalising the cup that Cheers", The Economic Times, September 11, 1995.

With the Commodity Trade policy of the WTO favouring the international trade of tea, increase in export may not be difficult to achieve given the competitive advantage, which the sector of the state enjoys. It cannot be achieved by area extension, as-

- the "large tracts of waste land" available in the initial periods are no longer so; conversion of prime agricultural land devoted to foodgrains for cash crop has accompanying socio-economic and socio-political consequences (struggle over the cultural and material resources of the rural environment has inherent problems).
- the constraints on expansion of tea area in the tribal held land is also from the virtual ban on extension as land held by them cannot be transferred to non-tribals.

But it has the technology edge-a number of Research & Development units of private companies as also public sector institutions (especially the Tea research station at Tocklai) have, over the years, developed better agronomic practices. Biologically stronger strains of the crop have been developed, cloning done, biotechnology developed and field tested (discussed in chapter II, p. 59). Therefore it is also in a position to sell the information to other tea regions.

The new Industrial Policy makes room for more foreign investment. A stable government and stable environment for development, which implies improved law and order will result in the tea industry attracting such investments. But the socio-political instability is a deterrent to outside investment. Particularly so as it is this sector which is targeted the most by insurgent groups for extortion,

kidnapping etc. by militants. The underdeveloped transport and poor power scenario in the state too make it unattractive to the foreign investors. Unless the environment is made more conducive to investment and development, the industry cannot benefit much from the subsidies provided by the government to private investors, or from the reformed Industrial Policy.

The export promotion program, through tariff concession and reduction in excise duty - at present the excise duty on bulk tea is Rs. 2 per kg. - aims at increasing volume of exports. At the same time, the new EXIM Policy, which came into effect in April 1998, consists of several-export friendly measures. Yet another package was announced in August 1998 which includes two types of measures- the first includes those which have direct cost implications to the exporters while the second introduces systematic and procedural measures which would make life somewhat hassle-free and increase operational efficiency. Presumably, these would also ultimately result in reduced transaction cost and improve competitiveness over time. At the same time to reduce transport cost and facilitate direct export from the state, Internal Container Depot (ICD) at Amingaon have started functioning. In fact tea exported to European and Middle East countries since 1997 have been through ICD. Earlier tea from the state had to be sent to these destinations via Calcutta and Delhi. The upcoming growth centre at Balipara, within the Tea Garden Zone of Sonitpur district and the Export Promotion Industrial park (EPIP) at Amingaon, Kamrup district aims to take advantage of the export promotion program, and to further open the industry to foreign investors. The degree of success remains to be seen.

Incentives in the form of tax concession was given to the growers/ producers. But they are now facing the grim prospect of losing such incentives flowing out of section 33AB of the Income Tax Act, with the proposed deletion of this section from the new Income Tax Bill consequent of structural adjustment programs (SAP).⁴⁸ Taxation in the industry is unlike in other industry- it comprise of 45% as corporate tax and 65% as agricultural tax. Besides that, tax in the form of Green Leave Cess is imposed - on every kg., Rs. 00.32.⁴⁹ Besides, SAP also implies the possible softening of the Tea Act, 1954. Its earlier version- the Tea Restrictive Measure introduced in 1933 by the India Tea Control Act had seriously limited the extension of tea cultivation in the state. The Delicensing Policy of the reform package will also remove the restrictive rules on matters of extension. Earlier the Indian Tea Licensing Committee restricted such extension of the tea areas by providing limited licenses. During the time when such laws were in force, extensions were allowable with only limited liability companies (sick companies) with less than 300 acres of planted area, or tea estates owned by industrial proprietors having the limit of 150 acres. Under the International Tea Agreement the total area of land permissible for extension in 1940 was 50 acres only.

52.9. Implication for small growers

Earlier measures under the Tea Restrictive Measures etc. were primarily designed to control the tea market in the interest of big planters. The removal of such restrictions allows the small growers to extend their plantations. This

⁴⁸ Section 33AB of the earstwhile I.T. Act pertained to investment allowance benefits. Accordingly, 20% of the amount invested has been Tax exempted, provided this amount invested was on development and welfare of the labourers.

has opened up potentials for the small growers. And in line with the new policy of de-licensing, and removal of restrictive acts, the state government have formulated schemes in the 9th plan which aims at increased productivity through area extension and extension to new areas-counter to the fact that expansion of tea area is limited. At the same time, changes in land legislation such as the amendment of Land Reforms Act have somewhat different implications. Regulating the upper limit of landholdings, essential for corporatised farming, could result in the large producers acquiring more from the small and marginal farmers.

For various reasons, there could not be growth of family size tea gardens. There are 8-10 thousand small growers in the state, covering approximately an area of 5000 hectare. Till 1999 only 659 small growers had registered themselves with the Tea Board (reasons behind this discussed in chapter IV). Numerous schemes were formulated. The objectives were socio-economic development of this section of the population through development of small tea gardens. A policy of allotting surplus land fit for tea cultivation, to educated unemployed youths were taken up. This was part of an action plan for development work to be undertaken by the industry for socio-economic development of the people of the state.⁵⁰ A comprehensive scheme for "Development of small Tea gardens" was formulated. The scheme involved allotment of land to educated unemployed youths with mortgageable right against raising of loans. These youths were to be provided training, technical services and assistance by Tea Directorate, TRA, Assam, and Assam Agricultural University, arrangement of working capital and marketing of

⁴⁹ Tea Board, Guwahati, Assam.

⁵⁰ Tea Directorate, TRA, Assam, 1999.

products.⁵¹ The policy of development of small gardens, through financial assistance too had similar objective of socio-economic development of the state. Financial assistance by the Tea Board was to the extent of Rs. 23000 per hectares for planting tea in the plains and Rs. 28000 in the hills. Disbursement of subsidy to small tea growers who are registered with the Board are as follows

Disbursement of Subsidies to small tea growers-

1991-92	Rs. 1.79 lakh
1992-92	Rs. 5.06 „
1992-93	Rs. 11.53 „
1993-94	Rs. 8.67 „
1994-95	Rs. 6.67 „
1995-96	Rs. 9.76 „
1996-97	Rs. 15.46 „
1997-98	Rs. 30.15 „
1998-99	Rs. 5.52 „ ⁵²

For encouraging the small growers, “Small Growers’ Development (Capital subsidy) scheme was launched with effect from 1-4-1999. The Board’s subsidy oriented scheme for these small growers in the form of input subsidy and interest subsidy for conversion of ceiling surplus land into tea growing areas in the districts of Golaghat, Dibrugarh, Sibsagar, Karimganj and Cachar.⁵³

⁵¹ Commissioner of Industries, Government of Assam.

⁵² Tea Directorate, TRA, Assam, 1999.

⁵³ Tea Board, Guwahati, Assam, 1999.

The various schemes did not bring as much success as the small growers' development schemes in South India. Unlike in that part of the country, here training and development activities, financing, marketing and follow up programs, etc. were not followed diligently. Thus restricted access to better technology, grossly inadequate field advisory services, out-dated cultivation practices, and weak input delivery system kept production and productivity levels in these small gardens much lower than those in south India (table 4.10, chapter IV). Thus they face competition not only from the large planters but also from small growers from other parts of the country. Also, the import of cheap tea under the SAARC inter-trade agreement further weakens their position. While the initial cost of production is quite high, there is also a long wait period, by the end of which the crop fail to fetch a high price. Average price of tea has been falling, and the big local buyers move in quickly to lift the tea at low price.⁵⁴ In the long run, there are apprehensions of these small growers being eventually taken over by larger growers who are economically strong and managerially competitive. This could seriously affect the small tea garden movement begun in earnest in 17 districts termed as a "silent green revolution" in the survey report of the North East Foundation.

5.2.10 Constrains to development

Viewed from the long term perspective, the industry has several constraints that affect production and productivity. These includes old age of tea bushes, limited availability of land for extension in traditional areas, slower pace of replantation (present rate of replanting is less than 0.4% as against the desired

⁵⁴ The Economic Times, April 22, 1997.

level of 2%) and fluctuations in tea prices. Measures in the 9th plan was to remove the constraints and fix production and export targets.

Plan development programs such as of the 9th plan are only for the very near future; by year 2003, all types of protection to industries have to be removed. The tea industry too cannot ignore the realities in the new liberalised WTO trade regime.

Observations and Conclusion

It is evident now that at the micro level producers/entrepreneurs do not have the competitive efficiency and therefor cannot respond to the profit opportunities of a free market economy. The social and economic formations do not provide much potentials for a meaningful response. So far the state has been very slow to respond to the changing economic order. Till the mid 1990s the agricultural scenario did not change substantially from the earlier period. In the first half of the decade policy thrust remained more or less the same- a somewhat similar strategy for improving the performance of this sector continued. In the farm sector at least, the situation remains more or less the same due the lack of a clear cut policy of development tuned to the changing economy and trade the world over. Preponderance of subsistence wet paddy cultivation persists. Vary marginal shift in the pattern by way of small increase in area and production of pulses and oilseeds indicate negligible improvement in competitive efficiency. Rather, fluctuations in area coverage and production of these crops were noticed. Efforts towards increasing production through extension of irrigation- by installing shallow tube wells and pump sets, mostly

favoured summer (rabi) rice. The role of research centres has remained limited only to transferring the improved technology to select villages and farms. Dissemination and adoption of the new technology by all have remained limited due to the persistent constraints. The fact that new technology/agronomic practices could only be adopted in areas with irrigation facilities. This was the reason for the continuing gap in production and productivity levels between the districts, and between beneficiary and non-beneficiary farmers. It is noted that the central districts of Nogaon, Sonitpur and Darrang have relatively more favorable irrigation facilities and utilisation more in comparison to other districts; these are the districts which whose agricultural performance are relatively better. The lack of efficient input delivery system affected use of inputs such as improved seeds and fertilisers in adequate quantities.

The results of research and technology development have remained limited only to select villages and farmers due to lack of an effective extension service. In the absence of this vital condition for technology dissemination, research and experimental trial achievements could not be translated to large-scale cultivation. Additionally, it is noted that farm mechanisation through incentives offered for purchase of tractors did not succeed since extension service was not available to the farmers in the event of breakdowns etc. Similarly the small tea growers did not achieve levels of production as achieved by small growers in South India because of inadequate field advisory services. Credit policies were equally ineffective. Small farmers did not avail of loans from the commercial banks and RRBs due to requisite paperwork and also their inability to pay back. Thus only relatively bigger farmers favoured by commercial banks. On the whole loan recovery rates of these banks were low. Loan waiver to help the

small farmers did not succeed in encouraging these farmers to applying further loans. Co-operative failed to provide the credit requirements of the small farmers due to malfunctioning of the village panchyats. Moneylenders took advantage of such conditions and forced farmers to sale their produce at unremunerative prices. This discouraged farmers from cultivating cash crops like jute. The result was decline in area under the crop. However credit mobilisation by pathar parisara samities or farm management committees-NGOs. To a large extent this was due to participation of small farmers in the Samities.

No sound and efficient marketing system exist. Sale the products in the immediate post harvest period in the absence of proper marketing structures including storage facilities left little scope for remunerative prices. Considerable wastage is incurred too in the process as has been noted in case of horticultural crops. Besides, uncertainty of demand and collapse in prices faced the farmers under conditions of minimal linkages to industries and lack of market information. Limited number of food processing plants and absence of jute industries constrained extension of commercially viable crops.

The related nature of all these factors, and the absence of a holistic, integrated approach to development have been the major drawback of the past policies.

Noticeable policy changes have taken place towards the end of 1990s. The steps towards privatisation of few public undertakings such as the seed farms, scaling down of subsidies is part of structural adjustment essential of the new Reforms policy. The step to privatise the seed farms was with the twin objective of making private plant breeders more active and also overcome the

drawbacks of the government agencies such as inadequate supply and/of inferior quality planting materials. Development of agricultural infrastructure with World Bank aid has the objective of developing rural roads linking the villages to markets, not just to domestic but far away markets. Interesting experiments by the state government involving the grassroots people seeks to tap the potentials of the under-utilised resources of agriculture. The formation of loose association of farmers, recognised and backed by the Agricultural Department, to join together to work on their fields through field management committees- the pathar parisara samities seeks to overcome the problem of small, fragmented holdings small farmers pool resources. Unemployed youths given wastelands for cultivation and backed by supply of inputs have thus been gainfully employed. This is particularly so in neighbouring tea gardens as in Dibrugarh under the social welfare program of Assam Branch of Indian Tea Association-ABITA. These NGOs are the vital link in the implementation of package of agricultural and allied practices for each of the agro-climatic subzones. For, these samities have proved to be more successful in resource mobilisation, as was noted in case of credit. The agro- climatic subzone planning and implementation undertaken with the involvement of the samities aims at area specific potential development. This is an attempt at rectifying the earlier mistakes of development strategy, which overlooked specific needs of local areas.

