CHAPTER - ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Agriculture is the backbone of India as a large section of the population still depends upon it. It is a vital determinant of the livelihoods of farmers and rural communities worldwide. Agricultural growth has been the progenitor of broad based economic growth and development, as linkages amid farm and nonfarm economies generated widely – based employment, income and growth. The growth histories of many developed countries reveal the common notion that the developments of their secondary and tertiary sectors were preceded by the development of agriculture. Agriculture forms the backbone of the Indian economy because it contributes to the economic and social well-being of the entire nation through its influence on the Gross Domestic Product (GDP) and employment. About 65 percent of the total working force is engaged in agriculture and the sector accounted for only about 25 percent of GDP, where as non-agriculture sector employed only about 35 percent of the total workers but it accounted for about 75 percent of GDP. This reflects upon the existence of much chronic poverty in the agriculture sector (Prasad 1985).
The importance of agriculture in the overall progress of our economy can best be defined as it is stated in the National Agricultural Policy 2000 of Government of India that - “Agriculture is a way of life, a tradition, which, for centuries, has shaped the thought, the outlook, the culture and the economic life of the people of India. Agriculture, therefore, is and will continue to be central to all strategies for planned socio-economic development of the country. Rapid growth of agriculture is essential not only to achieve self reliance at national level but also for household food security and to bring about equity in distribution of income and wealth resulting in rapid reduction in poverty levels”

Poverty in agriculture in most of the third world countries is as much as a problem of low farm level efficiency. Thus raising farm level efficiency in agricultural production has become a crucial element in determining the earning capacity of a farm unit. Logically every farmer try to maximize their production level by allocating the resources in their best manner, but as the resources of different farmers vary widely, so the productivity level per unit of inputs also vary significantly from farm to farm (Goyal et al. 2006). Paddy commends recognition, as a supreme commodity to mankind, because paddy is truly considered as the life,tradition and a means of livelihood to millions throughout the
world. It is also an important staple food to millions by providing 66-70 percent body calorie intake to the consumer (Barah & Pandey, 2005). As paddy is consumed both in urban and rural areas and its consumption is growing continuously due to high income elasticity of demand and to meet up this growing demand a much rapid rise in paddy production is highly needed. But there is little scope to increase the area, hence increase in production and productivity with an improvement in efficiency of production act as a technological breakthrough to meet this growing demand. The majority of the rural population manage their livelihood from agriculture and therefore the sector provides not only the much needed food and fiber but also fulfill the objectives of employment to the huge rural population, capital for economic transformation, supplies raw materials to the industries and there by responsible to increase the rural welfare in a various way. Additional contributions to development from the agricultural sector are the huge labour force which is for expanding the industrial sector and a market for output of consumer goods and production supplies from the expanding industrial sector and all these are closely associated with a good agricultural sector (Mellore 1967).

However, new analysis of India’s agriculture gives grounds for concern—perhaps for alarm. Agricultural productivity has again stagnated
after the green revolution and the yields are now languishing around the world. But even here, what causes great concern is that India’s agricultural productivity is even lower than that of many other developing countries of the world. India has 170 million hectares under food grains cultivation and producing 220 million tons of food grains in a year while China has only 60 percent of this arable land area and is able to harvest twice the quantity of food grains that India produces. This slackening in productivity may result from several causes, may be from a lesser use of inputs as the farmers respond to falling prices, or from non-increase in inputs where the farmers have already optimized their inputs applications in their production process (Economy at a glance 2011).

