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CHAPTER VII

Summary of Findings, Recommendations and Conclusions

Assam is the Easternmost state of the Indian Union and is located between the latitudes of 24°08'N and 27°58'N and the longitudes of 89°42'E and 96°01'(Govt. of Assam). For administrative and revenue purposes, Assam is divided into 27 districts and the 27 districts are divided into 56 sub divisions with 155 revenue circles (Govt. of Assam 2011). Sonitpur district is situated in the North bank of Brahmaputra valley. The District lies between 26° 30'N and 27° 01'N latitude and between 92° 16'E and 93° 43'E longitude. The economy of the state and the district is predominantly agricultural. Both the state as well as the district has immense potentiality for increasing agricultural production with suitable climatic condition, rich and fertile soil and enough water resources.

Agricultural sector and allied activities played an important role in the socio-economic development of the state of Assam as this sector is the major contributor to the state economy as well as providing livelihood to a significant proportion of the population of the state. About 99.0 percent area of the total land mass of the state is rural and almost 50.0 percent of the total land area is utilized for cultivation. The net cultivated area of the state is 25.33 lakh hectares (2009-10) and the per capita availability of net sown area comes to around 0.1 hectare. On the top of it, 23 percent of the net sown area is either flood or drought prone. The average operational is 1.11 hectare only and more than 83.0 percent of the farmer family is small and marginal farmers (2005-06, Agricultural Census). The contribution of the agriculture sector to the GSDP (at constant 2004-05 prices) was pegged at 4.1 per cent in 2009-10 (Quick estimate) recorded showing a growth from 2005-06 but
remained lower over 2008-09. However, this sector continues to support more than 75.0 per cent population of the state directly or indirectly providing employment of more than 53.0 percent of the workforce.\textsuperscript{11}

The sectoral growth of the state economy it has been observed that the growth of the agriculture and allied sector was not encouraging during the last three consecutive Five-Year Plan (8\textsuperscript{th}, 9\textsuperscript{th} and 10th FYP) periods. This depressing performance was continued even during the first year of 11\textsuperscript{th} FYP, but made some recovery over the average growth of the 10\textsuperscript{th} FYP. However, the growth of this sector shoots up and reached a comfortable level at 6.4 percent [GSDP at constant (2004-05) price] during 2008-09 surpassing the targeted annual growth of the sector at the rate of 2.00 percent set for the plan period. The main reason of achievement of this growth is due to the sufficient production of rice (mainly Winter rice). As per quick estimates, the growth rate is due to the adverse weather condition experienced during 2009-10. The growth of the agriculture and allied sector is projected at 6.6 percent in 2010-11(A) as the state has experienced sufficient rainfall during the Kharif season which is congenial for rice cultivation in the state.

The state agriculture department has given more focus of attention to increase production of food grains to provide food security to the growing population through increasing productivity of crops and cropping intensity. Accordingly, the state agriculture department has prioritized optimum and efficient use of available resources to enhance the production and productivity of the crops including the horticultural crops by harnessing the best in frontier technologies. The department has formulated District/state specific plan depending on agro-climatic condition, growth potential and specific

\textsuperscript{11} Economic Survey, Assam 2010-11
requirement of the Districts through improved farm mechanization and assured irrigation, use of quality certified seeds of HYV, popularizing the integrated nutrient and pest management with the special use of bio-fertilizer and bio-pesticides and organic farming etc.

Assam has been experiencing very high population growth since 1901. During the period from 1951 to 2011, population of Assam has increased from 80 lakh to 311 lakh. Due to low productivity and absence of diversification of agriculture in Assam, the high growth in population has created food problem in the state. The land use pattern of Assam highlights that there is little scope for further physical expansion of arable land in the state. At present the total area available for cultivation is almost 50.0 per cent the total land area of the state. Forest covers 22 per cent of land area; the cropping intensity in the state is 149 per cent. During the period from 1951 – 52 to till the end of seventies, the net area sown in Assam has increased considerably by extending of cultivation to new areas, but since 1981, net area sown in the state has remained more or less stagnant.

As mentioned in previous chapters, Assam produces both food crops and cash crops. But the cropping pattern of the state is dominated by food grains particularly paddy crops. Rice is a staple food of the people of Assam and it is grown everywhere by all sections of the hills and the plains. But the productivity of rice as well as other food grains is low as compared to other states of the country due to various constraints. Increasing production of food grains at a rapid rate has become an urgent need in Assam in the face of unparallel population growth in the state. The fact is that the state has by and large fallen in a situation of “food-trap” in the post independence period,

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12 Economic Survey, Assam 2010-11
where growth in consumption demand of food grains persistently exceeds the production growth for a long period. The result is – once a surplus state has become a importer of rice from the early 1970s. Though there have been some achievements in the productivity during eighties and nineties, it is much lower as compared to agriculturally developed states like Punjab, Haryana etc. In these circumstances, the state must intervene by investing heavily on the strategic research on newer production frontier. In this chapter, analysis of primary data has been done with the objective of diagnose the actual grass-root problems faced by the farmers in the district as well as in the state and their economic status with the help of field survey done with the help of a schedule.

7.1. ANALYSIS OF PRIMARY DATA AND TESTING OF HYPOTHESIS

For collection of primary data 300 farmers are selected from different level of land holdings (maximum weight is given to small and marginal and medium farmers because their proportion is very high in the district) from 20 villages randomly selected from 14 blocks of the district. The primary informations are collected with the help of a schedule including all the aspects of agricultural activities of the farmers along with their socio-economic status. In the following tables the result of the field work analyzed and discussed.

ANALYSIS AND RESULTS

Data collected in field survey are first tabulated according to their characteristics for analysis and interpretation. In the table: 7.1, the demographic structure of the district was shown with respect to the age of the respondent. According to the 2011 Census, the Sonitpur District has a population of 1925975, with a density of 365 persons per sq. km. The people
here are not a homogeneous lot. Rather, they are a mosaic of ethnic groups, an admixture of diverse types of people. The following table shows the demographic characteristics of the district under study.