A very serious lacuna of the past in policy formulation and implimention was the inadequate attention to the geocultural characteristics of the farming communities of the state. Distinct farming practices related to tribal cultures were overlooked in formulating and implementing a more or less uniform development strategy throughout the state. These tribal/ethnic communities

alleged disproportionate fund allocation for development, with the lion's share going to non-tribal belts. The role of these geopolitical factors has therefore been to breed discontent, causing pressure groups to demand for more focussed attention to their needs (this is discussed in the following chapter)

CHAPTER VI

Impact of Socio-Economic and Socio-Political Issues on the State Economic Policies particularly Agriculture.

6.1. Introduction

It is seen that the nature of development strategy adopted within the state have not been in harmony with the conditions and aspirations of the different population/ethnic groups within the state. The nature of development planning subordinated the interests of the indigenous people and restricted the local control over resources and gains. Policy of development initiated by the British was biased against sections of society as well as sectors of the economy. While this was true of the colonial era, and this situation continued even after independence. The result was a condition of unbalanced development amongst sections of society and amongst ethnic groups. Consequently nature of socio-economic development has not been uniform. A high percentage of population below poverty line, unemployment, and marginal farmers in the rural population has already been noted in chapters II. The failure to adopt suitable strategy for development in consideration of the state's specific ecological characteristics and to the peoples' psychology has been evident too in the analyses in chapters II & IV. At the same time, developmental programmes have been overshadowed by strong vested interests within and amongst communities. The programmes placed reliance upon chosen groups and most

of the development has benefited a handful of people. The outcome is that a multitude of socio – economic and socio - political issues confront the state management. The salient socio-economic issues identified so far are – an increasing peasant class, poverty, unemployment, economic deprivation of the peasants/minority classes, intra- regional inequality of share in resource allocation, and immigration. The socio-political issues identified includes among others, tribal land alienation, issue of autonomy and self- determination, equal sharing of political powers and of decision making, and immigration

6.2. Socio – Economic issues and their Impact on Reforms Policies

The socio- economic issues are related to the political issues, the former in fact being responsible for later. Demand for attention and redress of these issues by the various pressure groups and a noisy polity place serious constraints on policy framework, and certainly on their effective implementation. The state cannot ignore these constraints. As a consequence, the freedom of the state for management functions is confined more to its regulatory (and hence patronage dispensing) than to developmental role.

In the national scenario, strong farmers' movements have been greatly influencing politics and policy decisions. The rise of agrarian power in 1970s marked this decision influencing capacity of the farming class. Until the 1960s, the dominant agricultural groups had the capacity to defeat the implementation of agricultural policies though they had little control over its formulation.¹ But

¹ Myron Weiner, in the first study of interest groups in Indian polity found that neither the big landlords or the small peasant and the landless had any impact on policy formulation. But as for policy implementation, the

by the end of 1970s, a new agrarian force emerged in the national politics. Agricultural price replaced agrarian reforms as the most contentious issue of India's agricultural policy. This was a development with major political implication. Not only did it mobilised the rural sector as a whole, it began to exert influence on the policy formulation process. There was an unambiguous rise in agrarian representation in the political arena.² The subsequent decades-1980s and 1990s saw the gathering strength of this rural power aided by increasing ruralisation of Indian political representation. Democratic peasant mobilisation marked the Indian rural scene. They managed to exercise considerable pressure on national politics- to pressurise for higher agricultural price, loan waivers, input subsidies etc.³ The post – liberalisation era, particularly mid 1990s onwards saw the increased politicisation of such matters.

The scenario in the state has been quite different. Though the policies taken by the central government under such pressures from the farmers' lobby did also shape the state policies in agriculture in as much as subsidies, etc. formed an essential part of the state policies; no farmers' movement did take place here. Myron's observation that small peasants and landless, because of their inability to organise themselves, did not possess powers to affect policy formulation nor

landlords were powerful enough though unorganised, to defeat full implementation. The small peasants and landless were not unorganised enough, they affected neither policy formulation nor policy implementation.

² The rise of Chaudhary Charan Singh, a powerful peasant leader to national political arena, ushered in a peasant based party in national politics. Between 1977 and 1980, he and his party sensitised the political structure to the emerging agrarian power. More recently, leaders like H.D. Deve Gowda, who projected himself as a "humble farmer" associated themselves with the farmers.

³ In 1970, farmers in Tamil Nadu, particularly in Coimbatore successfully agitated against the decision of the government to increase electricity charges. By 1972, their demand had expanded to include remunerative agricultural prices, input subsidies, and waiving of agricultural loans. In the same year, there was a similar protest in Punjab against the decision of the central government not to increase the support price for wheat. More recently strong farmers' lobbies have staged agitation and demonstrated their protest against the decision to allow entry of MNC seeds company etc.

implementation proves quite true in Assam's context. It is already noted that there is a large population of small and marginal cultivators in Assam (21% are agricultural labourers and about 60% have landholdings below 3 hectares). Due to their socio-economic conditions, they possess no bargaining power and therefor perhaps remain unorganised. Unlike their counterparts in other states, they therefor do not have any political muscles to flex. For, "...it is precisely because the farmers have been enabled to move beyond subsistence economy that they have acquired the capacity to launch the kind the sustained struggle they have..."⁴ Also the fact that these peasants are net buyers (since they do not have surplus) perhaps explain their non involvement in the farmers' movement related to agricultural price policy. These then are the constraints to rural agrarian power in the state. The socio- economic conditions of the rural masses have however compelled the state government to adopt policies that are pro-poor. Therefor considerable public role in production functions, input subsidisation, agricultural loan waivers etc. have been significant features of the state agricultural policies so far (noted in the preceding chapters). Approximately 60% of cultivators and 12% of agricultural labourers of the state makes social cost-benefit perspective take paramount importance over the economic cost-benefit perspective. At the same time, the huge vote bank of this rural population explains the politics of these populist policies. Development policies were basically for political gains.

⁴ The Times Of India, Febuary 3, 1988, as quoted in Ashutosh Varshney's "Democracy, Development and The Countryside", Cambridge University Press, 1995, p. 117.

6.3. Socio-political issues and their impact on Reforms policies

Other constraints to rise of rural power within the state are the inability of economic interests to override ascriptive identities and non-economic interests. The rural population has not constructed their interests on entirely economic terms. Politics based on other cleavages – caste, ethnicity, religion, etc. have been more vibrant. Moreover, the policies of the state and Union government, and the influx of immigrants were blamed for their poor economic conditions. Therefor, the socio-political issues that arose related to these has increasing constrained the state development policy formulation and policy operation, are closely related to the socio-economic issues. The nature of development strategy adopted (from the British times onwards) which resulted in socio-economic disparity evidently led to the socio-political ferment within the state. The nature of development during the British rule was based solely on an extractive and exploitative policy, subordinated the interests of the indigenious people and did not permit local control over the resources and gains (as observed in chapter II). After independence, change of political power did not bring much change to this extractive and exploitative policy. In fact working of internal colonialism at different levels saw to the continuation of this policy.⁵ The outcome, in case of the first, was antagonism directed towards the central government, led by a generation of educated, socially & politically conscious Assamese middle class. Protest against outflow of resources and thereby being robbed of the gains were raised. Demand for setting up refineries in the state, and of other facilities were articulated by these emerging pressure groups, led

⁵ Resources continued to be extracted from the state by interests outside the region, with little profit accruing to the local people. Similarly, within the state too, the state government led by the elite/ beauocratic ethnic Assamese too can be blamed of indulging similar exploitatve policy from the tribal belts.

by the All Assam Students Union (AASU), and All Assam Gana Sangha Parisad (AAGSP). The pressure tactics used included boycott of parliamentary elections, closure of oil pipelines that feed the Barauni refinery, bands and road blockads.⁶ The result of such pressures was the signing of the Assam Accord in 1985 between them and the Congress (I) government.⁷ As a consequence of the Accord, one refinery, two central universities, and one IIT was established. The tribal pressure groups, of which the Bodos have emerged as the most vibrant and militant, too have similar grievances. These are directed towards the state government. They also allege the same treatment meted to them. Therefor the demand for autonomy and self-determinism as a political instrument for determining their own course of development and resource management.

The issue related to immigration and “outsiders” (which refers to all non-indigenous population irrespective of nationality) has been at the centre stage of state politics, having serious consequences for the state politics. For example, the Muslims by the strength of their numbers, have emerged as a powerful political force, constituting 30% of the state’s population. Religious census of 1991 exhibits an unusual growth of Muslim population from 35.92 lakh in 1971 to 63.73 lakh in 1991— a rise of 77.43% as against 41.8% of the Hindus. Four districts- Dhubri, Goalpara, Barpeta, Hailakandi are now Muslim-majority districts. They now wield sufficient power to influence the state

⁶ 1979 Parliamentary election was boycotted on grounds of faulty voters’ list; AASU also succeeded in disrupting Parliamentary election in 1980.

⁷ The Assam Accord which sought to address the grievances of the Assamese people contained Agreement on setting up a third oil refinery within the state, setting institutes of higher and technical education, i.e. an IIT and two central universities, and all round economic development besides addressing the foreigners issue by taking measures to detect and deport foreign nationals.

electoral politics. This is amply substantiated by the following course of events-

-on April 10, 1990, the then Chief minister, Hiteswar Saikia stated in the Assembly that there were three million illegal migrants in Assam. Two days later after being threatened by the leader of the Muslim Forum, he had to declare there was not a single Muslim immigrant in Assam. The CM had no alternative but to adopt the policy of appeasement of the religious minority viz. reservation of jobs according to population pattern, opening up for them riverine tracts, forests and tribal belts, etc.⁸

The immigration issue has also seriously hampered management functions of the state. Not just the 'cultural invasion' feared by the Assamese and the tribals, but also the consequent competition for economic opportunities and control of resources strengthened nativist tendencies. The situation becomes worse when one notes that proportion of unemployed is not only high but rising- from 12.8 lakh to 14.5 lakh within a matter of one year, from the end of 1996 to 1997.⁹ Large numbers of educated unemployed population-numbering 10.0 lakh and constituting 96% of the total job seekers during 1997, makes the situation even more explosive. Assessment of the employment position in the only significant revenue earner of the state, the tea industry, by the Assam Assembly Employment Review Committee in 1991 had revealed that much of the highly paid jobs were occupied by non-Assamese. Of the 241 tea gardens

⁸ Even the AASSU- AAGSP leadership in their eagerness for power had compromised on these issue. They agreed to contest elections on the basis of electoral roles prepared in 1977, which they had opposed all along. The crucial demand for detection, deletion and deportation of foreigners were forgotten. See Barpujari, H.K., (1998). *North East India: Problems, Policies and Prospects*.

⁹ Employment Exchange- Live Register, Assam, 1997.

surveyed, the Committee found that among 527 administrative/managerial posts and engineers etc., only 186 (35.3%) were from Assam, and the rest- 64.7% were from outside the region.¹⁰ Thus demands for (employment) opportunities for the 'sons of the soil' seriously hampers a policy whereby skilled labourers and personals from outside is imported for specialised economic activities vital for development.

In the rural areas not only the increasing farm population and fragmentation of the already smallholdings but encroachment by the immigrants, of the limited land resource had been the reason for the rural support to the Assam Movement. Similarly, in the tribal belts, antagonism is directed towards the 'outsider' moneylenders, traders and other job seekers. On the whole, protective rent seeking which has emerged has tremendous negative impact on the economy of the state. Protective rent seeking is the "...rent which is collected by the various socio-political organisation particularly from traders, entrepreneurs, professionals and even the white collar employees against so called protection of the interests of the later in the respective areas of influence of the former".¹¹ The negative impact are-

- Firstly, this protective rent seeking indirectly results in outflow of the huge amount of money so collected since it is used for purchase of arms and ammunition. This could have been used for productive purposes.

¹⁰ In fact it was only in 1992 that an Assamese was elected as the chairman of the Indian Tea Association.