Agricultural progress is normally regarded as a prerequisite of economic enlargement. It is true that economic development in modern times has to be associated with industrialization; nevertheless, it is also believed that industrialization can follow only on the sound heels of agriculture or to turn the image, agriculture is considered as the foundation on which the entire superstructure of the growth of industrial sector and other sectors of the economy has to stand. Thus agriculture throughout the world is still well thought-out as the single most important human activity. Despite all the advances of high technology
over the years, agriculture is still considered as the only reliable source of food and livelihood. In many third world countries, it is the barely source of livelihood for over 50 percent of population and contributes roughly the same proportion to the country’s national income. Notwithstanding on major diversification in the structure of the economy over the last few years the dependence on agriculture continues unabated. The pulls and pressures in the agricultural sector thus persist to exert the influence on the overall cause of economic activity, although the relative dependence of the economy on the agricultural sector has registered a noticeable decline (Ahmed 2006). The development of agriculture sector is not only important for enhancement of income in rural areas but also for the development of industrial sector as well. A number of authors have noticed the interdependence of agriculture and manufacturing sector, for example Ranis et al. (1961) opined that manufacturing sector cannot continue to expand without the increase in agricultural productivity. Similarly, Jorgenson (1961) claimed that economic growth, which breaks the vicious circle of poverty, cannot be achieved without rapid progress in agricultural technology. Kuznet (1976) suggested that without a marked development in agricultural productivity, the economies of Europe and United States could not have attained a high rate of growth. He also mentioned about modernization of traditional agriculture. Ruttan (1987)
explained that genuine economic growth cannot be attained without accompanying the improvement of productivity in the agriculture sector.

India’s majority of the farming community belongs to marginal and small farmers (76 percent) who have only 29 percent of the total operational holding, while 71 percent of the operated area is possessed by farmers who have medium and large size holdings. However the country ranked first in area under paddy (44.5 million hectare) and second in terms of production (85.31 million tons) and it stood next to China in the world. It is also projected that by 2025 the country’s population will be nearly 1.4 billion requiring annually 380 millions of food grains (Rai 2004). Hence the food grains production have to be increased by 60 percent in the next 25 years in order to meet the needs of the growing population. Thus it is found that farmers in general are unable in developing agriculture and also failure in exploiting fully the potential of technologies and are making allocative errors with the outcome that yields show wider variations, typically reflecting consequent variations in the management capacities of the farmers. This depicts that there is still considerable scope prevails for raising productivity and income of the farmers by improving their efficiency. Hence there is a great need to accelerate agricultural growth by increasing productivity and to achieve the objective of raising the
living standard of the people; the best ways are the removal of poverty and the improvement of farm level efficiency. The most obvious way to increase productivity is the use of increasing quantities of agricultural inputs (labour, fertilizer, pesticides, irrigation etc.) on the existing land in an efficient manner. The development of new technologies can also be considered as an important way towards this path. Although technological advancement has been identified as a very important source of growth, its development takes time and requires considerable investment (Greene 1980).

Thus we need to boost agricultural productivity on the size and scale that we have achieved in industry and service sectors. Such a substantial enhancement of agricultural productivity is possible only through the introduction of large scale irrigation, increased use of fertilizers and pesticides, multiple cropping, and widespread improvements in agricultural practices. Keeping all these aspects in view, the present study is a modest attempt to study indepth the paddy based farm level efficiency in agriculture in a holistic way around vivid dimensions with the specific objectives.

1.2 INDIAS CURRENT FOCUS ON AGRICULTURE

The agriculture sector continues to be the major source of employment for more than 50 percent of India’s population. However,
its share in GDP has declined from more than 30 percent in various plans and nearly 14.5 per cent decline is found in 11th Five Year Plan. This is primarily a consequence of India’s progression from an agrarian economy to an industry and service based economy. The 11th Five Year Plan (2007–12) emphasized ‘Inclusive growth’ to achieve a target growth of 4 per cent per annum in GDP from agriculture. Globally, this indicates that a higher GDP in agriculture is more effective in alleviating poverty in comparison with higher GDP in other sectors.