**Table: 7.1**

**Demographic Characteristics of the Sample Respondents (Age & Sex Composition of the Sample Respondent) (figure in bracket is in % term)**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Size group of farmers</th>
<th>No. of household</th>
<th>Total population</th>
<th>Male</th>
<th>Female</th>
<th>Less than 15 years age</th>
<th>15-50 years age</th>
<th>&gt;50 years age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Small</td>
<td>86</td>
<td>519(100)</td>
<td>284</td>
<td>235</td>
<td>158</td>
<td>256</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(54.7)</td>
<td>(45.2)</td>
<td>(30.4)</td>
<td>(49.3)</td>
<td>(20.2)</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>125</td>
<td>870(100)</td>
<td>518</td>
<td>352</td>
<td>285</td>
<td>445</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(59.5)</td>
<td>(40.46)</td>
<td>(32.8)</td>
<td>(51.2)</td>
<td>(16.0)</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>89</td>
<td>741(100)</td>
<td>397</td>
<td>344</td>
<td>224</td>
<td>375</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(53.5)</td>
<td>(46.4)</td>
<td>(30.2)</td>
<td>(50.6)</td>
<td>(19.2)</td>
</tr>
<tr>
<td>4.</td>
<td>All groups</td>
<td>300</td>
<td>2130(100)</td>
<td>1199</td>
<td>931</td>
<td>668</td>
<td>1070</td>
<td>386</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(56.3)</td>
<td>(43.7)</td>
<td>(31.36)</td>
<td>(50.5)</td>
<td>(18.1)</td>
</tr>
</tbody>
</table>

Demographic characteristics of the district reveals that 50.5 percent of total farm population lies between age group of 15-50 years, 31.4 percent less than 15 years age and 18.1% is more than 50 years age. In the district, the proportion of dependent population is very high. The economically productive population constitutes more than 50.0 percent of the district.
Table: 7. 2

Distribution of Respondent According to Educational Standard (figure in bracket is in % term)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Size group of farmers</th>
<th>No. of household</th>
<th>Total population</th>
<th>Illiterate</th>
<th>Literate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upto primary</td>
<td>Secondary</td>
</tr>
<tr>
<td>1.</td>
<td>Small</td>
<td>86</td>
<td>519(100)</td>
<td>163 (31.4)</td>
<td>126</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>125</td>
<td>870(100)</td>
<td>195 (22.4)</td>
<td>248</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>89</td>
<td>741(100)</td>
<td>181 (24.4)</td>
<td>196</td>
</tr>
<tr>
<td>4.</td>
<td>All groups</td>
<td>300</td>
<td>2130(100)</td>
<td>539 (25.3)</td>
<td>570</td>
</tr>
</tbody>
</table>

According to census 2011 the literacy rate of the district is 69.96 percent with sex ratio of 946. The majority people inhabiting the District are Assamese. They are among the original inhabitants of the place, and the typical culture of the place grew with them. But, The table: 7.2 showed the educational standard of the respondents under study. Around 74.7% of farm populations of the district are literate and literacy among medium class farm population is highest i.e., 77.6 percent and 68.6 percent in small farmer group and 75.6 percent in large farmer group are literate.

The district covers only 7.0 percent of the total geographical area of the state. The land use pattern in the district varies slightly in proportion to Assam. In 2009-10, total forest cover in the district is 29.0 percent which is more than state proportion (i.e., 25.0 percent). Similarly, net sown area in the
district is less in proportion i.e., 27.0percent in comparison to state level which is 35.0percent of the total geographical area. Total cropped area covers only 45.0percent of the total area of the district while state average is 51.0percent. The following table can helps us to analyze the farm structure of the district in respect of different size groups.

Table: 7.3

Farm Structure with Respect to different Size Group (land in hectare)
(figure in brackets are in percentage)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Size group of farmers</th>
<th>No. of households</th>
<th>Owned land</th>
<th>Leased land</th>
<th>Leased out land</th>
<th>Total operational holding</th>
<th>Av. operational holding</th>
<th>Area under home stead</th>
<th>Cultivable land</th>
<th>Av. Cultivable land</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Small</td>
<td>86</td>
<td>151.36</td>
<td>12.5</td>
<td>0.0</td>
<td>163.86</td>
<td>1.91</td>
<td>14.56 (8.9)</td>
<td>149.3 (91.1)</td>
<td>1.74</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>125</td>
<td>443.75</td>
<td>41.94</td>
<td>0.0</td>
<td>485.69</td>
<td>3.89</td>
<td>23.0 (4.7)</td>
<td>462.7 (95.3)</td>
<td>3.70</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>89</td>
<td>605.2</td>
<td>0.0</td>
<td>27.59</td>
<td>577.21</td>
<td>6.49</td>
<td>18.6 (3.12)</td>
<td>559.2 (96.9)</td>
<td>6.28</td>
</tr>
<tr>
<td>4.</td>
<td>All groups</td>
<td>300</td>
<td>1200.31</td>
<td>54.44</td>
<td>27.59</td>
<td>1226.76 (100)</td>
<td>4.09</td>
<td>55.6 (4.53)</td>
<td>1171 (65.47)</td>
<td>3.90</td>
</tr>
</tbody>
</table>

The table: 7.3 showed the Farm Structure with Respect to different Size Group of the respondent. It was revealed from the study that in average of all groups; only 65.47 percent of the total land in the district is cultivable land. The average cultivable land in the district was only 3.90 hectare per farm family in all groups but Average cultivable land holding in the district of small, medium and large farmers are 1.74, 3.70 and 6.28 hectare respectively.
Livestock husbandry is an important source of economic activity in the agricultural sector contributing a major portion of GDP to India and improving the socio-economic conditions for people in general and rural people in particular. Livestock husbandry has been practiced, usually in rural areas, since ancient times. The increasing urbanization of the growing population and the changing food habits of people has enhanced the demand of livestock products worldwide. Thus, the world’s livestock sector is growing at an unprecedented rate in developing countries. India is one developing country that shares the largest number of livestock and has a top position in milk production in the world. The livestock in India with 185 million cattle and 98 million buffaloes possesses 20% of the world’s bovine and 14% of the world’s cattle population. The following table shows the distribution of livestock among the different size group of farm family.

