

Changing Agricultural Scenario in North-East Regions with Special Reference to Assam

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Abstract: The economy of North-Eastern India is mainly depending on agriculture. The majority of populations of North-Eastern states are getting their means of livelihood from the agricultural sector as they have accepted agriculture as their primary occupation. Therefore, agriculture is playing an important role in the economy of North-East India. The major portions of the total population in Assam (89.0%) are living in rural areas. More than 70 per cent of the total populations in Assam are getting their means of livelihood from agricultural sector. As per 2001 census, 57.4 per cent of the total workers in Assam are agricultural workers. In 2005-06, agriculture alone contributed 28.7 per cent to the total state domestic product. Thus agriculture occupies a very important place and forms the major source of occupation of the people of Assam. The soil, topography, rainfall and climate in Assam is quite suitable for cultivation of rice crop which occupies about 70 per cent of gross cropped area and more than 90 per cent of the total area under food grains. Agriculture in Assam is mainly dependent on rainfall. Thus top priority must be given to the development of rural areas which requires development of agriculture, implementation of land reform measures and the development of Co-operatives. The cropping pattern is an important indicator to show the proportion of area under different crops at a definite point of time. Cropping pattern in a region or a state may change with the changes in proportion of area under different crops. At the beginning of the century about 90 per cent of the total cultivable land of Assam was put under food crops and the remaining 10 per cent was put under non-food crops. After independence a lot of change had been recorded in respect of cropping pattern in Assam. The proportion of area under cultivation between food crops and non-food crops has recorded a little change from 85:15 in 1960-61 to 80:20 in 2004-05.

Keywords: Land utilization, Area under crops, Cropping pattern, Food production

INTRODUCTION

Total geographical area of the North-Eastern region is 255.0 lakh hectares. Out of which 166.25 lakh is covered by forest. Land not used for cultivation purpose is 46.68 lakh hectares. Barren land not suitable for cultivation is 38.9 lakh hectares and about 50.25 lakh hectares of land is suitable for cultivation purpose.

Agricultural production and agricultural productivity are the two important indicators of the development of the agricultural sector of this NE region. Although the economy of the region is depending heavily on the agricultural sector but the agricultural production and its productivity in the region did not record any appreciable change during the post-green revolution period.

Agricultural production in North-eastern region can be broadly classified into food crops and commercial crops. The major food crops of NE region include rice, wheat, pulse etc. and non food crops include tea, raw jute, sugarcane, oil seed etc.

In respect of various agricultural crops produced in the North-Eastern states, the amount of such crops produced in Assam is highest. Total production of food grains in Assam was 4,167 thousand tonnes in 2000-01 which constituted about 70.9 per cent of the total production of food grains of the NE region. Among the agricultural crops produced in the NE region rice is the most important crop, the other crops produced in this region in minimum quantity include wheat, pulse, oil seed etc.

Agricultural productivity means the average yield per hectare of land. After the introduction of modern agricultural technique along with the adoption of hybrid seeds, extension of irrigation facilities and application of intensive methods of cultivation through green revolution in India, the yield per hectare of all crops has recorded a steep rising trend, but the agricultural productivity of the North-Eastern state of the country is of very low level.

Area under crops in Assam

The provisional estimates of land utilization statistics 2001-02 reveal that Assam had an estimated 39.84 lakh hectares of gross cropped area, of which, the net area sown was about 27.74 lakh hectares which is about 35.3 per cent of the total geographical area of the state. The area sown more than once stood at 12.09 lakh hectares during the year. Thus the ratio of area sown more than once to the net area sown was 43.6 per cent in 2001-02 as compared to that of 28 per cent in 1981-82.