Keeping all these in views, the National Mission for Sustainable Agriculture (NMSA) programme was founded after the approval of The Prime Minister’s Council on Climate Change in September 2010. The primary objective of the programme is to ensure food security as well as to protect various resources such as land, water etc. The programme is also aimed at enabling the Indian agriculture to face challenges and unprecedented threats in a better way. Although agriculture now accounts for only 14 percent of Gross Domestic Product (GDP), it is still the main source of livelihood for 50 percent of the population. As such rapid growth of agriculture is critical for inclusiveness. Important structural changes are taking place within the sector and there are definite signs of improved performance. The National Sample Survey Organization (NSSO) data has brought out that rural laborers are shifting to non-agricultural work, tightening the labour market in agriculture and
putting pressure on farm wages. However, it has been observed that dependence on agriculture remains unchanged among the rural self-employed whose average farm size continues to decline with population growth. This is also an ageing, more feminized population, whose educated young members are less likely to want to stay in farming.

The growth of agriculture is still a critical factor in the overall performance of the Indian economy. The 11th plan initiated the process of reversing deceleration in agricultural growth, which started in the 9th plan and continued until the 10th plan. Various schemes and programmes during the 11th plan had a positive effect on the sector and helped it to register an average growth of about 3.3 percent per annum in comparison to a lower average growth of 2.2 percent per annum in the 10th plan. However, many challenges came out, such as availability of credit facilities, lack of technological expertise, imbalanced use of fertilizers, pesticides, inefficiency at farm level and inadequacy in irrigation facilities continue to persist in the agriculture sector. Thus in the 12th plan, the government intends to continue with the introduction of new programmes, and the modification and implementation of existing plans and programmes. As India’s population continues to grow; the country needs to produce more efficiently to meet the rising food demand. The 12th plan has identified and addressed the burning issues, which will eventually help in
improving the farms overall output level. In addition, a long term foodsecurity should be madeby increasing the agricultural output at a rate faster than the prevailing population growth rate (Union Budget 2013).

1.3 NECESSITY OF THE STUDY

Agriculture 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 in general and Barak Valley region of Assam in particular. About 99 percent area of total land mass of the state is rural and almost 50 percent of the total land area is utilized for cultivation. It is for this reason that any strategy for the development of the state will have to keep agriculture at the centre of its planning process. If we look at the development of agriculture in Assam since independence, the scenario in terms of production and productivity has been mixed. The future of paddy production is not assured in the state, largely because of poor cultivation system. If one were to consider the fertility of the land and the abundance of water in the state, Assam should have been treated as one of the better-developed states in the country. Having all the key indicators of agricultural development, be it irrigation, human labour, levels of mechanization, cropping intensity etc.
the state today lags far behind the rest of the country. While this sector continues to support more than 75 percent population of the state directly or indirectly providing employment of more than 53 percent of the workforce. However the economy of Barak Valley continues to be predominantly agrarian in nature and paddy is the major crop being cultivated in the valley. About 70 percent of the people in the valley are depending on agriculture for their livelihood. It is already overcrowded and it shows that only 30.9 percent of the total geographical area in the valley constitutes its net sown area against 41.6 percent in the state of Assam. This means that the Valley suffers from relative scarcity of cultivable land. In the consequence, Barak Valley is constrained to feed as many as 8277 persons per 1000 hectares of cultivable land. The corresponding figures for the Brahmaputra Valley and the State of Assam are 6445 persons and 6567 persons respectively whereas the all-India figure is 4305 persons (Economic Survey, Assam 2012-13). It simply shows that there exists an excessive pressure on agriculture which has added the scarcity of cultivable land in the valley and its inadequate progress in the efficiency level. The ratio of gross cropped area to net sown area in the valley works out to 1.25 whereas it is 1.29 in the Brahmaputra Valley and 1.28 in Assam. Low intensity of cropping in the Barak Valley is mainly owing to poor irrigation facilities. Hardly 6.4 percent of the net sown area in the Barak Valley has irrigation
facilities compared to 18.3 percent in the Brahmaputra Valley, 17.3 percent in Assam and 32.5 percent in India. Irrigation facilities in the Barak Valley are also less assured as these are mainly devised at individual farmers’ level. It goes to the credit of the farmers of the Barak Valley that in spite of serious limitations in irrigation, they have succeeded in bringing about 48 percent of the net sown area under HYV. But introduction of HYV crops cannot achieve its full impact on productivity and crop intensity because of lack of irrigation facilities. As chemical fertilizers have complementary relation with irrigation as inputs, the Valley’s progress in the application of chemical fertilizers is also retarded. Per hectare consumption of fertilizer in the Barak Valley is as low as 16.4 kg in comparison to all India rates of 69.9 kg. Consequently, average yield of rice per hectare in the Valley is as low as 1447 kg as against India’s figure of 1745 kg. Significantly enough, the relevant figure of the Brahmaputra Valley, being the most fertile region of Assam is only 1131 kg. i.e., lower than that of the Barak Valley (Economic Survey of Assam 2013). The first generation problem of the green revolution has been to induce farmers to adopt the new technology to raise production (Ghatak 1995). It seems that the Barak Valley has been able to effectively solve this problem but it is still unable to reap the benefits of the green revolution because of the serious infrastructural deficiency in the form of irrigation facility, imbalance use of pesticides,
fertilizer, inability to adopt new technologies etc. This only highlights the uneven regional impact of the green revolution to the disadvantage of Barak valley region owing to disparity in infrastructural development. (Bhattacharjee & Nayak 2003).