Table: 7.4

Distribution of Livestock among the different size group of farm (in bracket av. no. per household)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Size group of farmers</th>
<th>No. of household</th>
<th>No. of cow</th>
<th>No. of bullock</th>
<th>No. of buffalo</th>
<th>No. of goat</th>
<th>No. of pig</th>
<th>No. of birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Small</td>
<td>86</td>
<td>98</td>
<td>83</td>
<td>31</td>
<td>267</td>
<td>22</td>
<td>1119</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>125</td>
<td>164</td>
<td>129</td>
<td>42</td>
<td>531</td>
<td>35</td>
<td>1750</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>89</td>
<td>127</td>
<td>155</td>
<td>54</td>
<td>382</td>
<td>43</td>
<td>1157</td>
</tr>
<tr>
<td>4.</td>
<td>All groups</td>
<td>300</td>
<td>389 (1.3)</td>
<td>367 (1.22)</td>
<td>127 (0.42)</td>
<td>1180 (3.93)</td>
<td>100 (0.33)</td>
<td>4026 (13.42)</td>
</tr>
</tbody>
</table>

According to table 7.4 the distribution of Livestock among the different size group of farm of the farm family was not so significant in the district. According to the table: 7.4, the average number of cow, bullock, buffalo and
pig per household was 1.3, 1.22, 0.42 and 0.33 respectively but average no of birds was 13.42 in the district.

Farm mechanization is an important element of modernization of agriculture. Farm productivity is positively correlated with the availability of farm power coupled with implements and their judicious utilization. Proper agricultural mechanization not only enables efficient utilization of various inputs such as HYV seeds, fertilizers, plant protection chemicals and water for irrigation but also it helps in poverty alleviation in the district by making farming an attractive enterprise. The following table represents the distribution of farm implements in the district under study.

**Table: 7.5**

**Distribution of farm implements (in bracket av. no. per household)**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Size group of farmers</th>
<th>No. of household</th>
<th>No. of plough</th>
<th>No. of power tiller</th>
<th>No. of pumps set</th>
<th>No. of sprayer</th>
<th>No. of duster</th>
<th>No. of weeder</th>
<th>Laveler</th>
<th>Other implements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Small</td>
<td>86</td>
<td>182</td>
<td>3</td>
<td>15</td>
<td>46</td>
<td>2</td>
<td>11</td>
<td>186</td>
<td>516</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>125</td>
<td>346</td>
<td>9</td>
<td>41</td>
<td>114</td>
<td>6</td>
<td>24</td>
<td>331</td>
<td>875</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>89</td>
<td>379</td>
<td>14</td>
<td>51</td>
<td>110</td>
<td>12</td>
<td>48</td>
<td>305</td>
<td>1067</td>
</tr>
<tr>
<td>4.</td>
<td>All groups</td>
<td>300</td>
<td>907 (3.02)</td>
<td>26 (0.09)</td>
<td>107 (0.36)</td>
<td>270 (0.9)</td>
<td>20 (0.07)</td>
<td>83 (0.28)</td>
<td>822 (2.74)</td>
<td>2458 (8.19)</td>
</tr>
</tbody>
</table>

Farm mechanization and implements are not satisfactory at all. The distribution of farm implements like plough, power tiller, pump set, sprayer, duster, weeder leveler etc are quite insignificant in the district. The average
(table: 7.5) number of power tiller, pump set and sprayer per household in the district are only 0.09, 0.36 and 0.90 respectively. Similarly, average number of duster, weeder and leveler per household of the farm family in the district are only 0.07, 0.28 and 2.74 respectively.

Cropping pattern of Sonitpur is almost similar with the state pattern. Around 80.0 percent of total cultivable area is used for production of food crops and rice dominates the maximum proportion in the district. All the three types of paddy i.e., autumn, winter and summer is cultivated in the district and among which production of winter paddy covers maximum area of the total cultivable area of the district. The following table gives a clear picture of cropping pattern of major crops of district in different farm groups under the study.

Table: 7.6

Cropping Pattern and Cropping Intensity with respect to different size groups during 2010-11(area in hectare)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Crops</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>All groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rabi crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Paddy (Boro)</td>
<td>14.2</td>
<td>30.43</td>
<td>14.51</td>
<td>59.14</td>
</tr>
<tr>
<td>2.</td>
<td>Wheat</td>
<td>10.2</td>
<td>20.43</td>
<td>32.54</td>
<td>63.25</td>
</tr>
<tr>
<td>4.</td>
<td>Rape and mustard</td>
<td>3.50</td>
<td>35.74</td>
<td>32.27</td>
<td>71.51</td>
</tr>
</tbody>
</table>
Food grains mainly cereals production dominates the cropping pattern of the district. The large proportion of the cultivable land are used for the production of cereals mainly rice. The cropping intensity of the district in 2009-10 for all groups was 165.7 percent (table: 7.6). But it was observed that the cropping intensity among small farmer group is less i.e., 155.68 percent in comparison to 161.08 percent and 172.34 percent in medium and large farmer group.

Fertilizer is considered as one of the most essential inputs for increasing the agricultural production. However, consumption of fertilizer in
the state is still low. Although an increasing trend is observed as regards consumption of fertilizer in absolute terms in Assam, its consumption in NPK is far below the level achieved by other states as well as national level. Both chemical and bio-fertilizer is used in the District in agricultural field to increase the productivity of crops. But average consumption of fertilizer is less in comparison of the other district of Assam. The use of some of the chemicals like plant protection chemicals, pesticides etc, is very insignificant. The following table shows the consumption and chemicals in the district under the study.

Table: 7.7

Utilization of different Farm Inputs used in Production of Rice

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Farm inputs</th>
<th>Unit</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Seeds</td>
<td>Kg/hec</td>
<td>76</td>
<td>79</td>
<td>72</td>
<td>75.67</td>
</tr>
<tr>
<td>2.</td>
<td>Farm Yard Manure (FYM)</td>
<td>Cart load/hec</td>
<td>13.65</td>
<td>12.75</td>
<td>15.00</td>
<td>13.80</td>
</tr>
<tr>
<td>3.</td>
<td>Fertilizers</td>
<td>Kg/hec</td>
<td>13.5</td>
<td>12.46</td>
<td>14.14</td>
<td>13.37</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
<td>8.15</td>
<td>6.37</td>
<td>7.48</td>
<td>7.33</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td></td>
<td>--</td>
<td>--</td>
<td>3.45</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Insecticides/pesticides</td>
<td>Litre/hec</td>
<td>1.00</td>
<td>0.69</td>
<td>0.75</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Use of HYV seeds, fertilizers and pesticides in the district is also quite insignificant. In average 75.67kg/hec seeds, 13.8 cart load/hec of FYM,
21.85kg/hec fertilizers and 0.81liter/hec pesticides (table: 7.7) are used which are quite insignificant in comparison to state and national level. This scanty use of farm inputs in farming is one of the main causes of low productivity in the district. The poor economic conditions of the farmers and lack of financial assistance is responsible for the scanty use of farm inputs.