Assam is producing both food and cash crops. Main food crops in Assam include rice, wheat, pulses, potato, maize etc. The principal cash crops are tea, jute, oil seeds, tobacco, sugar cane, etc. Amongst the various important crops in the state, the area under rice dominated the position, sharing about 60.7 per cent of the total cropped area in 2005-06. During 2004-05, the area under autumn and winter paddy stood at 4.361 lakh hectares and 16.36 lakh hectares respectively as against 4.41 lakh hectares and 17.70 lakh hectares respectively in 2003-04. Moreover, area under wheat increased by 4.5 per cent in 2004-05. In respect of commercial crops, rape and mustard accounted for the largest percentage of area covered followed by jute, potato and sugarcane. The area under rape and mustard, jute and potato stood at 245 thousand hectares, 58 thousand hectares and 73 thousand hectares respectively in 2004-05 as against 264 thousand hectares, 64 thousand hectares and 78 thousand hectares respectively in 2003-04. The area under sugarcane which was around 36 thousand hectares in 1995-96 declined to 24 thousand hectares in 2004-05 [1].

Objectives

The main objective of this chapter is to examine the changes that have taken place in agricultural sector in Assam with special reference to the following:

- Pattern of land utilization;
- Area under crops;
- Change in cropping pattern;
- Agricultural production, food production and the yield rate;
- The impact of green revolution on agriculture.

METHODOLOGY

The study is of descriptive type based on both primary and secondary sources. The data obtained from various published and unpublished books, records, reports and journals of the government of Assam, internet surfing etc. primary source includes data/information collected by visiting different departments of Assam, individuals and organizations.

Objectives of planning for the agricultural sector

The planning commission finalized four broad objectives initially for the development of agricultural sector.

- Raising agricultural production: To raise agricultural production by bringing more area under cultivation, by raising yield per hectare through intensive cultivation with the application of improved inputs like HYV seeds, fertilizers, irrigation etc.
- Raising employment opportunities: The agriculture sector should generate adequate number of additional employment opportunities in the rural areas for enhancing the income level of rural people.
- Reducing excessive dependence on agriculture: Indian planning has also set another objective of reducing excessive dependence on agricultural sector and to reduce number of people working on land. Accordingly, the surplus labour in agricultural sector can be shifted to secondary and tertiary sectors.
- Reduction income inequality in rural areas: The plan aims at reducing income inequality in rural areas and should distribute surplus land among small and marginal farmers. This should be done in rural areas for attaining high degree of equality and justice [2].

Change in cropping pattern

After independence a lot of change had been recorded in respect of cropping pattern in Assam. The following table reveals the change in cropping pattern since 1960-61.

From the table-1, it is revealed that the proportion of area under cultivation between food crops and non-food crops has recorded a little change from 85:15 in 1960-61 to 80:20 in 2004-05. Thus in recent years, the area under non-food crops has slightly increased [3].

Factors determining crop-pattern

Assam has experienced a very little change in its cropping pattern in comparison to that of the states like Punjab and Haryana but whatever changes the state has recorded these are influenced by various factors which can be classified into the broad categories of natural, social, historical, economic and government policy.

- Natural factors: Nature of soil, type of climate, extent of rain fall, etc. will determine the basic crop-pattern of a region over a period of time. For example, in areas having sufficient rainfall and water logging the most appropriate crop is rice since it can withstand water.
- Economic factors: These pertain to prices of agricultural commodities, incomes of farmers,

- size of holdings, availability of agricultural inputs, nature of land tenure etc.
- Historical factors: If ownership of land is vested in numerous small and marginal farmers, the tendency will be to grow food crops and if ownership is vested in large landowners, the tendency will be to produce more cash crops.
- Social factors: Social environment, customs, traditions, outlook towards material things etc. also influence crop-pattern to some extent.
- Government policy: Policies of the government relating to different crops, exports, taxes, subsidies of inputs, availability of credit etc. can affect the cropping pattern in a significant way [4].