While due to poor agricultural productivity the income of the farmers of the Valley is also very low. Due to frequent flood and scarcity of water during pre and post monsoon period affect the agricultural production. In addition, due to poor irrigation facilities, a high rate of productivity is difficult to expect in the Valley. The new agricultural strategy, popularly known as the green revolution fails to make its presence fully in the Valley. Hence the question of efficiency in resource allocation in agriculture is significant and is widely held that efficiency is at the heart of agricultural production. This is because the scope of agricultural production can be expanded and sustained by farmers through efficient use of resources (Udoh 2000).

The role of efficient use of scarce resources in fostering agricultural production has long been recognized and has motivated considerable research into the extent and sources of efficiency differentials in farmers. Empirical evidence suggests that improving the productivity of the farmers is important for economic development because farmers provide a source of employment and a more equitable
distribution of income (Bravo-Eureta & Evenson 1994) and above all it removes poverty in a greater extent. Accordingly, many researchers and policy makers have focused their attention on the impact that adoption of new technologies can have on increasing farm productivity and income (Hayami & Ruttan 1985; Kuznets 1966; Seligson 1982). However, during the last decade, major technological gains branching from the green revolution appear to have been worn out across the developing world. This suggests that consideration on productivity gains arising from a more efficient use of existing technology is necessary (Bravo-Pinheiro 1993). Technically efficient farmers are highly productive because they are able to use a minimum level of inputs to produce a given level of inputs. Similarly, allocatively efficient farmers tend to run more profitable farming as they are able to produce a given level of output from minimum costs. Any developmental package in agricultural sector of this region, therefore invites frustration and the consequent failures. This is not only due to the wide diversity within the region itself but also due mainly to the low farm level efficiency in the said sector. The consequent depressions become the main hurdle in the way of economic development of the region.

The foundation of the economy of the state is agriculture as of the most other states. An increased agricultural production is the need of the
hour and it is the most dramatic demonstration of progress for the overwhelming majority of population. The high degree of poverty in the region, high density of population, low agricultural productivity and the relative geographical isolation of the region, very little industrialization and it’s less scope for the future necessitates undertaking studies relating to the formation of a strong agriculture sector. This may provide necessary base for agricultural development of the region as a whole but proper identification of the problems of the Valley will be the root of all developmental policies (Roy & Bezbaruah 2002). Another important reason of low productivity of agriculture in Barak Valley is that many farmers with low literacy rates and inadequate physical infrastructure face difficulties in doing agriculture in an efficient way.