The agriculture, which is the main source of livelihood in the District as well as in State are suffering from low productivity. The agricultural sector in the district has not developed significantly. Agriculture in Assam solely depends on vagaries of monsoons, which creates unexpected havoc on the agricultural production in the district as well as in the state. But it is disappointing to note that they have been facing varieties of problems over which they have little control because of extreme lack of capital, technical knowhow and other resources. The important problems constraining agricultural development and innovation in the district may be summarized in four categories as - natural, biological, techno-economic and socio-cultural. The natural problems include flood, drought, soil erosion, etc. The biological problems are pests and diseases, unhealthy peasants and draught animals; while the problems such as surplus manpower, insignificant use of inputs like improved seeds, fertilizers, pesticides and insecticides, modern implements, irrigation, finance, inadequate market facilities and price incentives, adverse land policy and legislation, lack of agricultural research and inefficient extension services are included in techno-economic problems. Among the multitude of socio-cultural problems, conservative outlook of the farmers, ill fatalism, ignorance, illiteracy and antiquated organization of agriculture are found to be of great importance. The following table shows the Farmer’s Response to different Production Problems according to different size groups under the study.
The farmer’s response to different Production Problems according to different size group is quite important in diagnose the main problems of the agriculture in the district. In the district 24.67, 61.67 and 49.3 percent (table: 7.8) area was affected by flood, drought and pest and diseases. In the district 93.0 percent farmers are not getting adequate credit facility, 64.3% deprived of getting agricultural inputs, 67.33% are suffering from adequate mechanization and 93.0 percent are not getting any type of training till date.

Besides the farmers are also sufferings from inadequate infrastructural facility in post harvesting period. The roads of Assam in the rural areas are mainly Kutchta roads and in the rainy season the conditions of these roads are so deplorable that the timely supply of essential inputs to these areas become impossible. The poor means of transport and communication is a major cause of the underdeveloped marketing infrastructure of the state. The Govt. has
attempted to establish regulated markets in rural areas but still the traditional market dominates the rural marketing system with all its malpractices. The weekly ‘Hats’ act as the main market places for the villagers and the middle men are also active as before in these ‘Hats’. Improved agricultural marketing is an important condition for agricultural development of a particular region, but in Assam, the government is not successful to establish regulated market and to identify the malpractices prevalent in the trade. The following table represents the Farmer’s Response to different Post Harvesting and Marketing Problems in the district under study.

Table: 7.9

Farmer’s Response to different Post Harvesting and Marketing Problems
(response in percentage)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Post harvesting and marketing problems</th>
<th>Small farm</th>
<th>Medium farm</th>
<th>Large farm</th>
<th>All farm (average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lack of transport facility</td>
<td>50.0</td>
<td>60.0</td>
<td>49.4</td>
<td>54.0</td>
</tr>
<tr>
<td>2.</td>
<td>Low marketable surplus</td>
<td>53.49</td>
<td>74.4</td>
<td>31.46</td>
<td>55.67</td>
</tr>
<tr>
<td>3.</td>
<td>Absence of domestic market</td>
<td>69.7</td>
<td>68.0</td>
<td>73.03</td>
<td>70.0</td>
</tr>
<tr>
<td>4.</td>
<td>Price uncertainty</td>
<td>87.2</td>
<td>92.8</td>
<td>96.63</td>
<td>92.67</td>
</tr>
<tr>
<td>5.</td>
<td>Poor marketing facility</td>
<td>82.5</td>
<td>76.8</td>
<td>92.13</td>
<td>81.67</td>
</tr>
<tr>
<td>6.</td>
<td>Presence middlemen</td>
<td>62.79</td>
<td>65.6</td>
<td>70.79</td>
<td>66.33</td>
</tr>
<tr>
<td>7.</td>
<td>Absence of sales promoting agencies</td>
<td>74.4</td>
<td>78.4</td>
<td>80.9</td>
<td>78.0</td>
</tr>
<tr>
<td>8.</td>
<td>High marketing charge</td>
<td>51.16</td>
<td>49.6</td>
<td>48.3</td>
<td>49.67</td>
</tr>
<tr>
<td>9.</td>
<td>Lack of storage facility</td>
<td>90.7</td>
<td>96.2</td>
<td>94.38</td>
<td>94.0</td>
</tr>
<tr>
<td>10.</td>
<td>Lack of market knowledge of farmers</td>
<td>70.0</td>
<td>73.6</td>
<td>76.4</td>
<td>70.33</td>
</tr>
</tbody>
</table>
According to the table 7.9, in the district 54.0 percent of farm family in average are affected by inadequate transport facility, 70.0% due to absence of domestic market, 66.33% due to presence of middlemen, 81.67% due to inadequate marketing facility and 70.33% was affected by Lack of market knowledge. In the district, 92.67 percent and 94.0 percent of the farmers are affected by price uncertainty of the agricultural produce and lack of adequate storage facility.

7.2. TESTING OF HYPOTHESIS

The entire research work is followed by following three pre-determined hypothesis:

4. Agricultural productivity can be increased by providing adequate infrastructure and input facility.
5. Agricultural Development in the District has been very much insignificant.
6. The size of land holding and their fragmentation retards efficiency of cultivation in the district.