¹¹ Das, Gurudas. (1998). "Liberalisation and Internal Periphery: Understanding the Implications for India's North East", in Das, G., and Purkayastha, R.K., (co. ed.) "*Liberalisation and India's North East*", Commonwealth Publishers, New Delhi, 1998, p.152

- Secondly, traders and producers in turn try to recover this amount by increasing the prices of the goods and services they sell. This reduces the competitive ability of the local producers.

- Thirdly, this rent seeking activity act as a disincentive as traders and entrepreneurs, those who do not quit and migrate for more profitable and safer areas, invest as minimum as possible within the area. This leads to minimal infrastructure development and at the same time, flight of resources from the region.¹²

The political movement demanding protection of indigenous population also implies, economic protection, along with safeguarding indigenous interests. This attitude is at variance with the attitude required of a competitive economic environment. Herein lies the problem of integration of the state economy to the market economy. The parochial attitude is an obstacle on the path of free market economy. The feeling of regionalism also sends wrong signals to the prospective investors.

The legitimisation of the movements, Assamese as well as tribal, by the elite of the concerned communities on regional ideology therefor, gives a political dimension to issues of economic development. The political factor accentuates and exploits the situation of regional/nativist feeling. Thus "...autonomous tendencies of a community often become an instrument in the hands of an elitist group who wish to gain power".¹³ Over the years the demand for

¹² *ibid.*, p.152-153.

¹³ Phandis, Urmila, (1991), "Ethnicity, and Nation Building in S. Asia", Sage Publications, N. Delhi, p. 262.

attention and redressal of these issues by the pressure groups have place constraints to the development activities. In trying to appease these groups, the government's freedom for management functions have therefor been greatly constraints. The community elite, for their own vested interests, has made this movement persist over the years. Various efforts on the part of the state and central governments to arrive at an agreement with the pressure groups, or negotiate terms and conditions within the constitution of the country have therefor failed.

Thus emergence of pressure groups and their articulated interests succeeded in seriously interfering with the management functions of the state government. Electoral politics strengthened these pressure tactics. This is accomplished by the pressure groups and their ascriptive communities through their voting pattern.

The impact of the socio - political instability on the economy can be perceived as-

- outflow of resources consequent of little or no reinvestment within the region, purchase of arms by insurgents, etc.
- reduction and diversion of resources – the already fund starved state have to divert a huge amount of money in the form of rehabilitation scheme for the militant outfits like ULFA. The magnitude of the resource so diverted to nondevelopmental channel can be gauged from the amount of financial assistance given to them. Under the ULFA rehabilitation programme of the government, the scheme-“100% special margin money scheme for

ULFA surenderees”, a surenderee is given a loan of up to a maximum of Rs.1.5 lakh, and will be entitled to a maximum of Rs. 50, 000/- as grants by the government as margin money. Thus maximum value of the scheme is Rs. 2 lakh.

- Targeting the transport networks have affected movement of goods and services, in effect slowing down the economy. Blowing up of bridges and railway tracts also put additional pressure on the state finances by way of expenses on restoration work of the damages.
- Targeting the tea industry in the form of extortion has resulted in shifting of area of operation of large planters like Tata Tea and tea packeters Brooke Bond, Lipton and Hindustan Lever to out side the state and region, while some large estates are now remote controlled from outside. Another aspect of this problem is the sensitive issue of security of the industry. Security measures provided is in the form of a special tea security force – The Assam Tea Plantation Force, unique in the country having a strength of 2000 armed personnel with 97 tea estates under its protection. Huge amount of money is required to maintain the Force.

Thus political instability obstruct development. Another pointer to this is the withdrawal of a number of companies from the state. the number of registered companies since 1975 have come down considerably. In 1975 a total of 26 companies were registered within the state, which came down to 24 in 1980.

Though the number increased to 90 in 1984 and to 138 in 1986, by 1990 it had again come down to just 78 registered companies.¹⁴

Socio-political factors which can have a bearing on the globalisation phenomena are-

-antagonism towards outsiders- this in effect can limit outside participation in the economy,

-protective rent seeking by the insurgent groups, which can also limit outside participation and in further investment within the state.

-demand for autonomy or statehood which can depreciate government's (interventionist) role in the development affairs.

¹⁴ DIA, NIC-ROC, Shillong.

Summery and Conclusion

Programs of economic development in Assam were basically dictated by political compulsions. Over time politics played an increasingly important role in plan formulation as well as implementation and overall state management functions. Rural (farming) community within the state did not get organised into groups with sufficient political power to demand for redressal of issues of economic interests, and effectively influence development policies. But they were drawn into organisations with non-economic interests. Politics based on other cleavages – caste, ethnicity, religion, etc. had been more vibrant. But co-relation exists between the politics of development and socio-economic processes within the state. For it was the feeling of deprivation (real or perceived), and lose of control over resources which gave birth to political ferment, and which the community elite were quick to take advantage of for their individual political gains. It was in their vested interest too, to keep the political pressure sustained over time. Manifestations were both violent as well as non-violent. The effect on the economy has been the same- slowing down the economy and discouraging private investment within the state. Non-violent tactics such as bands had as much effect on the economy as extortion, protective rent seeking, bombing and disrupting transport facilities, and other such public facilities.

Thus the freedom and rationality of adopting a free market economy is limited by the politics of the pressure groups. The response of the individual communities to globalisation is a factor to be considered (since community enjoys such pre-eminent role). For example the fear of losing identity will

determine a community's response to the phenomena. Many ethnic factors are at odds with the imperatives of globalisation. The first is related to local/community control over resources. The desirability of ethno-cultural control both of the quantity and quality of economic growth has great significance in the present context. Also, the identity issue will determine many a community's response to the phenomenon of globalisation. Thus programmes of globalisation have to be sensitive to the ethnic factors. In this context 'who initiates' the economic programs becomes much more important than 'what is being initiated'.¹⁵ The value of an economic program will be judged by the nature of the agency that initiates them. And since any government formed by members of an 'insensitive core community' is looked upon with detestation, initiating the program(s) through agencies other than the government needs consideration. The program(s) will be acceptable if the agencies involved are internal to them since "... the member of an ethnic group tend to favour their group members over non-members because they are more related to their group members than the remainder of the population...".¹⁶ This will also hopefully solve the distributive aspects of gains of globalising the economy. Therefore giving them what is due to them, of the gains (if any) of globalisation is a vital concern of ethnic management. On this will depend the viability of globalisation, which in turn depends on positive and favorable response of the communities.

¹⁵ Das, Samir Kumar, (1998) "On Politics of Globalisation: Managing Ethnicity in North East India" in Das, G, and Purkayastha, R.K. (eds.), *"Liberalisation and India's North East"*, Commonwealth Publishers, New Delhi, p.212.

¹⁶ Ibid, as quoted from Tatu, Vanhar:en, (1991) "Politics of Ethnic Nepotism in India" in Diethelm Weideman (eds) *"Nationalism, Ethnicity & Political Development in South Asia"*, New Delhi.

Therefore the argument in favour of neo-liberalism that free market is efficient and would act as a guide towards a better and prosperous future for all in society through 'trickle down' effect needs conscious examination, in a situation of economic and political inefficiency (in the sense of public management of resources and state affairs), an inegalitarian system, and a political scene crowded by numerous pressure groups. It is also said that pluralism of perspectives tends to obstruct the practical side of development processes leading to unpredictable social conflict. Therefore the need to evolve and accept a common definition of social justice and a universally acceptable paradigm of development are imperative to the path of globalisation of the economy. Removing economic imbalances will also minimise if not neutralised altogether, the thrust for regionalism (since the crux of regionalism and ethnicity lies in economic underdevelopment or economic exploitation). This is so desirable also as the regional elite who engineer movements taking benefit of the economic grievance exploit economic imbalances.

Chapter VII

Prospects of Policy Reforms and Restructuring of the Agrarian Economy

7.1. Geographical Basis for Policy Reforms

Prospects of policy reforms in agriculture have to be seen in the light of geographical endowment, which would make such reforms viable, and sustainable. Fertile food plains, large water bodies, favourable agro-climatic conditions, long growing periods, have been noted. The geographical location of Assam is also of great significance for a market-oriented economy. It forms a part of the larger Brahmaputra- Yangtze – Mekong economic region. Thus the line of economic development pursued must be to take advantage of this position. This could be through increased trade with countries within this economic region. Trade could be in agro- processed products - fresh or processed fruits and vegetables, foodgrains, spices, besides other commodities like paper, cement, plywood, and jute products. Necessary than, is the re-establishment of transit routes by rail, road and waterways through Bangladesh. (This would also liberate the state and the whole of North East India from the cruel political geography of partition). The waterways affording cheap means of transport could prove to be one of its strongest points. The geographic location of the state also offers possibilities of utilising land routes through Myanmar to the Far East and South East. The British, during the colonial period, had considered a Burmese connection to the Assam-Bengal railway (Fig. 21).

ASSAM GEO STRATEGIC LOCATION

100 50 0 100

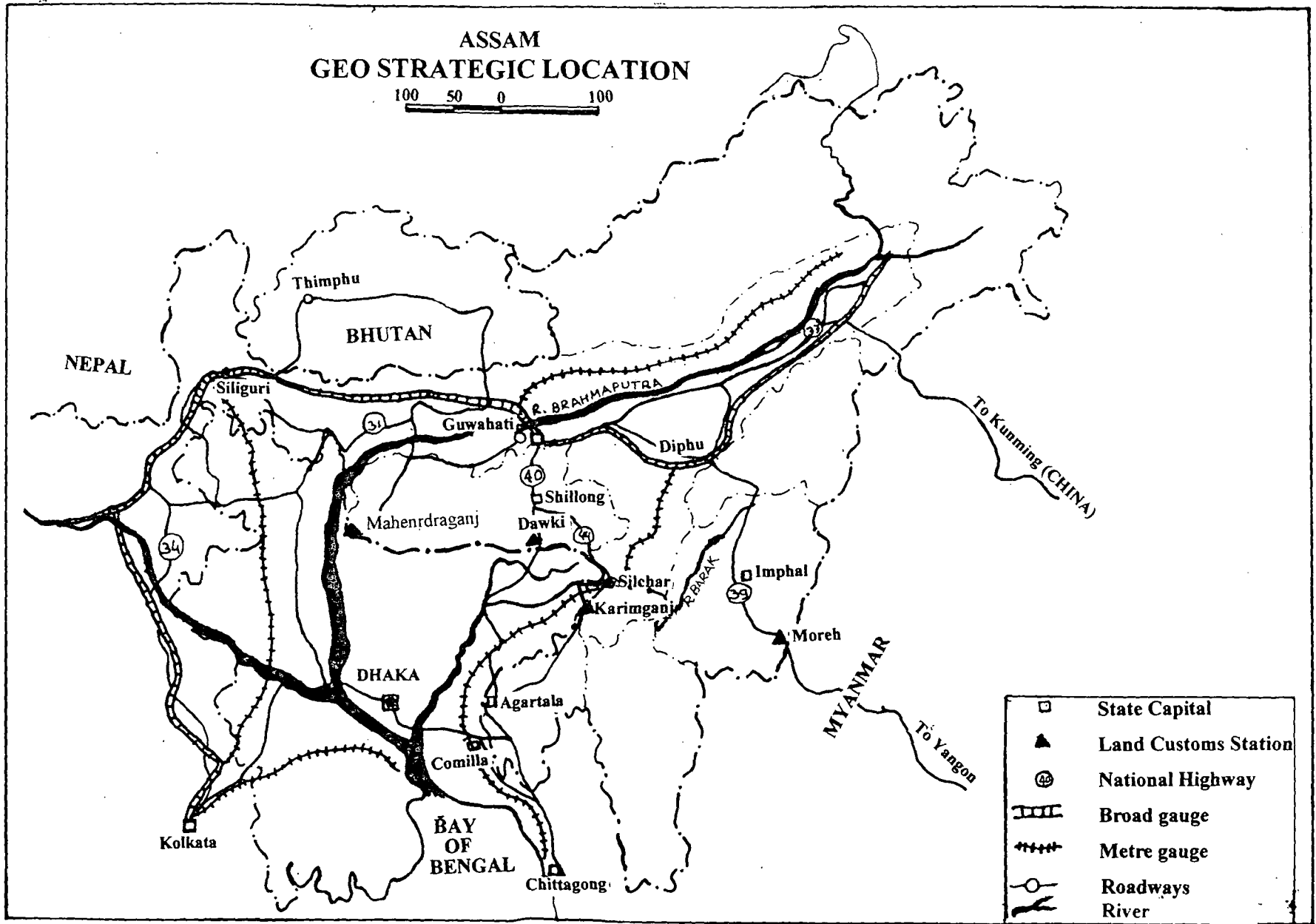


Fig. 21.