Thus measuring farm level efficiency is important in order to know the extent and inefficiency of agricultural condition, but why farms differ in their relative efficiency level can be seen most crucial. Though many research works have already been done by the eminent researchers on farm level efficiency of agriculture else where but little such studies undertaken for North Eastern Region (NER) in general and Assam and its southern part in particular. Thus the present study makes a holistic attempt to measure and explain the farm level efficiency differentials using farms specific attribute.
1.4 OBJECTIVES OF THE STUDY

The important objectives of the present study are:-

1. To analyze the status of agricultural development.
2. To measure the farm level efficiency.
3. To identify the determinants of farm level efficiency.
4. To find out the relationship between farm level efficiency and agricultural productivity.
5. Prescription of policy measures to raise the efficiency of farms.

1.5 HYPOTHESIS OF THE STUDY

Keeping the objectives in view, the following hypotheses will be examined in course of the study:-

1. The agricultural development in Barak Valley is much less than the country as a whole.
2. The level of efficiency of farm is less than the other parts of the country.
3. The level of efficiency of farm depends on demographic, agro-infrastructure and other related factors.
4. There is positive and direct relationship between efficiency and size of agricultural farms.
1.6 DATABASE AND METHODOLOGY

The present study is based on both the primary and secondary data. The main sources of secondary data are the publications of different government and semi-government agencies such as Directorate of Agriculture and Economic and Statistics and other publications.

The micro level analysis is mainly based on primary data based on a process of multi-stage sampling. In order to retain the representatives of the whole region it has been decided to select the sites for sample survey from all the agricultural sub-divisions in the region. There are altogether six agricultural sub-divisions in the three districts, namely Cachar, Karimganj and Hailakandi in the region. From each of these six sub-divisions one Agricultural Development Officer (ADO circle) has been selected for the field study. However the selection of the ADO circle has been done in proper consultation with the officials of the agricultural department keeping in view the level of development of agriculture. From each ADO circle, three villages have been chosen at random. The sample design and statistical and econometric tools used in the study has been analyzed in details in chapter five.
1.7 LAY OUT OF THE THESIS

The present study is organized into seven chapters. After this Introductory Chapter, the dissertation of the other Chapters is spread over as follows.

CHAPTER-2 REVIEW OF LITERATURE

In this chapter we have dealt with the review of the existing works related with the study. This analysis helps to find out the research gap on the topic of the study.

CHAPTER-3 STATUS OF AGRICULTURE IN BARAK VALLEY REGION

This chapter is constructed to give a glimpse of the characteristics of the broad study area. It consists of the detailed description of the agricultural sector of Barak Valley region.

CHAPTER-4 BACKGROUND OF THE FIELD STUDY

In this chapter we have reported the profile of the field study and also a pilot survey report is depicted depending on the study area.
CHAPTER-5 DESIGN AND METHODOLOGY

This chapter highlights and analyses the models in the study and methodology used to find out the objectives. This chapter explains the source and methods of data collection, selection of sample size and the sample design and statistical and econometric techniques for testing the hypotheses of the study. To derive logically acceptable results, all the concepts and variables are analysed systematically.

CHAPTER-6 RESULTS AND DISCUSSION

In this chapter we have presented the result of the study and analysed their implications. This chapter contains the result of the regression equation and statistical analysis used in the study. All the objectives under the present study have been analysed in this chapter. This chapter consisted of the overall findings of the study analysed under different sections.

CHAPTER-7 CONCLUSIONS AND SUGGESTIONS

The seventh chapter is a concluding chapter dealing with the summery of the study, the important findings in the study, conclusion
of the study. In this chapter we have summarized the entire work and drawn conclusion. Further, we have recommended some suggestions based on the findings of the study.

**BIBLIOGRAPHY**

Finally bibliography contains details of all references made in the study which are arranged alphabetically and systematically in this part.
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