7.2.1. TESTING OF HYPOTHESIS I

Agricultural infrastructure and input facility includes adequate Irrigation facility, Agricultural Credit, Farm Mechanization, Rural Electrification, Agricultural Marketing, Transport and Communication, Agricultural Research, Education and Extension Services, Fertilizers, HYV Seeds, Plant Protection Measures etc. In Assam available infrastructure and input facilities are not sufficient to fulfill the requirement of farmers which ultimately reflects in low productivity of agriculture. As explained in Chapter VI, the irrigation potential created in Assam so far covers roughly 17.17 per cent of the total cropped area, which is very poor in comparison to the
potential created in some other states of India. In Punjab 92.9%, in UP 68.7%, and in Bihar 49.4% of total cropped area was under irrigation system which were much higher than that of Assam. Agricultural productivity in the Sonitpur district is affected by inadequate irrigation facility. Only 11.7 percent of total cropped area was under irrigation facility whereas the state average was 17.17 percent. The credit provided to priority sector in Assam was marginally above the all India bench mark of 18.0 percent but it is not sufficient to fulfill the total demand for credit in rural Assam. In case of farm mechanization, the district as well as the state are still depends on traditional techniques and implements. According to the field survey (table: 7.5) total average number of power tiller/tractor and pump set in the district was 0.09 and 0.36 which was quite insignificant. Similarly agri-marketing system in Assam is not developed, only 24 regulated markets are present but their performance was not satisfactory. The rural areas of Assam and the district still not connected with all weather roads and this communication gap reflects in distress selling of agri-products by the farmers. Agricultural research and extension services still have to develop to achieve the target. Consumption of fertilizers in the state is quite low i.e, 63.16kg/hec whereas all India level was 135.30kg/hec in 2009-10. In Assam Seed Replacement Rate (SRR) is not so significant. SRR improves the productivity of crops to a large extent. The actual seed replacement rate of paddy, wheat, pea and oilseeds (rape and mustard) during 2009-10 was 33 percent, 51 percent, 51 percent and 60 percent respectively. So, it is clear that existing infrastructural facilities are not sufficient to increase the productivity of agricultural sector in the district and the state. Therefore, the proposed hypothesis can be proved to be correct that in the district as well as in the state, agricultural productivity can be increased by providing adequate infrastructure and input facilities.
7.2.2. TESTING OF HYPOTHESIS II

Agricultural development of the district can be determined by studying the productivity trends and variation in yield rate of major crops with comparison to some other agriculturally competent districts and the state level. In Chapter III trends in productivity of major crops in the district was explained and in Chapter IV inter district variation in production and productivity was explained. The productivity of Autumn, Summer and Winter rice in the district in the year 2009-10 was 1050, 2720 and 1850 kg/hectare whereas in the state as whole it was 982, 2180, and 1824 kg/hectare (chapter III, table: 3.4). Similarly, in some other crops yield rate in the district is little bit higher than that of state level. In case of consistency in production and productivity of major food grains, the district was more consistent in production of rice in comparison with neighbouring district Darrang and Barpeta (chapter IV, table: 4.17, C.V: 22.5), in case of yield rate it is more consistent than Darrang district. In productivity of maize the district is more consistent (C.V: 2.2) than Darrang (C.V: 3.5), Barpeta (C.V: 2.34), and Jorhat (C.V: 2.26). Similarly, in production of pulses it is comparatively consistent than Darrang, Barpeta, Nagaon, Dhubri, and Jorhat district. In case of major non food grains, the district is comparatively consistent (C.V:15.8, chapter IV, table: 4.18) in productivity of rape seeds and mustard in comparison with Barpeta (C.V: 20.2), Dhubri (C.V: 16.1) and Jorhat (C.V: 22.3) district. In case of potato, the variation in yield rate is very high in the district but in production (C.V: 34.9) it is comparatively consistent than Darrang (C.V: 54.9), Barpeta (C.V: 39.4), Nagaon (C.V: 36.02), and Jorhat (C.V: 69.2) district. In production of sugarcane, the yield rate of the district during the period shows more consistency (C.V: 7.44) than the state level (C.V: 15.8). So, from the above analysis, it is clear that the agricultural performance in the
district is not so high like agriculturally developed states like Punjab and Haryana, but the development and performance of agriculture in the district is not so insignificant in comparison to other agriculturally competent districts of Assam. Therefore, the proposed hypothesis second is proved to be wrong.

7.2.3. TESTING OF HYPOTHESIS III

Agricultural development and its performance in any region very much depend on the size of the land holdings of the household farmers. In Sonitpur district, total number of farm families was 154441 operating on the area of 165129 hectares during the said year. The per capita land holding in the district was 1.06 hectare which was less than state average. In the district, 15.0 percent farmers are landless whereas large farmers constitute only 12.0 percent. The percentages of small and marginal farmers are 37.0 and 36.0 percent whose landholding is 0.4-1.0 hectare and 1.0-2.0 hectare respectively in the district (chapter VI, table: 6.2). This is mainly due to the defective law of inheritance of agricultural land and land tenure system in the state. Fragmentation of holdings stands out as one of the chief responsible factors hampering the implementation of the modern technology in agriculture. In the small area of operational holdings, it is practically not possible to implement modern techniques of production and inputs. Since the percentage of small and marginal farmers are very high in the district, which means the farmers are subsistence level farmer producing mainly food crops to maintain their family, they never think for crop diversification, which ultimately reflects in low productivity in agriculture. The consolidation of land holding is a very important measure of land reforms policy, but the government has not given serious attention for its implementation. Therefore, the proposed Hypothesis
III that the size of land holding and their fragmentation retards efficiency of cultivation in the district is proved to be correct.

7.3. MAJOR FINDINGS OF THE STUDY

- Demographic characteristics of the district reveals that 50.5 percent of total farm population lies between age group of 15-50 years, 31.4 percent less than 15 years age and 18.1% is more than 50 years age. It implies that more than half of the population of the district is productive.
- Around 74.7% of farm populations of the district are literate and literacy among medium class farm population is highest i.e., 77.6%.
- Average cultivable land holding in the district of small, medium and large farmers are 1.74, 3.70 and 6.28 hectare respectively.
- Distribution of livestock in the district was not so high. Average number of cow, bullock and buffalo per household was 1.3, 1.22 and 0.42 respectively.
- Farm mechanization and implements are not satisfactory at all. Average number of power tiller, pump set and sprayer per household are 0.09, 0.36 and 0.90 respectively.
- The average number of plough per family of all groups in the district was 3.02 but average number of duster and weeder in the district was only 0.07 and 0.28 respectively.
- Food grains mainly cereals production dominates the cropping pattern of the district. The cropping intensity of the district in 2009-10 was 165.7 percent.
- Use of HYV seeds, fertilizers and pesticides in the district is quite insignificant. In average 75.67kg/hec seeds, 13.8 cart load/hec of FYM,
21.85kg/hec fertilizers and 0.81liter/hec pesticides are used which are quite insignificant in comparison to State and National level.