Table-1: Change in area under different crops in Assam since 1960-61 (in thousand hectares)

Crops	1960-61	1980-81	1990-91	2004-05
1.Total food grains	4,572 (84.9)	2,521 (84.2)	2,755 (83.5)	2,583 (80.0)
a. Rice	4,320 (80.2)	2,275 (75.9)	2,526 (76.5)	2,384 (73.8)
b. Wheat	9 (0.16)	102 (3.4)	84 (2.5)	64 (2.0)
c. Other coarse Cereals	58	23	32	27 (0.8)
d. Pulses	185 (3.4)	113 (3.8)	113 (3.4)	108 (3.3)
2. Total non-food grains	813 (15.1)	474 (15.8)	545 (16.5)	647 (20.0)
a. Oil seeds	309 (5.7)	233 (7.8)	320 (9.7)	290 (9.0)
b. Jute	299 (5.5)	112 (3.7)	96 (2.9)	58 (1.8)
c. Cotton	32	4	2	1
d. Mesta	11	12	7	5
e. Sugarcane	62	48	36	24 (0.7)
f. Potatoes	76 (1.4)	38 (1.2)	56 (1.6)	73 (2.2)
g. Others	24	26	25	196 (6.1)

Source: Compiled from Statistical Hand Book, Assam, 2006, and previous issues, pp.⁶¹⁻⁶². Note: Figure in brackets shows percentage figures to total area under different crops.

New Agricultural Strategy (Green Revolution)

Since the mid-1960's, the traditional agricultural practices are gradually being replaced by modern technology and farm practices in India and a veritable revolution is taking place in our country. Initially, the new technology was tried in 1960-61 as a pilot project in seven districts and was called Intensive Agricultural District Programme (IADP). Later, the High-Yielding Varieties Programmed (HYVP) was also added and the strategy was extended to cover the entire country.

From the very beginning, the coverage of green revolution is very much restricted to Northern States like Punjab, Haryana and some parts of Uttar Pradesh. Moreover, as the green revolution was initially very much restricted to the production of wheat, thus the impact of green revolution in its initial stage was almost marginal. It is only since eighties; Assam started to experience the adoption of new agricultural strategy with the growing use of HYV seeds, chemical fertilizers, modern implements etc. to a limited extent. Thus even at the present stage, Assam still stands at the marginal level in the field of green revolution. Under such a situation, the state cannot expect to gain much from such new agricultural strategy.

Achievements of green revolution

- The major achievement of the green revolution is to boost the production of major cereals, viz. wheat and rice.
- Initially, the green revolution was directed to increase the production of food grains. However, after 1973-74, there was considerable improvement in the production of cash crops such as sugarcane, cotton, jute, oilseeds and potatoes.
- As a result of the green revolution, the crop pattern has undergone two significant changes. Firstly, the output of cereals has risen and secondly, among cereals, the proportion of rice in total cereal output has come down.
- The successful adoption of the new agricultural technology has led to continuous expansion in area under crops, increase in total production and rise in agricultural productivity.
- The new technology and modernization of agriculture have strengthened the linkages between agriculture and industry [5].

Agricultural yield rate

The yield rate of various crops in Assam is not at all satisfactory in comparison with the average yield rate of all India. In Assam, cultivation is still carried on with traditional techniques and modern inputs like

fertilizers, H.Y.V. seeds, irrigation and pesticides etc. are yet to be extensively used. Further, the yield rates

fluctuated widely in Assam due to natural factors viz. flood, draught, erosion of soil etc.

Table-2: Yield rate of some selected crops in Assam (kg per hectare)

Crops	1960-61	1970-71	1990-91	2001-02	2005-06
Autumn rice	713	729	873	1,000	1,017
Winter rice	1,046	1,126	1,446	1,607	1,543
Summer rice	860	1,244	7,752	2,003	1,780
Total rice	968	1,022	-----	1,539	1,487
Wheat	824	583	1,248	1,181	1,076
Jute	1,229	1,305	1,632	1,802	1,835
Sugarcane	34,403	37,217	42,510	37,230	37,190
Potato	4,784	4,524	7,240	7,752	5,079
Rape & mustard	381	413	535	503	456

Source: Statistical Hand Book. Assam, 2006 and other issues, Directorate of Economics and Statistics, Assam and Economic Survey, Assam, 2006-07. P.xv

The table reveals that the yield rates of some principal crops such as Rice, Wheat, Jute, Sugarcane, Potato, Rape and Mustard have increased slightly from 1960-61 to 2005-06. The average yield rate of rice per hectare in Assam which was 968 kg in 1960-61 gradually rose to 1,220 kg in 1980-81 and then to 1,487 kg in 2005-06 as compared with 2,093 kg for India in 2005-06. It is revealed that the agricultural yields of various crops in Assam are poor and even declining gradually in case of some crops [6].