Three routes were considered namely, "a southern route from Chittagong to Akyab and thence to Aeng Pass across the Arakan Yoma... to Central Burma (Myanmar); a central route from Lunding through the Naga hills into Manipur and Kubaw Valley in Burma and on to connect with the line to Myitkyine (365 km); and the most favoured, a northerly route from Margherita over the Patkai... and Myitkyina on to the Irrawady."¹ Movement of agricultural produce either in or out of the region through these shortened routes will reduce costs. They will also access markets in the East Asian countries to the producers/exporters of the region. The strategic location of the state is evident from Fig. 21.

7.2. Constraints to development

The critical development constraints of the state are mainly attributable to its physiographic, soil and climatic characters, besides the socio-political constraints (apparent from chapter II, pp. 33-43; chapter VI, pp.206-211). Poor drainage, accompanied by high rainfall and recurring floods which result in extensive water logging in the low lying areas have been responsible not only for crop losses but the resultant sheet erosion reducing fertiliser efficiency. This phenomenon, as observed earlier, in turn has a disincentive effect on adoption of H.Y.V Technology. Overcast skies and short sunshine hours reduce the photosynthetic efficiency of the hybrid seeds and had indirectly affected the yield levels. Added to the natural and physical factors affecting agricultural development are the human errors which have accumulated over

¹ Verghese, B.G, 1996, "Development and Change" in *India's North East Resurgent; Ethnicity, Insurgency, Governance and Development* Centre for Policy Research, New Delhi, p. 25.

the years to create a vicious cycle of underdevelopment. The human errors were-

- Agricultural development strategy in the state largely unorganised in the sense that the bulk of the micro level production plans were not market oriented.
- The need for creation of cold storage facilities was not given serious consideration. This is a serious omission, given the oppressive, hot and humid conditions throughout the length and breadth of the state, which speeds up spoilage.
- Serious consideration to development of good roadways linking villages to markets in the urban centres was also not given. Most rural roads are not metalled or are poorly maintained. During the rainy season, heavy vehicles cannot use most of these roads. Thus transporting products to the market becomes a problem for many.

On the whole, development of agricultural infrastructure received half-hearted attention till the mid 1990s. They are vital to market orientation of agriculture. It was only from mid 1990s that the World Bank funded Agricultural and Rural Infrastructure Services Project - ARIASP undertook the task of developing this component of agriculture.

Apart from the constraints to agricultural development, a host of constraints affecting trade in the products such as spices, foodgrains, (as also coal and limestone), exist within the region (which include whole of the North East). These can be classified as socio-economic, techno-economic, and geographical constraints.

The socio economic constraints arise due to - low educational levels and economic conditions of the farmers. The former affects the willingness and receptiveness of the farmers to new technology, shift from foodcrops to commercial crops, and market awareness, among other things. The latter affects the ability of the farmers to all the above. The high gestation period of many commercial crops including horticultural crops, high initial investment required not just in cultivation but in setting plants for value addition, operational problems faced by processing units and tax related issues impede trade because of the economic conditions of the farmers.

The techno-economic constraints include unorganised market set up in the region, acute shortage of infra-structure related to post harvest stage such as cold storage, processing and packaging facilities. Other techno-economic constraints are-

-underdeveloped transport, storage and packaging facilities. This has resulted in high wastage rates of products like fresh fruits and other perishable products. In the NorthEast, wastage rates are estimated at 30 to 40%.²

-small scale processing units do not possess the ability to improve performance in terms of hygiene, safety and quality. Huge gaps exist between the phyto-sanitary standards maintained within the state and the international requirements. This was too evident in case of tea as examined in chapter V. Low standards in quality and safety, and of packaging is therefore a major constraint to export of these products. Countries can use this as a measure to

² Tata Consultancy Services, North Eastern Industrial and Technical Consultancy Organisation, July 1998, p. 4-5.

block imports. The low training level and awareness of export quality criterion among the small entrepreneurs therefor restricts their operation to the domestic markets only.

- The unfavourable tax levels are another major constraint for small as well as larger entrepreneurs interested in exporting. Total cumulative tax levels on processed foods are around 16%. Additionally, sales tax of 5-12% is levied, apart from the tax on packaging. Comparative tax burden in other Asian countries totals 10% only.

- capital equipment tax levels are also higher than in other countries. Here 10-40% excise duty is charged while in other Asian countries no excise duty is charged on such equipment. For cold storage equipment, import duties are between 20-50% and excise between 10-40%.³

Perhaps the most critical constraint to development is the internal instability arising out of the socio-political conditions. This is apparent from the preceding chapter. Antagonism towards outside competition, protecting rent seeking from traders and entrepreneurs not belonging to indigenous population are serious constraints to development. Insurgency too has kept out business establishments and companies from sustained economic activities within the state. Needless to say, before initiating any development project, law and order situation has to improve. This must be part of the policy to strengthen the investment climate within the state. This will ensure creation of an environment conducive to progress by facilitating and increasing private participation in the development processes.

³ Ibid. p. 4-5.

7.3. Prospects of Policy Reforms

Direct Policy reforms in four broad areas within agricultural sector are essential for ensuring significant impact in agricultural growth. These four areas are in -

- Agriculture infrastructure and services development,
- Commercialisation of agriculture - crops and agricultural practices to cash crops and accompanying practices.
- focus on agro-industries, processing and value addition,
- border trade in agricultural products particularly of processed products.

7.3.1. Agriculture infrastructure and services development – direct reforms in policies for development of infrastructure and services for agriculture is imperative for the sector to become dynamic. This is a precondition to the technological changes needed to boost agricultural production. It is seen that lack of or inadequate infrastructure in agriculture in the past had slowed down progress within the state. The miracle of green revolution in the 1960s was possible due to a developed agriculture infrastructure and services for the dissemination of new technologies. Thus similar strategy needs to be adopted in the state. This essentially includes irrigation facilities, power, input supply system, extension network, rural roads connecting villages to markets, market information system. Direct reforms would include –

Firstly, not just installing more tube wells and pumpsets by way of creating more irrigation facilities in all the districts uniformly, but ensuring regular and

uninterrupted power supplies to run these facilities.⁴ This will in turn ensure optimum utilisation of the irrigation potentials. This will also bring many monocropped or double cropped areas within the state under a third crop season. Agricultural performance of beneficiary farmers and non beneficiary farmers within the state has pointed to the necessity of these basic inputs for adoption of HYV technology. In areas where land was not irrigated or had limited irrigation, production performance of HYV was low. This presents a strong case for agriculture development through increase in cropping intensity- three crops a year, and increasing productivity with HYV technology with irrigation support. Twin improvement in irrigation facilities and power availability will increase the rate of technology dissemination, and possibly bring more barren land under crop cultivation. Lack of irrigation facility was one of the reasons limiting technology dissemination.

Unlike in many other states where limits to further growth in irrigated areas is reached, vast potential exist for further growth of irrigated area and increasing the efficiency in utilisation of the same. For example, In states like Punjab and Haryana, excessive channel irrigation have saturated the fields to such an extent that salts from the subsurface come up to the surface rendering the soil saline, and in many cases barren. This makes further irrigation of the fields risky. In Uttar Pradesh, excessive irrigation through tube wells etc. has depleted the ground water reserves. Not only has the water table fallen, years of fertiliser application has made the soil highly leached. Within Assam, on

⁴ In the progressive states of the country a relatively high level of development was achieved due to development of these two basic inputs. For example, the development model followed in Punjab was scientific exploitation of immense water resource of Sutlej and Beas through the Bhakra project. The dam supplied two

the other hand, vast areas are still un-irrigated. In most districts, less than 25% of the gross cropped area is irrigated (chapter V, pp. 177-179). Further expansion of area under irrigation is therefore not only possible but also essential. This would increase cropping intensity, which are only 145% at present in the state. It is found that with irrigation, cropping intensity increased in the command areas to the tune of 240%. Thus the intensity can be increased by another 60%, as the net sown area is only 40.62%. Districts such as Goalpara, Kamrup, Darrang, Sibsagar, and Cachar where the cropping intensity is below 130% have scope for increasing it by another 60%. Districts where the intensity is between 130% to 140% - Nalbari, Sonitpur, Morigaon, Jorhat, Dibrugarh Tinsukia and the two hill districts, have prospects for an increased intensity by another 80% or more.

Thus to derive optimum benefit of the potentials, investment and development of the two crucial infrastructure- irrigation and power is still essential. Increased private participation is unquestionable in this regard. Private participation will not only remove the monopoly of the public sector but also ensure optimum utilisation of the facilities developed. Crucial too is a policy which aims at continuous, uninterrupted power supply to the farm sector. This alone can ensure an efficient utilisation of the irrigation facilities created.

Part of the policy of infrastructure development would be to focus on building up an efficient input supply system. This was a serious lacuna that affected timely and efficient distribution of better inputs. In the past constraints to this

basic inputs- irrigation and power, bringing amazing transformation to agriculture in the state. Similarly, in Gujarat, a huge program of irrigation development led to agricultural prosperity

had been not so much an ineffective extension service as a grossly ineffective input supply system. Here too increased private sector participation will increase efficiency. Increasing productivity levels through improved planting materials and increased fertiliser application therefor requires a sound input supply system. It was noted in the earlier analyses (in chapter V) that fertiliser application showed an additional production of 1040 kilograms/hectare (for sali paddy), additional per hectare gain of Rs. 4015/- for winter crops, and Rs 5643/- for summer crops. The strategy must be for building up a sound input supply system, which will make better inputs available in time, and in adequate quantities. Along with this, building a market-information system should be considered vital. Awareness of demand and supply position of products, and of price fluctuations, in the market- domestic as well as international, is becoming increasingly vital for commercial farmers. Market information of the nature of the products in demand is just as important to become an active participant in the market driven economy.

7.3.2. Restructuring agriculture to market orientation – essential to restructuring agriculture is consideration of the wide range of agro-climatic conditions and potentials for cultivation of more remunerative horticultural and other commercial crops, which have a market across the border. Remunerative crops identified are- horticultural crops, spices, oilseeds and jute. Incorporating other land based activities along with these cash crops through a 'farming systems approach' will prove more economic. This approach is a systems approach where all the activities allied to crop cultivation such as livestock rearing; fisheries and horticulture are carried out simultaneously. In such a system, the by-product of one is utilised as input for the other. For example,

crop and horticulture residue are utilised as feed for livestock and fish, livestock residue are used as bio-fertiliser as well as made out as feed for fish, etc. all the interlinked activities are situated more or less within the same farming unit. The benefits of this system lie in –

- removal of the excess pressure of farming population on the already small and fragmented land. Employing the excess farm population in these allied activities will ease the pressure on the farmlands.
- not only will it generate full time productive employment to the excess farm labour, but will help increase income of the farmers.
- this would also give comparative advantages to both the research institutes as well as the farmers.

The potential for such farming systems already identified in each of the agro-climatic subzones requires specific technologies. Each of the agro climatic subzones possess potentials already identified (chapter II, pp.46-47). Generating location specific technologies on all these land based activities is imperative. Horticultural projects need focused attention as a new thrust areas, concentrating in the favourable piedmonts and foothills.⁵ Similarly improved varieties of oilseeds and pulses etc can be introduced during the rabi season with assured supply of irrigation.

At the same time traditional crops have potentials for further growth in terms of extension in area as well as increase in productivity. In most of the zones the

⁵ In Karnataka, 250 acres of land has been allotted for horticultural projects worth Rs 200 crores during the 9th plan.

long growing season favours cultivation of 2-3 successive crops. For example, cultivation of 2 rice crops, pulses and mustard in the humid and per-humid young alluvial flood plains of upper as well as lower Brahmaputra valley zones. A major change in farm pattern can thus be effected. This must essentially consist of bio-technological application in the sense that the new strains of paddy- either flood resistant or quick maturing for post flood planting be introduced in large scale in the flood plains.