- In the district 24.67, 61.67 and 49.3 percent area was affected by flood, drought and pest and diseases. In the district 93.0 percent farmers are not getting adequate credit facility, 64.3% deprived of getting agricultural inputs, 67.33% are suffering from adequate mechanization and 93.0 percent are not getting any type of training till date.

- In the district 54.0% of farm families are affected by inadequate transport facility, 70.0% due to absence of domestic market, 66.33% due to presence of middlemen, 94.0 % due to inadequate storage facility and 70.33% was affected by Lack of market knowledge.

- In the district, 55.67 percent farmers in average are suffering from low marketable surplus in agricultural produce and around 92.67 percent are suffered from price uncertainty of their product in the market.

- Farmers are also not getting the facilities of sales promoting agencies in the district. Around 78.0 percent are directly affected by the absence of sales promoting agencies in the district.

- In the district, around 50.0 percent of farmers in average are suffering from high marketing charge.

7.4. RECOMMENDATIONS AND SUGGESTIONS

In the context of foregoing discussion, it is felt that there is urgent need of improving the present agricultural situation in Assam by raising the crop intensity through multiple or relay cropping and substantially raising the productivity of crops per unit of area. For this purpose the following policy measures have been suggested:
7.4.1. LAND REFORM MEASURES

It is very unfortunate that the various land reform measures undertaken in Assam have not been implemented properly to assist the farmers in their endeavours to raise agricultural production. Therefore, the following steps should be taken to implement these measures properly and if necessary by changing the existing policies.

a) For this purpose, a drastic land distribution policy should be taken, which will break the monopoly of big farmers and help equal distribution of rural income.

b) The agricultural land distribution policy of the Government should be such that each farmer gets sufficient land for remunerative production.

c) State should also make laws to prohibit subdivision of land into uneconomic sizes. For this purpose, if necessary the ‘law of inheritance’ should be amended. Besides, new laws should be enacted to debar the non-cultivating members of a family employed in other occupation from inheriting the agricultural land and purchasing such lands from the peasants. Adoption of improved technology is not possible unless the farm size is raised to an economically feasible unit.

d) In Assam the average size of land holdings is very small (1.11 hectares according to agricultural census 2005-06). Besides, there are marginal farmers with skill and vigour with or without little holdings of land. In such cases, the co-operative farming systems will be the best policy. But it is necessary for small neighbouring farmers to form such co-operatives for more production. For this
purpose proper guidance and help should be given to these co-operatives to achieve the purposes by the Agricultural Department of Government.

e) In order to reduce the pressure of population on agricultural land, Government should undertake programmes for the development of rural based industry and other projects such as transport, irrigation projects, rural electrification etc. Such programmes will absorb a large labour force and thus will release the excess surplus labour force from agriculture.

7.4.2. DEVELOPMENT OF AGRICULTURAL RESEARCH, EDUCATION, TRAINING AND EXTENSION SERVICES

For the development of agriculture, the research and extension services of Assam will have to be strengthened to provide solutions of problems faced by the farmers. For this purpose, agricultural research institution should be revitalized. The various research conducted by the Agricultural University should be based on local level problems and production oriented so that it can suit the specific needs of the state. The agro-climatic and other situations of Assam are different from other parts of the country. Assam has fertile soil for different crop cultivation, but the soil of certain area need special treatment to raise the yield of crops. Therefore, agricultural research work in the state should be directed to evolve such seeds and technology that will be most suitable for the different types of soils and climatic conditions of the state and farming technology appropriate for small and marginal farmers. Further, there must be wide publicity about the seeds and technology developed by such research work among the farmers through establishment of experimental farm and by holding field demonstrations.
The Indian Council of Agricultural Research (ICAR) has innovated programmes to impart training and education to the farmers to spread knowledge of technology among the farmers. The state should avail all these facilities imparted by ICAR for agricultural development of the states. Further, the training programmes for the farmers should be need-based. Therefore, while preparing the course contents for training programmes, necessary advice should be taken from the local agricultural officers as they are more aware of the local needs of the farmers.

The illiterate farmers may not be enthusiastic to adopt the new seeds and technology until they see the changes very vividly. So the Department of extension services should make practical demonstration of new seeds and technology to the farmers. When they are satisfied that the new methods give much more yield, this demonstration can be held in some individual farmers. Gradually the neighbouring farmers will adopt these new seeds and technology and gradually this will spread to cover the whole state.

The role of agricultural extension officers will be very crucial for the success in adoption and extension of the new technology and improved seeds; they will have to hold block level training programmes to some literate and selected farmers of the block; then such training programmes to be extended to the village level; this will require greater number of field officers if the programme is held simultaneously all over the state; as, so many officers may not be available, the change can be done gradually by first starting with one district and then to another and so on. This will take up some time of a year or two or more; but when the whole of the state is covered, the result will be very satisfactory both to the state and to the farmers. Farmers will find their production of crops as increased manifolds.
The success of this programme mostly depends on the sincerity and devotion of the agricultural Extension Officers. If they sincerely work for this purpose, they can bring about the change. For this purpose, the service of the Gram Sevak can also be utilized; if the block level extension officers give training to the Gram Sevak about the new technology, they in turn will give training to the farmers falling under his area under the supervision of the extension officer. Thus the whole of the state can be covered within a year or two. The main requirement is the sincerity and devotion of the field officers, both the block level and village level.

7.4.3 USE OF HYV SEEDS

Seed is the basic, vital and central input in agriculture and all farming system. It is the timely availability of quality seeds of right variety in adequate quantity that decides the strength and health of an agricultural economy. But in Assam as well as in the district the supply of quality seed is very poor in Assam. Therefore, farmers are compelled to use the farm saved seeds which do not have any quality standard. Many times none descript varieties are also used as seeds by the resource poor farmers which result in low productivity. Therefore, there is an urgent need to increase the supply of seeds in order to meet the growing demand for seeds.