FINDINGS AND SUGGESTIONS

Modernization of agriculture or transfer of technology in agriculture in Assam is progressing at a slow pace. Adoption of new agricultural strategy or green revolution which was very much restricted to Northern states like Punjab, Haryana and Uttar Pradesh in its initial stage, could not make much headway in a backward states like Assam even at its later stage. There are certain major obstacles or causes responsible for the slow pace of transfer of technology or modernization of agriculture in Assam.

- Absence of sufficient assured and controlled water supply due to lack of adequate irrigation facilities is one of the major obstacles in the path of modernization of agriculture. In 2005-06, total irrigation potential developed in the state covers only 17.17 per cent of the total cropped area of the state.
- Small size of agricultural holding is another obstacle in the path of modernization of agriculture. The average size of operational holding is only 1.27 hectares.
- Lack of high yielding variety of seeds and its limited use is the next important obstacle, in the path of modernization of agriculture.
- Scanty use of fertilizer is another important obstacle on the path of modernization of agriculture. In Assam, the consumption of fertilizer per hectare of land was only 60.00 kg

in 2005-06 as compared to that of 104.5 kg for all India.

- Lack of adequate finance is another important obstacle in the path of modernization of agriculture in Assam. Poor financial condition of the farmers and the absence of adequate institutional finance are mostly responsible for such a peculiar situation.
- Natural factors like floods, hailstorm, frost or attack by pest or insects and the inability to contain such natural problems are also responsible for lack of modernization of agriculture in Assam.
- Lack of adequate agriculture research is also another important obstacle in the path of modernization of agriculture in Assam. This has led to the situation where fruits of research are not being percolated to the farmers and thus the problems faced by the farmers still remain largely unattended.
- Lack of motivation on the path of farmers and educated youths is another important obstacle on the path of modernization of agriculture.

The current policy of economic liberalization adopted by India has broadened the scope of modernization agriculture in different states of the country. In order to sustain the agricultural production in Assam to the required level, the following measures are suggested.

In order to keep pace in respect of increasing agricultural production, the farmers in Assam should try to modernize the agricultural sector by adopting modern implements, using high yielding variety seeds, applying adequate quality of fertilizers, by adopting scientific rotation of crops and careful crop planning and finally through intensifying agricultural research and percolating the fruits of research to the farmers.

In order to sustain agricultural production in Assam to the required level, adequate organizational steps must be taken for the all-round development of the agricultural sector of the state. These organizational steps include consolidation of small and uneconomic holdings, overcoming the problems of agriculture created by natural factors like ever-recurring floods, extension of irrigation facilities, developing of marketing arrangements etc. All these steps will definitely develop the organizational structure of the agricultural sector of the state.

Assam being an agricultural state can avail the benefit arising out of economic liberalization through diversification of its agricultural exports. If the agricultural sector of the state can be modernized to a considerable level, the farm lobby in Assam would see major growth in exports of superior rice, vegetables, fruits, fishery products, meat products etc. over and above its traditional items of exports like tea and jute.

Assam is quite famous for plantation industry. Tea industry in Assam is one of the most important agro- based industries of the state. Considering its age-old tea garden, tea plantation in the state needs its expansion in areas.

Moreover, the state is having enough scope for rubber plantation, coffee plantation, horticultural plantation etc. considering the natural endowments and land available in the state. Development and expansion of these plantations can lead to a boost in agro-horticultural production and its exports in the state.

Thus, under the present regime of economic liberalization, the state can play role of an important player in the field of agricultural production and its exports, if adequate steps are taken to take care of the genuine needs of the sector.

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