To intensify improvement in land use, yields and raise production, two fundamental institutional ingredients needs special attention-new technology, together with the inputs and investments needed for its application, and the incentives for farmers to apply them. One of the successes of agriculture in agriculturally developed parts of the country has been the relatively high quality of agricultural research and agro-technology, and also the success in dissemination of the same. In Assam much of the species developed by research centres had remained unused since appropriate incentives to apply it was not provided. Incentives in the form of remunerative prices, or support price, and an assured market (government procurement of the grains for the Public Distribution System) had encouraged the farmers of Punjab and Haryana to adopt the new HYV technology of the green revolution in the sixties. To quite an extent the success of Green revolution was due to a policy of relatively high agricultural price. The highly remunerative and assured prices of the products had compensated the high production cost. In the absence of such incentives by the state UN-remunerative agricultural prices did not permitted the profitable use of purchased inputs and to invest in on-farm improvements and equipment. The uncertainty of an assured, remunerative

price together with natural physical problems (such as flood hazards, low fertiliser efficiency due to climatic conditions, low photosynthetic efficiency due to less sunshine hours, etc which lowers yield levels of HYV crops, discussed elsewhere) have discouraged prospective farmers from adopting such technologies. Thus similar strategy needs to be adopted in the state to motivate the farmers in adopting new technologies.

There is also need for an integrated nutrient management approach -INM (efficiency of fertiliser use- in terms of quantity of grains per quantity of NPK - nitrogen- phosphorous- potash mix). It involves a mix of chemical fertiliser with organic fertiliser. This eco-technological strategy is vital not just for success but also to minimise ecological degradation and maximise economic value for the production cost. Development policy based on large scale bio-technology application will answer problems of low productivity, ecological degradation, while maximising economic value for production costs. All this is possible only through an efficient and sound input supply system.

7.3.3. Focus on agro-industries – in the present competitive atmosphere, the alternative to survive and possibly maximise on the benefits depends on value addition to the commodities exported. Till date export of agricultural products from the state, except for tea, were of unprocessed nature. Reasons for this was - lack of entrepreneurial skills and working capital to set up processing plants. Processing requires investment. Firstly investment in the cultivation of horticultural crops which requires a wait period. During this time the trader-moneylenders exploit the farmers to sell the harvest at low prices. Secondly, investment is required in setting up processing plant. Local entrepreneurs when

they do set up a plant most often fall into a vicious negative loop- the plant takes a number of years to be commissioned; meanwhile it builds up the accumulated interest burden on capital loan. The plant suffers from a number of congenital defects like optimistic market projections, high loan burden, and poor market presence. Faced with the grim market realities the management survives from day to day, never building enough investible resources for backward integration or technology upgradation. The result is a high priced, poor quality product with little market penetration. The high inventory required due to the distance of the trade centres and of unsold stock forces the management to reduce production. The result is lower capacity utilisation and less procurement of raw materials- a cause of demotivation amongst the farmers.⁶

With the constraints removed, the producers can focus on –

- integrated projects/ventures for agro- harvesting,
- development of jute based industries for manufacture of non- traditional diversified products,
- development of horticultural food products etc.

Success in competition with neighbouring tropical countries on processed agro – products depends on getting the “supply side” factors right. Chief amongst these factors is the right capital, a good labour force with the right skills, a financial base to support infrastructure and initial development by sharing risk, an entrepreneurial and managerial capacity to organise, sufficient technology & information links.

⁶ TCS, 1998.

The constraints of working capital and financial base for support of infrastructure are assured by North East Development Federation of Industries (NEDFI), Industrial Development Bank of India (IDBI) and SIDBI.⁷ The Industrial Policy for the N. E. Region have given emphasis on development of food processing industries and growth of export oriented units. To achieve its goal of basic infra-structural facilities, attractive incentive packages are promised. Emphasis is also on setting up of a responsive industrial network.

The decision of NEDFI to foray into agricultural financing through loans to credible NGO's and voluntary organisation is with the expectation of overcoming the constraints faced due to insufficient flow of institutional financial. The focus is on – agri- plantation, horticulture, as well as pisciculture and animal husbandry. This is to be launched through a micro –credit finance scheme that would provides loans ranging from Rs.20,000 to Rs.3,000,000 to self- help groups through NGO's.⁸ The business plan of the corporation prepared by the Tata Consultancy Services (TSC) identified 62 projects in the whole of North East, 31 of these are identified in the state. These projects include fruit and vegetable processing, rubber processing, handloom and handicraft, meat and milk processing, silk processing, petrochemicals, urea fertiliser plant, mini power plant, wood based plant. Many of the agro- based

⁷ So far scheduled commercial banks had been the only source of finance for agriculture and agro processing. IDBI and SIDBI have not directly financed, though the later has refinanced a few agricultural enterprises through rural banks. The Industrial Credit and Investment Corporation of India (ICICI) opened a branch in Guwahati in 1982. Assistance from the I.F.C.I. has been declining over the years. The complex transaction procedures involved in these institutions kept the farmers and local entrepreneurs from taking full advantage of these financial institutions. For example often the IDBI funds for such purposes are not procured. The establishment of NEDFi in 1996, has been perceived as tailor-made to the regional conditions – a dynamic responsive organization for assisting the development of the region by identifying and financing commercially viable agricultural, industrial and infra-structural projects, so that it leads to fixed capital formation. As a development bank of the region, it will promote the participation of private capital both internal and external, and provide marketing and research facilities as well.

⁸ The Assam Tribune, Oct. 2, 1999.

projects have been identified as 100% export oriented units (EOU). These projects are –

1. Integrated Fruit/ vegetable processing plant
2. Mushroom cultivation and processing plant.
3. Banana Puree Processing Plant
4. Papaya Processing Plant.
5. Spice oil & Oleoresin Project.
6. Meat & Poultry Processing Unit.
7. Aquaculture Project

Six District Industrial Centres (DIC) besides the already existing ones are established. This is to facilitate speedy flow of credit to the local entrepreneurs. Udyog Sahayak Cell in each of these DICs have been set to guide the entrepreneurs in the matter of setting up of industries, prepare viable project reports, and arrange finance for the same.

For too long the wide disparity in basic infrastructure have slowed the development of the private sector and discouraged investors. The need to rectify this is realised. Steps taken by the government towards this includes-

- The project for conversion of multi-gauge rail system to uniguage. As a result the stretch from Guwahati to Lumding has a single unigauge line, facilitating
- Uninterrupted transport. Prior to this, trans-shipment was required from Guwahati onwards on either sides, resulting in much delays and costs incurred.
- The project for extension of broad gauge line upped Dibrugarh.

- The commissioning of the fourth bridge at Bogibil near Dibrugarh, completion of the third bridge- Naranarayan Setu over the Brahmaputra near Jogigopa,
- Upgradation of Guwahati airport to an international one and declaration of Brahmaputra waterways as a National waterways. This to an extent improves the situation. At the same time, development of the Asian highway routes expected during the 9th plan is expected to be greatly advantageous to trade potentials to the region. One of the two routes identified enters Bangladesh through Siliguri; emerges through the southern part of the region before entering Myanmar through Imphal.⁹

The proposed setting up Industrial Growth Centres is hoped to promote setting up of industries. Till recently the state had a shortage of developed land for this purpose. The Assam Industrial Development Corporation Ltd. (AIDC) has been allotted governmental land at a number of places for development as Industrial Areas. adequate funds are to be provided to AIDC by the government. The total exemption of Export duty on goods produced in plants located in these growth centres, by an Excise notification issued by the Union government, is meant as a major incentive (Directorate of Industries, Guwahati). However, many other specified industries located outside the growth centres have also been exempted from payment of Excise duty. Some growth centres too have been converted into total tax free zone for the next 10 years. as further incentives, power subsidy is also promised, available for 5 years from the date of commercial production. The subsidy is 50% for plants

⁹ Economic Times, 15 May, 1998.

with upped 1 MW connected load, subject to a ceiling on subsidy of 5 lakh, and 20% for above 1 MW.

To fund all such developmental projects, a separate non – the new government East has created lapsable budgetary pool for the North. The previous governments' efforts to earmarked 10% had failed since it was found to be unimplementable.

7.4.Trading prospects following Agricultural Restructuring

The search for regional strategy for economic success leads to the enunciation of an export –led growth model for the state. As evident from the earlier section, there is an urgency of the need of restructuring of the agrarian economy to take advantage of the increased crossed border trade in this part of the country and the liberal Import- Export policy.¹⁰

Border trade has special significance to the economy of the state due to its geographical location. Locational factors which have significance are-

- The region's (inclusive of the other North Eastern states) relative proximity to East and South East Asian countries as against its distance from mainstream India. Here three probable routes are suggested trade- (i) National Highway 39 connecting the region to Myitkyine and Irrawady in Myanmar via Imphal and

¹⁰ A number of South Asian trade and commerce bodies have advocated the opening of the borders with the northeast for trade as they feel it would benefit their countries too. A 15- member Advisory committee of NEDfi, (headed by the chairman Dr. Jayanta Madhab), in their report recommended a strategy to export the state's untapped potentials in agriculture and allied activities, besides others. The action plan for development was suggested after a thorough scrutiny of the Dinesh Goswami Report on economic development of the state,

Moreh, (ii) National Highway 37 (Ledo road) through Margherita to Kunming in China, & (iii) Railway connection to Chittagong in Bangladesh via Silchar and Comila (Bangladesh).

- The longest international boundary along five foreign countries,
- Close cultural affinity with them.

It was this geographical contiguity which had for centuries fostered trade relations with Bangladesh and Myanmar before the partition of the subcontinent. In fact a total of 12 border markets were in operation between Meghalaya (then a part of undivided Assam) and Bangladesh at the time of partition. It is this geographical contiguity which is sought to be taken advantage of presently. The dismantling of Indo- Bangla trade barriers, and the trade agreement between India and Myanmar gives the people of the region access to these traditional markets across the border.

The Border Trade Agreement between India and Bangladesh first signed in 1972 laid the foundation for state regulation of trade in border areas. This was to cover the stretch lying within a 16 km belt of the border, on either side. Presently 14 land customs stations are operational along the 200 km long Assam and 443 km long Meghalaya border with the country. Of these, two are along the Assam –Bangladesh border at Shutarkandi and Karimganj Steamerghat Ferryghat (KSFS). Dawki, Mahendraganj, Borsora, Gasuwupara, Shella Bazar, Bholaganj and Bhagmara along the Meghalaya- Bangladesh border; Agartala, Shrimantpur, Ragnabazar, Monu and Khowaighat along the

Tripura- Bangladesh border.¹¹ India's export to Bangladesh consists of both primary and manufactured goods. Fruits and vegetables, foodgrains, textiles and cotton yarn are items in great demand along with automobile parts, coal and limestone. Items exported from these points are coal, oranges and fresh ginger (from Meghalaya), paper, cement, plywood, citrus fruits, dry fish, aniseeds, dry chilli, garlic, onion and jackfruits. Trading in the last two years (1997-98 and 1998-99) via the first two custom stations by value is given below.

	1997-98		1998-99	
	Export	Import	Export	Import
Shutarkandi (Rs. crore)	33.76	4.56	28.63	5.3
Karimganj				
Steamerghat	9.46	00	22.88	0.05

Source : Office of Customs and Central Excise, Shillong, 1998-99.

The government of India entered into a trade agreement – The Barter Trade Agreement, with the government of Myanmar in January 21st, 1994, and it came into effect on April 12th, 1995- when Indo –Myanmar border was officially declared open for trade in Moreh in Manipur. At present it is the only land customs station along the Indo- Myanmar border. Items exchanged via

barter system - are wheat flour, soya products, cumin seeds, and bleaching powder as export items while imported items are beatlenut, chickpeas, reedbroom, raisin, garlic, and dry ginger.¹²

¹¹ Customs and Central Excise, Shillong, 1999.

¹² Ibid.

The inaccessibility of border point, road conditions and minimal interactions at the government level have kept the volume of trade at the minimal. Insufficient availability of items listed under the barter trade agreement, and the inadequacy of infrastructure facilities and high tariff rates, could result in the collapse of trading relations with the country. The non-availability of listed items in sufficient quantity has resulted in heavy trade imbalance (with trade deficit in favour of India) as per report of the office of the commissioner of Commerce and Industries, Manipur.¹³

Indo- Myanmar trade by value (in Rs. crore)

	1987-88	1998-99
Imports	36.26	3.79
Exports	25.26	5.02

Source: Customs & Central Excise, Shillong, 1998-99.