Production and supply of hybrid seeds of the crops require highly technical know-how, trained personnel and resources. The following suggestions are given in order to increase the production and supply of seeds in the district and in the state:

a) Government should encourage seed production in the private sector along with public sector.
b) Proper co-ordination must be maintained between various seed producing organizations so that they can meet the seed demand of the state.

c) Necessary financial support should be given to the seed producers. For this purpose, a good budgetary provision must be committed for the development of new varieties, hybrid and seed research.

d) To maintain the purity of seed, necessary programmes must be organized to train the seed producers. The number of seed testing laboratories must be increased in the state.

e) Steps should be taken to supply the seeds to the farmers in proper time and at reasonable price.

f) Extensive publicity should be given among the farmers about the beneficial effects of hybrid seeds by farmers training programme and field demonstration.

7.4.4. PEST MANAGEMENT

As the HYV seeds are easily susceptible to pest and diseases, necessary steps should be taken to protect the crop from the ravages of pest by adopting appropriate pest management practices. During the early years of Green Revolution, use of chemical pesticides was popular as a plant protection measure. But it is observed that over use of chemical pesticides led to poisoning people and animals and as well as polluting the environment. The other problem associated with over use of pesticides is the contamination of soil and water resources including the aquatic system. Continued use of harmful pesticides poses greater danger to the soil fauna and flora. Chemical pesticides and their residues have often been detected in food grains, vegetables, fruits, oils etc. in most part of the country. Due to harmful effects of these chemical pesticides the use of non-chemical methods of pest
management has become popular in different parts of the country. Such pest management methods include botanical and biological pest control tactics. In the district and the state ‘Bio-basis’ method of pest management becomes popular in the recent years. In order to develop and popularize this method of pest management in every corner of the state, the following suggestions are made:

a) Farmers of the district and the state should be given necessary training under the FFS (Farmers Field School) approach of integrated pest management programme in order to let them know about the eco-friendly crop production programme. Such programme should be extended to each corner of the state so that each farmer gains knowledge as how to grow healthy crops and manage crops.

b) The presently available biological control agents and botanical pesticides should be made available to the farmers of Assam and all the needed infrastructure should be developed with a view to enable the farmers to adopt these non-chemical method of IPM (Integrated Pest Management)

c) Research work should be encouraged and more importance should be given in innovate new pest management method suitable for the state of Assam under the IPM-Eco-friendly approach in agricultural production activities.

It can be expected that proper use of eco-friendly approach in agriculture in the state will protect the crops from the ravages of pest and raise crop productivity and production of quality crops.
7.4.5. USE OF FERTILIZER

Fertilizer is one of the important inputs to increase the agricultural production to meet the growing demand. Though fertilizer consumption has been rising over the years, per hectare consumption is still very low, even when compared to our neighbouring states. Therefore, there is need to undertake some measures by the Government to increase the supply of fertilizer within the state and the district. For the use of fertilizer following suggestions are made:

a) Fertilizers should be made available to the farmers at the time of need through well-organized distributive agencies at reasonable rate.

b) Periodical soil testing based on fertilizer application for specific crops should be made.

c) Organic materials of plants and animals have a unique role to play in soil fertility. Therefore, farmers should be encouraged to use the Organic materials derived from plant residue and agricultural waste. Optimum productivity level can be attained if fertilizers are applied according the requirement of the soil.

7.4.6. IRRIGATION AND WATER MANAGEMENT

Agricultural development depends a great deal on the availability of adequate and assured irrigation facilities. Assured irrigation especially during winter months is an imperative need for the optimum utilization of chemical fertilizers and HYV seeds. Irrigation also enables diversification of cropping pattern from the traditional mono-cropping to multiple cropping vis a vis increase in productivity. Unfortunately, development of irrigation is extremely tardy in the district and in the state. A good proportion of agricultural lands have been out of use on account of water-logging and
salinization caused by seepage from unlined canals and distributaries. So, required steps should be taken in time to develop the irrigation facilities and water management system in the state. For this purpose the following measures have been suggested:

a) Detail soil surveys should be carried out in the areas where irrigation facilities are available to find out the optimum requirements and over application of water. Incentive should be given to those farmers who save water and the motto for the farmers should be ‘more crop per drop of water’

b) Govt. should identify areas suitable for setting up Lift Irrigation schemes and provide adequate funds for completion of schemes.

c) To minimize wastage of water and water logging and salinity proper drainage facilities should be developed.

d) Financial assistance should be provided to farmers for purchasing and repairing of machines, pump sets etc in time.

e) The micro irrigation system such as drip irrigation not only saves each drop of water most efficiently, but also save the soil from getting water logged or saline. Steps should be taken to adopt and develop such schemes in the district and in the state.

f) Water management requires substantial skill which depends upon technical knowledge of the persons involved in irrigation. So, proper training should be given to farmers and irrigation workers.

g) High priority should be given on rural electrification.

h) In Assam there is a wide gap between irrigation potential created and utilized. Govt. should take steps to reduce the gap.
i) There should be proper coordination between the agriculture and irrigation departments and between farmers and the departments for getting maximum benefit.

It should be noted that the irrigation scenario in the state after 2000-01 show a different picture because of large scale installation of shallow tube wells in the state under the major irrigation project launched in the state through NABARD funding.

7.4.7. FARM MECHANIZATION

Mechanization of agriculture is very important to increase the total production and sustaining the tempo of agricultural growth in the district and in the state. It reduces the cost of cultivation and helps in reclaiming barren lands. Use of fertilizer and pesticides also require suitable machinery. In Assam, huge manpower in rural areas and fragmented land holding mostly prevent mechanization. Hence, there is little scope for full mechanization of agriculture in Assam. The cost of mechanization is very high and most of the farmers cannot think of buying all the necessary machines and tools themselves. So, the following suggestions are made for mechanization in agriculture:

a) Proper land policy for consolidation of land holdings should be adopted by the Govt.

b) Financial assistance should be made available to farmers for purchasing farm implements and tools.

c) Iron plough should be made available to the farmers at reasonable price. Tractors can be installed by co-operative farms on co-operative basis.
d) Vital agricultural implements should be manufactured within the state and these should be provided to the farmers at a lowest possible price and on hire basis through the co-operatives basis.