Export to other countries besides the bordering countries is minimal and is basically of tea – to the European and middle- east countries. Since 1997 exports has been taking place directly through the Internal Container Depot (ICD) in Amengaon, Guwahati. The following table shows the volume of trade in monetary terms which has taken place since then.

Trade with European countries through ICD, Guwahati.

	(in Rs.crore)	
	1997-98	1998-99
Total imports	2.9	2.71
Total exports	268.63	247.3

Source: Customs & Central Excise, Shillong.

¹³ Tata Consultancy Services, 1998.

Experience of the North East in exports (except in tea) has been disappointing. Errors and problems mar the experience – financial planning errors, non-availability of working capital, high interest payment and manpower shortage.

7.5. Probable consequences of Export – led Growth strategy in Agriculture

This export –led growth strategy particularly by export of agro- processed products suggests a farming system devoted more to cash cropping- a system devoted to producing more of horticultural crops, fibre crops like jute, mesta, or spices etc. In the present situation of non availability of further cultivable land, this implies encroaching upon farmlands devoted to traditional crops like paddy. Considerable risk is involved in such a change over evident from the experiences of other countries.¹⁴ The expansion of capitalist export agriculture squeezes out small farmers from their basic means of livelihood. This could result in further polarisation of the economy which is already characterised by a three- tiered agrarian structure - of subsistence agriculture of the majority, shifting cultivation of the tribal minority, and cultivation of export crop- tea- with higher levels of technology of the privileged few within the state.

¹⁴ The experience of Central American countries exporting mainly agricultural products (tropical products like bananas, cotton, coffee, fruits, vegetables et.) to the North have been marred by great disparity and ecological crises. The export sector is controlled by a small class of large landowners, or latifundistas, who hold power in Central America. These export oligarchy monopolises the best land and resources. The majority – poor farmers and agricultural workers, struggle to survive by growing on marginal land or by migrating to cities. Thus a two-tiered agricultural economy is characteristic in these countries. The expansion of the capitalist export agriculture squeezed out the small farmers from their basic means of livelihood. Moreover in countries like Costa Rica trade driven SAPs introduced by World Bank and IMF has further polarised the economy. See Siddiqui, Kalim. "Agricultural Exports, Poverty and Ecological Crisis-case study of Central American Countries," *Economic & Political Weekly*, 1998.

Adaptation of producers/farmers and entrepreneurs to an export –based growth strategy and thereby a restructuring of agriculture would give rise to new geographies of development. Restructuring which, within the state may results in new patterns of agriculture, essentially consists of emphasis on cultivation of non- traditional, cash crops, in new areas, with new input- technology mix, and new markets across the border, would give rise to shifting trends in the geography of agriculture.

Cross border trade with the neighbouring countries also has the prospect of converting the zone into a transitional economic zone – a growth triangle. Development of such micro or sub- regional level linkages and growth triangles between regions across international borders is the increasing event of the contemporary times. By adopting the growth triangle concept to boost intra- regional trade, the state could also create competitive and efficient industrial capacity, and thereby create regional specialisation. Not just that, but the formalisation of the hitherto informal trade between the north east India, Bangladesh and Myanmar (which, according to an unpublished survey conducted by NCAER, is of nearly three billion dollars worth) is expected to generate immense revenue. Thus a growth triangle in this part of the world could be the answer to the financial crises of the state and of subsequent economic development.

Summary and observations

Development efforts in the past were confronted by numerous constraints ranging from socio-economic, techno-economic to geographical. Of the socio-economic constraints low educational levels and the general economic conditions of the farmers emerged as the factors impeding spread of new technology. Unorganised market set up acute shortage of infrastructure related to pre and post harvest stage, low training levels and awareness of export quality criterion, etc are noted to be some of the techno-economic constraints to development of market oriented agriculture, agribusiness and of agri-industries. Constraints which are geographical include extensive water logging in large part of the two valleys due to poor drainage and recurring floods, the resultant sheet erosion which follows, and the damage to crop, low efficiency rates of hybrid seeds as a result of overcast skies, etc. Any policy reforms must incorporate solutions for removing or reducing the constraints.

Great prospects exist for the state to develop agro-industries and agri-business once the constraints are reduced if not altogether removed. With restructuring of agriculture to focus on agro-industrial crops, processing of the crops, and trading in them will be gainful for the economy. Four broad areas therefore within agriculture are identified for policy reforms. These relate to restructuring agriculture to market orientation and trade in agri-products (processed), and development of infrastructures to facilitate these processes. Initiatives already taken includes setting up agro-processing plants, or techno-economic feasibility research (for eg. by Tata Consultancy) for the same. Organisations such as NEDFI are seen to play greater role in

establishment and financing the enterprises. Involvement of private sector in agricultural infrastructure developments is encouraged not only for speedier development but also more efficient services. The role of the public administration in this is to provide conducive environment in regards to law and order, and favourable policies facilitating foreign/private investment or involvement.

The prospects are strengthened further by the state's locational advantages in terms of geographical proximity & cultural affinity to the South East and Far East Asian countries. Already cross border trade agreements with the neighbouring countries have opened opportunities for those ready to take the risk (of investing and setting up enterprises in the troubled environment of the state). Increased trade, particularly in agricultural products, processed or fresh, can therefore boost the agricultural economy of the state in a liberalised economic environment.

Summary and Conclusion

The present study is an attempt in understanding the agricultural situation within the state from a geographical perspective and the prospect of change in this situation in a liberalised economic environment. The focus is mainly on the past policies in agricultural – farm and plantation sector, which shaped the agricultural economy. The significance of analyses of the past policies lies in revealing the loopholes and lacunae in the same. This provides suggestions for future policy options. The work has been much affected by non-availability and even non-existence of data in certain relevant aspects. The select aspects of policy analyses include analyses of production policies-in foodgrains, cash crops-jute and oilseeds in the farm sector, and of tea in the plantation sector. The study also analysed policies in agricultural infrastructure, more particularly irrigation, agricultural pricing and marketing, and credit. Policies on input-their production and distribution, policies on research and technology development, and technology dissemination are other important aspects of the present policy analyses.

The study begins with an introduction to the very concept of free market economy and its implications for the country's and the state's agricultural economy. In the following chapter geographical characteristics and resource base of the state have been examined. This serves as the bases for understanding the type and pattern of economic activities pursued and the level of development.

The two major river basins of Brahmaputra and Barak and their respective watershed areas form important physical divisions. Contained within each of the basins are rich fertile floodplains. This has favoured the cultivation of traditional crops-paddy, jute, and mustard as well as a range of other crops. The older alluvium of the higher grounds with gentle slopes on both banks of the rivers has supported tea cultivation for more than a century. The depressions-bils along the flood plains are favourable for fisheries. Thus the two river basins represent areas highly favourable for agriculture, as well a host of allied activities.

The Karbi Anglong, Hamren and Cachar Hills form a separate physiographic unit. This unit has favourable agro-climatic conditions for the cultivation of a range of horticultural crops, besides livestock rearing which is an integral part of the economic activities of the tribes inhabiting these areas.

While the two rivers have provided rich fertile agricultural land that supports a very high density of population, they have also been the cause of a number of problems. The heavy water discharge from these two rivers during the monsoons have been the cause of extensive damage to the agriculture-about 12.49% of net sown area are flood prone. The annual flood prone area is identified as 5.46%.

The climate in most parts is humid (average relative humidity 85 %) with high temperature, ranging between 30 degrees to 35 degrees centigrade, and rainfall between 1100 mm. to 3000 mm annually. This coupled with the soil types which in the flood plains are recent alluvium rich in organic content and

moderate Nitrogen and Potash content, and old alluvium on the higher ground rich in Nitrogen, have provided a range of agro-climatic conditions favourable for biodiversity. The biodiversity of the state in terms of rice cultivars, citrus and tropical fruits, fibre crops, spices etc. offers the state, the country and the world a rich genetic bank. Biotechnological pursuits by public sector institutes to capitalise on this resource led to the development of crop varieties. Location and season specific rice varieties with high yield capabilities are developed and applied on the ground. Other HYV species developed are in jute, oilseeds and tea.

The colonialists virtually transformed the tea growing areas through development of transport linkages-roads, railways and waterways. Transformation also was caused by large import of tea labourers from outside the region. Their policies also brought large migrants to the sparsely populated parts of the valley where jute cultivation was started. The result of all such policies was a change in the cropping pattern, in the demographic composition, and in socio-economic situation.

The third chapter evaluates the state agricultural policy prior to 1991 against this understanding of the geographical attributes and the resource base of the state. The evaluation reveals the fact that during this period there has been no clear-cut agricultural policy within the state. Also it brings forth the fact that lacunae exist in the agricultural development strategies adopted within the state. The first phase of agricultural policies began within the state after independence with Land Reforms policy. Numerous land acts were expected to bring more equitable distribution of agricultural land and improve the tenurial

system. Vested interest of the large landowners, adihars, and the political nexus defeated the purpose. There was very small improvement in the tenurial system, while land holding pattern remained inegalitarian.

Over the years, production strategies for foodgrains has been in favour of increasing production of rice, the traditional crop, with the objective of attaining self-sufficiency in foodgrains. However the loopholes in the policy is evident from the shortfall in the target of production at every terminal year of the five-year plans. The productivity levels of paddy increased very insignificantly. Similarly, efforts to popularise other foodgrain crops-wheat and pulses amongst the farmers were not successful. Only few districts of Central Brahmaputra valley, and Sibsagar in Upper Assam achieved some small measure of success in this respect. In the other districts paddy cultivation still predominate-having largest percentage of area coverage. Here too, winter rice-kharif crop, received maximum attention. Other foodgrains-wheat and pulses did not receive the desired attention. However these crops registered increased yield rate. Amongst the cash crops, jute, traditionally an important crop has lost much of area under it, and yield rate too did not increase significantly. Area under oilseeds increased only marginally. Reason behind the continued gap between target and actual physical achievement was seen in the inadequate and inefficient support system to back the production strategies. Behind all these failures lies one major drawback of the development efforts. That was the monopoly of the public sector. This brought inefficiency and inadequacy in the agricultural services and agricultural extension.

A comprehensive policy on agricultural infrastructure was lacking till 1990-91. Agricultural infrastructure which includes irrigation, credit facilities, agricultural marketing and pricing, etc. did not receive adequate attention. Irrigation did not receive the priority it deserved. Not only was the facilities created by the public sector inadequate, it was also marked by unequal development across districts, and less than optimal utilisation of the facilities created. Similarly, policy on credit availability to farmers was not appropriately implemented and lacunae existed in the operation of the credit schemes. Loans in the form of crop loans, term loans etc which were generally granted via the Gram Panchayats revealed loopholes in the system of credit dispensement. In the absence of data on application/grant of individual loans this important aspect of agricultural credit availability could not be studied. The strategy to mobilise credit through co-operative societies via. The Gram Panchayats also did not succeed much. Loans advanced by commercial banks have generally gone to the plantation sector, since recovery from farm sector have been poor.

Non existence of a comprehensive policy on inputs – seeds, chemical fertilisers, pesticides etc. greatly affected the productivity levels. Non availability or delay in supply of improved seeds/planting materials affected timely sowing and consequently the yield rates. Similarly non-availability or inadequate supply of fertilisers, lack of irrigation support and wrong mix of fertiliser were reasons for poor performance of agriculture. Districtwise disparities in application of such inputs were glaring. Districts- Nogaon, Sonitpur, Darrang and to a certain extent Kamrup and Sibsagar emerged as more progressive.

No sound marketing and pricing policy existed within the state. The only crop-jute for which marketing and pricing existed was fraught with loopholes. The result was emergence of imperfect market and operation of middlemen. Consequently farmers received unremunerative prices. This was one of the reasons for decline in jute acreage.

Policies in the plantation sector caused much fluctuation in production, productivity and trade of tea. Prior to independence, under colonial capital, organisation and patronage, large areas in upper Assam and parts of Barak valley were brought under tea plantation. Colonial policies were such as to encourage extension of tea areas. After independence, the Union government enacted numerous Laws and Regulations. Biggest impact was on productivity of tea, which declined in the period immediately following the enactment. The policies of the government of India were not conducive to the continuation of the foreign companies. The policies were restrictive, and regulatory, formulated and implemented with a view to providing protection to the domestic companies. Consequent was the withdrawal of a number of foreign companies. This also resulted in the fall of yield rates due to poor production techniques and inefficient management by the new domestic owners. Declining yield rates and decline in export have also been due to the militant activities, which target the industry the most.