7.4.8. AGRICULTURAL MARKETING

Agriculture in Assam has been at a subsistence level with a very small surplus for sale. The growth and diversification of agriculture mostly depends upon efficient marketing system. So, the following necessary steps have been suggested for the improvement of present marketing system in the state.

a) All the markets of the state should be brought under the purview of the Agricultural Produce Market Act and regulated according to the time bound programme. Till now 24 markets in Assam are under regulated market but none of the markets has shown the expected result.

b) Modified storage and cold storage facilities must be made available in rural areas to increase the longevity, retention of freshness, texture and reduction of post harvest loses of different types of food grains, horticultural crops and other perishables including seeds etc.

c) Market information should be made available to farmers all over the state and country by interlinking important markets and mandis.

d) A necessary pre-condition for an efficient marketing system is developed transport system. But the existing transport systems in the rural areas of Assam are in very poor condition. Therefore, Govt. should take urgent step to develop existing transport and communication system of the state.

7.4.9. AGRICULTURAL CREDIT

As mentioned in chapter VI, nearly 84 percent of the operational holdings are below the minimum economic size of holdings and the economic
condition of the farmers are very poor. These subsistence level farmers are unable to invest in agriculture for its modernization. Therefore, major thrust of the existing credit policy should be to provide farmers through institutional agencies. The following suggestions are made regarding credit in agriculture in the district and in the state:

a) To reduce the exploitation of farmers, the role of indigenous bankers should be minimized and institutional facilities should be improved.
b) The financial institution should provide agricultural credit on priority basis and sanction of loan should be time bound.
c) As the repayment capacity of the small and marginal farmers is relatively lower as compared to rich farmers, banks and other financial institutions should provide adequate repayment period so that loan prepayment does not become difficult for the farmers.
d) The micro finance facilities through SHGs (Self Help Groups) should be implemented properly in Assam so that small farmers operating on a micro scale get benefit from such scheme.

7.4.10. NATURAL HAZARDS

Flood in Assam is main natural and regular hazard which causes much damage to crops every year in all the localities of the state; as a result, control of flood is the urgent necessary for increasing production. Actually, the flood problem of Assam is caused by the mighty river Brahmaputtra and its tributaries. The problem is so severe and costly that it is not possible to tackle it by the state Govt. alone. Some part of the state is sometimes suffered from drought situation due to irregular rainfall. The following suggestions have
been made to minimize the damage due to flood and drought in the district and the state:

a) To minimize the damage early variety of paddy and short duration crops should be cultivated before the probable flood period.
b) There are some flood resistant paddy and other crops, which should be cultivated during the flood period. Proper selection of crop rotation also help the flood affected farmers to a great extent.
c) Flood can be controlled scientific way by constructing dams and reservoir in flood prone area.
d) Proper irrigation facilities can minimize the effect of drought in drought prone areas.
e) The flood problem in Assam should be recognizing as a National Problem and Government both a State and Union should think for permanent solution.
f) For all these, research is essential and Govt. should install such research centre under the guidance of reputed scholars in the line.

7.4.11. LIBERALIZATION AND MARKET ECONOMY

The world scenario in recent time has been rapidly changing because of liberalization through economic reforms and also due to globalization on account of creation of WTO. Market economy is now going to play a large role in various economic activities including agriculture.

With increasing globalization of world agriculture, India has an opportunity to participate in the world agriculture market through increasing its competitiveness of various crops. In order to enjoy the benefit from trade liberalization and globalization of agriculture, India should continue to carry
out domestic reforms through streamlining its domestic markets, institutions and infrastructure policies that reduce high transaction costs and make agricultural commodities competitive in international market. Being a part of India and having high potentiality of increasing agricultural productivity with suitable soil and climatic conditions for agriculture, Assam should also introduce all necessary reforms to increase its competitiveness in the production of various food grains and other crops particularly the horticultural crops and vegetables.

7.5. CONCLUSIONS

Agriculture is the mainstay of Assam economy because of its high share in employment and livelihood creation not withstanding its reduced contribution to the state domestic product. But the year-wise production and productivity of main agricultural products are not consistent. This is due to natural, technical and socio-economic factors which are responsible for dismal growth in the sector. But since the sector provides livelihood to major portion of population in Assam, it is very necessary to attain a sustainable growth in productivity. It is observed that agricultural development is the basic precondition of sectoral diversification and development of the states’ economy. An increasing marketable surplus of agricultural output is much essential in a poor state like Assam for increasing supply of food and raw materials at non-inflationary prices, widening domestic market for industrial products through higher purchasing capacities in the rural sector, facilitating inter-sectoral transfers of capital needed for industrial development along with infrastructural development and increasing foreign exchange earnings through increasing volume of agricultural exports. But agriculture in Assam is frequently affected by natural factors like flood,
drought etc. It is necessary to develop different agricultural strategies should be developed for flood affected and unaffected areas. In the hill regions tree farming (settled cultivation) should be given top priority. In the context of the rapid growth of population and meager growth of extension of cultivation to new areas, the future strategy for agricultural development in Assam should be concentrated on increasing cropping intensity and greater emphasis on increase per hectare yield of crops like rice, wheat, pulses, mustard, potato sugarcane etc. This will reduce the dependence of the state on outside sources. There is also need to improve research on crop husbandry to evolve technology suitable to our soil and climatic conditions. In executing such a programme, farmers must be properly trained and motivated through improvement in extension service. For increasing cropping intensity there must be adequate and assured irrigation facility. So, required steps should be taken in time to develop irrigation facilities and water management system in the state. In all such efforts, State Govt. and Agricultural Institutions will have to co-operate with one another in order to assist the farmers in their endeavours to increase agricultural production. As an agricultural state, Assam can attain higher economic growth rate only after attaining a reasonable and sustainable growth in agriculture sector. Therefore, extension of irrigation facilities, extension of land under organic farming, diversification of agriculture and sustainable agriculture should receive priority.

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