The fourth chapter brings out the subsistence nature of the farm sector. The subsistence nature is in terms of land holdings pattern, cropping pattern, and input utilisation, farming practices and post harvest management. Very

smallholdings (less than one hectare), preponderance of traditional crops-paddy, low intensity of cropping (less than 120%) is characterise the subsistence nature of agriculture. Crops like jute oilseeds, pulses and even horticultural crops have a very small presence. It is also characterised by low levels of input utilisation such as fertilisers (less than 20 kg. /hectare), and inadequate irrigation (most districts have less than 10% of the gross cropped under irrigation). Evidently yield rates are very low. The plantation sector is characterised by small growers as well as large planters, and indigenous as well as foreign companies (British). Types of ownership range from smallholdings between 1 to 100 acres, to large estates of over 100 acres. Small growers either only cultivate, or also manufacture. Large estates are owned by private or public companies and controlled by Board of Directors – Indian, Non-Indian or mixed. Number of small growers is increasing but yield rate of these growers is much below those achieved by the South Indian growers. The reasons are same as those encountered in the farm sector- inadequate extension and advisory services, low utilisation of improved inputs, and existence of middlemen.

The fifth chapter analyses and evaluates the policies since 1990-91 (post liberalisation period). It is seen that the situation in agriculture observed prior to 1990 continued to persist even during the 1990s. The policy thrust in the first half of the decade remained more or less the same. Monopoly of the public sector in agricultural research, extension services and infrastructure development continued. However, policy changes occurred since mid 1990s. Privatisation of the public sector facilities were initiated in a small way, and policies was spelt for tapering down or removal of subsidies in agriculture as well as closure of uneconomic public facilities. These were essential conditions

for World Bank funded projects on rural infrastructure and agricultural services. Components of the project include irrigation, rural roads connecting villages to markets. Agro-climatic Regional Planning Approach as a major shift in the development strategy attempts at involving NGOs-Farm Management Committees or the pathar parisar samitis. The NGOs comprises representatives from related departments of agriculture and the farmers themselves. By transferring decision making to the grass-root people, the approach is an attempt at economic viability and cost effectiveness of the development strategies. This is to be achieved through identification of comparative advantages of each agro-climatic subzone.

In the post liberalisation period, removal of the restrictive policies in the plantation sector, and a more open environment in the industry have placed the Indian tea industry in competition against tea growing countries like Sri Lanka and Kenya even in the domestic market. Thus future policies for the tea industry have to be towards improving productivity, quality, and marketing strategy.

Chapter VI examines the role of socio-economic and socio-political conditions and factors affecting development (policies). It has become apparent that policies for development were influenced tremendously by the socio-economic conditions of the people, and by the socio-political conditions within the state. Disparity in economic condition of a plural society, which includes numerous plains, and hill tribes and their different perspectives of development, sense of alienation, and aspirations led to emergence of numerous pressure groups

pressurising the government to redress their grievances. Militancy directed towards the government and towards 'outsiders' hindered progress and development. This and the desire by the indigenous people for protection and safeguard of their interests have significance for any policy reforms in favour of inviting outside competition. Policy reforms has to strike a balance between development strategies safeguarding indigenous interests and those which will invite outside participation in any developmental activities.

In chapter VII, it has become possible to suggest alternative policies for development of the agricultural sector. Based on the analyses and evaluation of the past policies and the lacuna and errors, alternative policies considered includes restructuring of agriculture to focus on market-orientation. This essentially means focussed attention on cash crops, processing and trade-particularly with neighbouring countries, in these crops. Improving infrastructure is imperative to achieve this. And to do so, increased involvement of private sector (companies) is considered essential.

Major findings

So far Assam have been very slow to respond to the changing economic order. In the agricultural sector, the situation remains more or less the same due the lack of a clear-cut policy of development tuned to the changing world economy and trade. The only noticeable policy changes towards the end of this decade have been the steps towards privatisation of few public undertakings such as the seed farms, scaling down of subsidies. Evaluation of the policies has

revealed the loopholes and lacunae in the past policies. The major findings of the study are-

1. The situation in Assam after five decades of planned economic development is that about 36.09% or 9.45 lakh persons are still below the poverty line (Planning Commission, 1999-2000). Large proportion of landless and marginal cultivators constitute much of this population below the poverty line. They did not gain from the land redistributive legislation of the state. In the liberalisation process, land legislation lost their relevance. This is because the liberalisation process has to facilitate large farmers and corporate to acquire land for adoption of market based agriculture in order to promote agro-industries.
2. In India the objective of achieving food self-sufficiency was attained with technology development in agriculture and large-scale agricultural extension services. In Assam agricultural technologies could not bring similar achievement in crop production. This was partly because large-scale agricultural extension services were inadequate. Inadequacies also existed in input support systems, which limited dissemination of technology. Liberalisation process tends to facilitate entry of private enterprise in these sectors. Also privatisation of the public enterprise will enhance efficiency. However law and order situation inhibits this.
3. Assam continued to be foodgrains deficit. It was also characterised by slow agricultural growth. This deficit persisted as gap between target and actual production did not narrow down over the years. The result is annual

procurement of foodgrains. This points to the failure of the production policy. Rapid growth of population (2.17% annual exponential growth rate of population) put increasing pressure on the foodgrains situation. This rapid growth of population also increased pressure on agricultural land reducing farm efficiency. High agricultural density is observed in Assam.

4. The vast rainfed agricultural system of Assam was neglected with regard to a comprehensive policy on water management. A suitable strategy for utilisation of the huge water resource was not evolved. Nor was the agro-ecological characteristics (of alternate growing periods of excessive rains and dry conditions) considered for a policy of water management. Therefore stability in production was not achieved.
5. While agricultural infrastructure development depended solely on state action, production functions did not depend on state assistance. Production was undertaken with use of farm-saved seeds/planting materials, minimal or no use of chemical fertilisers or irrigation. Government assistance programs (such as subsidy programs) were mostly out of reach of the peasants. Structural adjustment in these sections of agriculture (of input subsidisation) therefor will have little impact on the peasant class.
6. Restrictive policies in tea production, extension, marketing and export resulted in change in ownership, and management of the industry. This was true particularly after independence. This resulted in stagnation in this sector. Exports have dwindled (from around 30% in 1980 to less than 10% in 1998-99). Removal of licensing system and relaxation of the restrictive

policies following liberalisation is expected to reverse the trend leading to growth. This process is also expected to revive the sick tea gardens (with inflow of capital and increased foreign participation).

7. Imperfect market mechanism, inefficient functioning of government procurement agencies have caused decline in growth of cash crops such as jute. This sector suffered serious setback in the last three and half decades. The policy neglect in the area of credit support, price support and government procurement led to the operation of a chain of intermediaries and moneylenders. The resulted has been an imperfect market mechanism.
8. Considerable changes occurred in geographical patterns in terms of changes in cropping pattern, more intense use of land, introduction of new crops, utilisation of wastelands, etc. But the extent of these changes was not attributed to the operation of the policies alone. Tremendous increase in population was more responsible for this. However it was found that geographical and socio-economic conditions affected the policy operations. The resultant geographical patterns that emerged were skewed.
9. Patterns, which emerged, reflects intra- state differences – spatial and temporal, in implementation of the policies. The significant differences were in patterns of technology adoption, in agricultural performance, and in infrastructure development and in utilisation. Different patterns emerged in upper Assam, central, and lower Assam, and in the hills.

10. Environmental problems have not been adequately addressed. Adequate attention to sanitary and phyto-sanitary conditions (particularly of tea) was not paid. High pesticide residue levels are found in Assam tea. These levels exceed the international norms. This will not only restrict export, but also result in increased market access of other countries to the domestic markets. This will happen as domestic consumers' places demand for quality products. Domestic markets have been the greatest strength of Indian tea. To be globally competitive, use of agro-chemicals will have to conform to international standards.
11. Missing strategy in development of marketing structures, modern storage facilities, and post harvest technologies were characteristic. This resulted in considerable wastage of products (given the high temperature and humidity conditions, wastage rates are between 30-40%). This also resulted in underselling of the products to intermediaries, in the absence of an efficient and effective government procurement system.
12. Growth of small tea growers segment occurred with increase in number of small tea growers. This was the result of "small tea growers' movement" (started with the assistance of Tea Board and ABITA). However they had restricted access to new technologies and assistance because many were not registered with the board. Limited extension services and follow-up programs kept the productivity and production at low levels. Entry of private enterprise in the agricultural extension and services can remove the monopoly of these public enterprises and enhance efficiency.

13. Slow economic development and differences in development led to conditions of internal (political) tension and conflicts with the government. Extractive and exploitative policies were responsible for the imbalances in economic development. The internal instability affected government management functions and slowed down economic growth. Funds are diverted away from developmental purposes to maintaining law and order, in rehabilitation programs of surrendered insurgents, etc. These are conditions that create an environment not conducive to globalisation. These conditions restrict outside participation in economic and developmental activities.
14. Socio-cultural barriers in the form of local protection from outside competition have been restrictive. Safeguarding local interests have been translated to keeping out non-indigenous enterprises from participation in economic activities. Protection from competition will result in increasing economic gap.
15. Special tax incentives and subsidies declared for setting up industries (particularly in EIPs) failed to generate enthusiasm. Reason has been absence of specialised factors like skilled labour and enterprises, and absence of a cultural movement in favour of competition rather than protection.
16. Export strategy in agriculture has not gained momentum due to numerous existing techno-economic constraints.

Observations and Recommendations.

It has been observed that one of the reasons for slow growth has been the result of vital missing link between the policies in production and in infrastructure development. Infrastructure development is also vital to facilitate a competitive environment and establishment of related industries. Therefor essential is not just increased role of the public sector, but inviting increased private participation in the same. This will also reduce monopoly of the public sector in implementation of many development packages. Non implementation of the policies, has been the most important reason for the slow growth of the economy. It was seen that monopoly of the public sector in input supply system had resulted in inefficiency of the system. Private sector participation is therefore desirable for greater efficiency.

Poverty alleviation through growth in the agricultural sector was seen from the narrow perspective of providing a series of subsidies to the weaker sections. Also these were inefficiently administered. This narrow perspective has to widen to include a multi-disciplinary technologies program. –including irrigation, controlled use of fertilisers, pesticides and post harvest technologies. Creating awareness is vital to this.

Major recommendations.

Law and order situation has to improve to facilitate private participation in the development process. Maximum environmental support to trade and industries has to be ensured through maintaining law and order (this problem had caused

withdrawal of big business houses from the state, or shifting area of operation). Thus a stable environment conducive to competition has to be created first.

Once a stable environment is created, Assam's agricultural sector can be made competitive by focussing on-

1. Restructuring agriculture for market orientation. This can be effected through cash crop cultivation. Here the prospects lies in the range of commercial crops which can be cultivated in the favourable agro-climatic conditions. Increasing area and production under -

- horticultural crops- tropical fruits, and spices, in the favourable conditions of the hills, and foothills.
- small tea gardens.
- plantation of medicinal and aromatic plants (RRL, Jorhat has started with experimental cultivation of these plants. The institute has identified so far 18 major medicinal plants of the Northeast that can be commercially exploited. Certain plants have been identified to have curative properties for cancer, AIDS, malaria, etc.)

2. Development of an efficient and adequate field advisory services system, which will enable better access of improved technologies to the small growers and horticulturists. This will also require development of post harvest technologies to minimise wastage.

3. A policy of integrating the three functions – research and technology development, effective extension service supported by an equally effective input supply system. The need to link up to processing plants suggest for a

Farmer-research-industry policy interface, adding value to many farm products besides jute and oilseeds.

4. Development of agro-industrial activities. This means processing and value addition of the cash crops. This also calls for-

- establishing linkages between the farms and industries- linkages to backward linked industries to provide capital, equipment, etc, and to forward linked industries for packaging, branding, and marketing.
- reduce the role of the intermediaries between financial agencies and users, and between farmers and market.
- develop links between the markets, and the producing areas.
- focus in the tea sector in research in processing technologies, product chemistry (to test pesticide residue levels), and consumer taste and preferences. The last is important to survive in a competitive market (even domestic market). Therefore close interaction between research, to know the consumer profile and scientific research has to be established.
- this should also ensure maintaining international quality norms (in packaging etc)

So far, technologies developed by the public sector agencies were not commercialised. Commercialisation of the technologies developed is desirable. This will also require upgrading and maintaining a gene bank of the indigenous plant species.

5. Crucial to all this is maintaining rural connectivity, and access to information technology for market trends, and of international standards.

Therefore a vital area of policy reforms should be in the area of development of agricultural infrastructure.

6. Promote the above development strategies through joint ventures. This strategy has been mooted as one of the strategies to managing the tribal/ethnic issues. By promoting development joint ventures between corporate, family/village/tribal ownership, with state government as a third partner. The involvement of the corporate sector will take care of the capital and technology aspect, while involvement of local/tribal owners ensures their participation. Also local/tribal (indigenous) knowledge will be harnessed. Thus on the one hand this will stem instability by addressing the needs of these communities, on the other hand gains of development will be shared.

By ensuring continuity in development as well as ensuring inflow of technologies and investment, the state and its people will have development as a social commitment to maintain individual freedom.

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APPENDIX I

Assam- Population, density, and literacy, 1991

District	Population	Decadal variation	Literacy rate	Density (per sq. km.)
Dhubri	1332475	56.57	38.31	470
Kokrajhar	800659	76.78	40.57	256
Bongaigaon	807523	64.64	49.06	322
Goalpara	668138	54.12	46.81	366
Barpeta	1385659	43.02	43.24	427
Nalbari	1016390	49.27	55.99	450
Kamrup	2000071	65.72	65.04	460
Darrang	1298860	55.63	42.00	373
Sonitpur	1424287	57.15	48.14	268
Lakhimpur	751517	56.29	58.96	330
Dhemaji	478830	107.50	53.84	148
Marigaon	639682	50.90	47.99	375
Nogaon	1893171	51.26	54.74	494
Golaghat	828096	58.12	58.54	236
Jorhat	871206	13.10	65.51	306
Sibsagar	907983	38.76	64.46	340
Dibrugarh	1042457	37.78	58.32	308
Tinsukia	962298	47.03	50.28	254
K. Anglong	662723	74.72	45.57	64
N.C.Hills	150801	98.30	57.76	31
Karimganj	827063	42.08	54.71	457
Hailakandi	307695	45.94	53.07	338
Cachar	1215385	47.59	59.19	321
Assam	22414322	53.26	52.89	286

Source: Calculated from Census of India, 1991, and Directorate of Economics and Statistics, Assam, 1995.

APPENDIX II

Districtwise distribution of main workers, cultivators, agricultural labourers and marginal workers.

District	Total main workers	Cultivators (%)	Agri. Labours (%)	Marginal workers (%)
Dhubri	361883	51.07	22.14	11.19
Kokrajhar	271189	65.54	16.01	4.92
Bongaigaon	244322	56.11	17.07	16.02
Goalpara	194682	54.89	18.82	15.58
Barpeta	366322	58.38	16.62	13.57
Nalbari	269327	49.77	18.39	25.03
Kamrup	574174	35.05	8.22	13.52
Darrang	405743	59.91	14.02	28.65
Sonitpur	502421	47.58	11.62	14.05
Lakhimpur	241552	68.16	6.17	33.34
Dhemaji	160833	79.68	4.97	33.88
Morigaon	184695	69.27	11.55	20.81
Nogaon	553993	54.79	14.76	21.17
Golaghat	293248	55.00	8.30	15.74
Jorhat	299539	44.23	5.33	11.54
Sibsagar	331439	44.58	6.24	14.87
Dibrugarh	361269	31.64	6.44	14.04
Tinsukia	351237	35.41	5.82	11.46
K. Anglong	252123	75.59	6.41	12.46
N. C. Hills	57751	57.71	2.16	9.79
Karimganj	222625	43.14	16.64	7.35
Hailakandi	130642	46.42	17.38	8.25
Cachar	361037	37.69	17.35	7.21
Assam	6992056	50.90	12.08	15.69

Source: Census of India, Primary Census Abstract, Part II-B, (1), General Population, Vol. 1, 1991

ANNEXURE III a.

Population of tribes- plain and hills tribes, 1991.

Name of tribes	Total population	Name of tribes	Total population
Plain tribes		Hill tribes	
Bodo-Boro Kachari	1184569	Karbi Mikir	355032
Miri/Mishing	381562	Dimasa	84654
Tiwa/Lalung	32633	Rengma	4679
Rabha	112424	Khasi	29384
Deori	15955	Kuki	15209
Koch	7205	Hmar Naga	19054
		Sema Naga	13836
		Tripuri	12965

Source : Census of India, 1991

ANNEXURE III b.

Percentage of scheduled tribe and scheduled caste population, 1991

Districts	S.C. Population	S.T. Population
Dhubri	4.82	2.42
Kokrajhar	3.76	41.15
Bongaigaon	10.74	17.53
Goalpara	5.50	17.23
Barpeta	6.54	7.97
Nalbari	8.8	17.67
Kamrup	7.4	10.72
Darrang	4.4	17.32
Sonitpur	5.69	10.71
Lakhimpur	8.01	23.57
Dhemaji	6.37	43.92
Morigaon	13.78	15.40
Nogaon	10.02	3.69
Golaghat	5.59	10.25
Jorhat	7.61	12.09
Sibsagar	3.56	3.80
Dibrugarh	4.02	7.95
Tinsukia	2.61	5.35
K. Anglong	4.22	51.56
N.C. Hills	2.60	65.54
Karimganj	14.58	0.17
Hailakandi	12.05	0.16
Cachar	14.70	1.36
Assam	7.40	12.82

Source: Census of India, 1991.

APPENDIX IVa

Proportion of plan provision and actual expenditure of the state plans.
(figures in percentage)

Heads/ plan		Agriculture & allied	Irrigation & power	Industries	Transport. Communication	Social service
1 st	Provision	19.00	23.78	0.53	15.68	
	Expenditure	17.68	22.45	0.47	17.02	36.39
2 nd	Provision	13.77	7.68	8.88	13.32	37.02
	Expenditure	13.5	12.7	8.05	13.32	40.71
3 rd	Provision	20.3	28.98	8.12	8.87	33.72
	Expenditure	17.7	43.3	6.0	5.9	27.1
Ad-hoc	Provision	16.75	32.72	5.97	5.76	13.54
	expenditure	16.9	36.3	6.2	4.7	13.7
4 th	Provision	18.48	32.02	9.04	13.94	21.47
	Expenditure	18.38	35.87	8.53	13.10	18.99

Source: Plan documents of Department of Planning and Development, Assam.

APPENDIX IVb

Proportion of plan outlay and actual expenditure-6th-8th plan.

Plan/heads	6 th plan		7 th	8 th plan
	Provision	Expenditure	Provision	Provision
1. Agriculture & allied	10.98	11.17	14.6	11.4
2. Rural devep.	5.43	4.69	6.11	4.04
3. Irrig. & flood control	14.55	13.45	15.9	8.00
4. Power	33.18	123.49	23.3	25.56
5. Industry & minerals	5.16	102.94	5.0	6.9
6. Transport	9.05	104.72	7.9	6.31
7. Scientific service & research	0.02	0.06	0.23	0.19
8. Social & community service	18.45	19.46	2.78	35.36

Source: Plan Documents of Department of Planning and Development, Assam.

APPENDIX IVa

Proportion of plan provision and actual expenditure of the state plans.
(figures in percentage)

Heads/ plan		Agriculture & allied	Irrigation & power	Industries	Transport. Communication	Social service
1 st	Provision	19.00	23.78	0.53	15.68	
	Expenditure	17.68	22.45	0.47	17.02	36.39
2 nd	Provision	13.77	7.68	8.88	13.32	37.02
	Expenditure	13.5	12.7	8.05	13.32	40.71
3 rd	Provision	20.3	28.98	8.12	8.87	33.72
	Expenditure	17.7	43.3	6.0	5.9	27.1
Ad-hoc	Provision	16.75	32.72	5.97	5.76	13.54
	expenditure	16.9	36.3	6.2	4.7	13.7
4 th	Provision	18.48	32.02	9.04	13.94	21.47
	Expenditure	18.38	35.87	8.53	13.10	18.99

Source: Plan documents of Department of Planning and Development, Assam.

APPENDIX IVb

Proportion of plan outlay and actual expenditure-6th -8th plan.

Plan/heads	6 th plan		7 th	8 th plan
	Provision	Expenditure	Provision	Provision
1. Agriculture & allied	10.98	11.17	14.6	11.4
2. Rural devep.	5.43	4.69	6.11	4.04
3. Irrig. & flood control	14.55	13.45	15.9	8.00
4. Power	33.18	123.49	23.3	25.56
5. Industry & minerals	5.16	102.94	5.0	6.9
6. Transport	9.05	104.72	7.9	6.31
7. Scientific service & research	0.02	0.06	0.23	0.19
8. Social & community service	18.45	19.46	2.78	35.36

Source: Plan Documents of Department of Planning and Development, Assam.

APPENDIX V

Districtwise fertiliser consumption (1986-87 to 1996-97)
(kg. per hectare)

Sub-zone	Districts	1986-87	1992-93	1996-97
I	Lakhimpur	3.50	2.42	3.03
	Dhemaji	-	3.14	13.30
	Sonitpur	5.70	3.82	7.04
II	Tinsukia	-	4.74	12.14
	Dibrugarh	7.29	3.44	6.89
	Sibsagar	5.73	5.99	10.59
	Jorhat	11.27	6.85	10.56
	Golaghat	-	6.57	2.54
III	Nogaon	6.47	16.14	14.50
	Morigaon	-	6.85	2.54
IV	Nalbari	5.04	6.00	8.22
	Barpeta	4.41	3.16	2.86
	Darrang	8.84	4.41	6.15
V	Dhubri	8.19	6.09	3.94
	Kokrajhar	5.60	4.73	6.89
	Bongaigaon	-	7.43	4.35
VI	Kamrup	6.96	10.90	11.08
	Goalpara	7.00	8.50	8.72
VII	Cachar	10.55	7.85	16.28
	Karimganj	6.51	7.56	3.71
	Hailakandi	-	14.61	6.43
VIII	K. Anglong	2.06	0.45	0.46
	N.C. Hills	2.95	1.39	0.23
State		4.25		27.38

Source: Statistical handbook, Assam, 1988, 1994 and 1997.

APPENDIX VI

District wise total irrigation potentials created.

(figures in hectares)

Sub-zone	District	1993-94- potential		1996-97- potential	
		Created	As % of gross cropped	Created	As % of gross cropped
I	Lakimpur	10111	6.16	10357	6.31
	Dhemaji	5225	5.44	5271	5.47
	Sonitpur	50346	21.42	51119	21.75
II	Jorhat	10387	6.41	12121	7.48
	Golaghat	11413	6.79	16064	9.56
	Sibsagar	15698	9.81	15649	9.78
	Dibrugarh	11598	6.94	11189	6.70
	Tinsukia	5089	3.82	5377	3.95
III	Nogaon	82990	21.60	86505	22.58
	Morigaon	15318	11.60	15685	11.88
IV	Barpeta	56218	17.40	55505	17.18
	Nalbari	16095	8.12	17805	8.99
	Darrang	50724	18.85	50319	18.70
V	Kokrajhar	24233	16.71	21056	14.52
	Bongaigaon	6136	4.06	9806	6.49
	Dhubri	13872	6.16	14000	6.22
VI	Kamrup	33211	14.95	32680	14.72
	Goalpara	11263	11.04	11439	11.21
VII	Cachar	5034	3.62	5377	3.86
	Karimganj	524	4.94	2892	2.78
	Hailakandi	3521	5.67	3621	5.84
VIII	Karbi Anglong	20661	11.41	21870	12.08
	N.C. hills	4707	12.38	4996	13.15

Source : Compiled from Records of Irrigation Department, Assam, 1995-96, 1997-98.

APPENDIX VII

Sub-zonewise flood prone area.

(area in 000 hec.)

Sub-zone	Net sown area	Chronically flood prone area	Occasionally flood prone area	Total flood prone area	% of net sown area
I	323	74.8	37.0	111.8	34.61
II	597	44.3	15.8	60.1	10.07
III	321	15.6	7.5	23.1	7.20
IV	524	47.3	8.6	55.9	10.66
V	324	34.6	6.5	41.1	12.70
VI	254	27.7	4.5	32.3	12.72
VII	215	3.5	10.0	13.5	6.28
VIII	147	0.0	0.0	0.0	0.0
Total	2705.0	247.9	89.9	337.8	12.49

Source: Report of the Agro-climatic planning for agricultural development in the state of Assam, AAU, Jorhat.

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