CHAPTER-2

CONCEPTUAL FRAMEWORK OF BORO PADDY CULTIVATION:

A REVIEW OF LITERATURE:

In order to study the nature and status of Boro (Summer) rice cultivation, it is highly necessary to analyze the various view points of the conceptual framework about the cultivation of Boro Paddy.

2.1 BORO RICE :

Depending upon geo climatic variations, there are mainly three distinct rice growing seasons in Assam, namely winter rice, autumn rice and summer rice. Winter rice in Assam is locally known as Sali. Autumn rice is known as Ahu.

Summer Rice is called as Ravi Rice . It is commonly known as "Boro" rice in Assam. 'Boro' a term of Bengal origin refers to a special rice cultivation in low land pockets during the months of November-May taking advantage of the residual water in the field after harvest of Kharif rice. The farmers innovated Boro rice cultivation with short duration photo period insensitive varieties to supplement a poor Kharif harvest. The Boro rice areas in Assam are mainly distributed in swampy low lying areas. Of course, cultivation of Boro rice in the flood-prone areas of Assam has gained momentum through massive public investment on Shallow Tube Wells, especially in the non-traditional areas.

Farmers prefer Boro rice in flood prone areas because of

i. Shallow water level and water logging low land can be utilized by using Boro rice cultivation, which remains fallow in winter due to excessive moisture and late maturing rice.
ii. Immense potential for improving Boro rice yield over winter crops in low land areas.
iii. Boro rice matures before on set of monsoon and get sufficient time for harvesting.
iv. Good market price of Boro rice due to off season production.
v. Reduces risk of natural calamities like flood for main season under flood prone areas using Boro rice cultivation.

2.2 BORO RICE VARIETIES:

Considering the vast potential of Boro rice in Assam , it is imperative that rice scientists have developed practices that are ideally suited to divers Boro rice-growing situations. An understanding of the target environments and farmers' needs is the first step in the process of developing varieties and agro techniques that are specifically suited to the environments concerned. In rainfed swampy ecologies, both traditional Boro rice varieties and modern rice varieties are cultivated. Among the farmers working in these conditions, 45 percent has reported growing traditional varieties , while 55 percent has grown modern varieties . Among the traditional varieties , Jajli Boro is the predominant variety and, Mahsuri, Biplab, Mala, No.9, Pankaj, IR8, Ranjit, etc. are the predominant modern varieties.

Table 2.1

Varietal adoption pattern in different growing situations.

Growing Ecology	Adoption by farmers	
	Improved Varieties (%)	Traditional varieties (%)
Rain fed, swampy, flood-prone	55	45
Irrigated, flood prone	95	5
Irrigated, flood-free	100	0

In irrigated flood-prone ecologies modern varieties are grown predominantly (95 percent), and only 5 percent of the respondent farmers have reported growing traditional Boro varieties. In these conditions, Jagli Boro is again the predominant traditional variety, while Mala, Jaya , IR8, Ranjit, Bahadur, Biplab are the predominant modern varieties.

Table- 2.2

Varieties grown and their characteristics under different Boro rice growing situations

Growing ecology	Variety	Yield (t/ha)	Plant height at maturity (cm)	Seedling height after 40 days of seeding (cm)	Tillering ability	Crop duration (days)	Period of harvest	Grain type
Rainfed , Swampy flood prone	Jagli Boro	2.0-3.0	120	25-40	High	170	Mid-May	Coarse
	Mahsuri	4.0-6.0	125	15-20	High	190	End of may	Fine
	Biplab	5.0-7.0	120	15-20	High	200	Mid june	Coarse
	China	5.0-6.0	70	12-15	High	140	End of April	Coarse
Irrigated Flood prone	Jaya	5.0-6.0	90	15-20	High	180	End of May	Coarse
	IR8	5.0-6.0	80	12-15	High	185	End of May	Coarse
	Mala	4.0-6.0	100	15-20	High	185	End of May	Fine
	Mahsuri	4.0-7.0	125	15-20	High	190	Early June	Fine
Irrigated flood Free	Jaya	5.0-6.0	90	15-20	High	185	End of May	Coarse
	Mala	4.0-6.0	100	15-20	High	185	End of May	Fine
	Mahsuri	4.0-7.0	125	15-20	High	190	June	Fine
	Biplab	5.0-7.0	120	15-20	High	200	June	Coarse

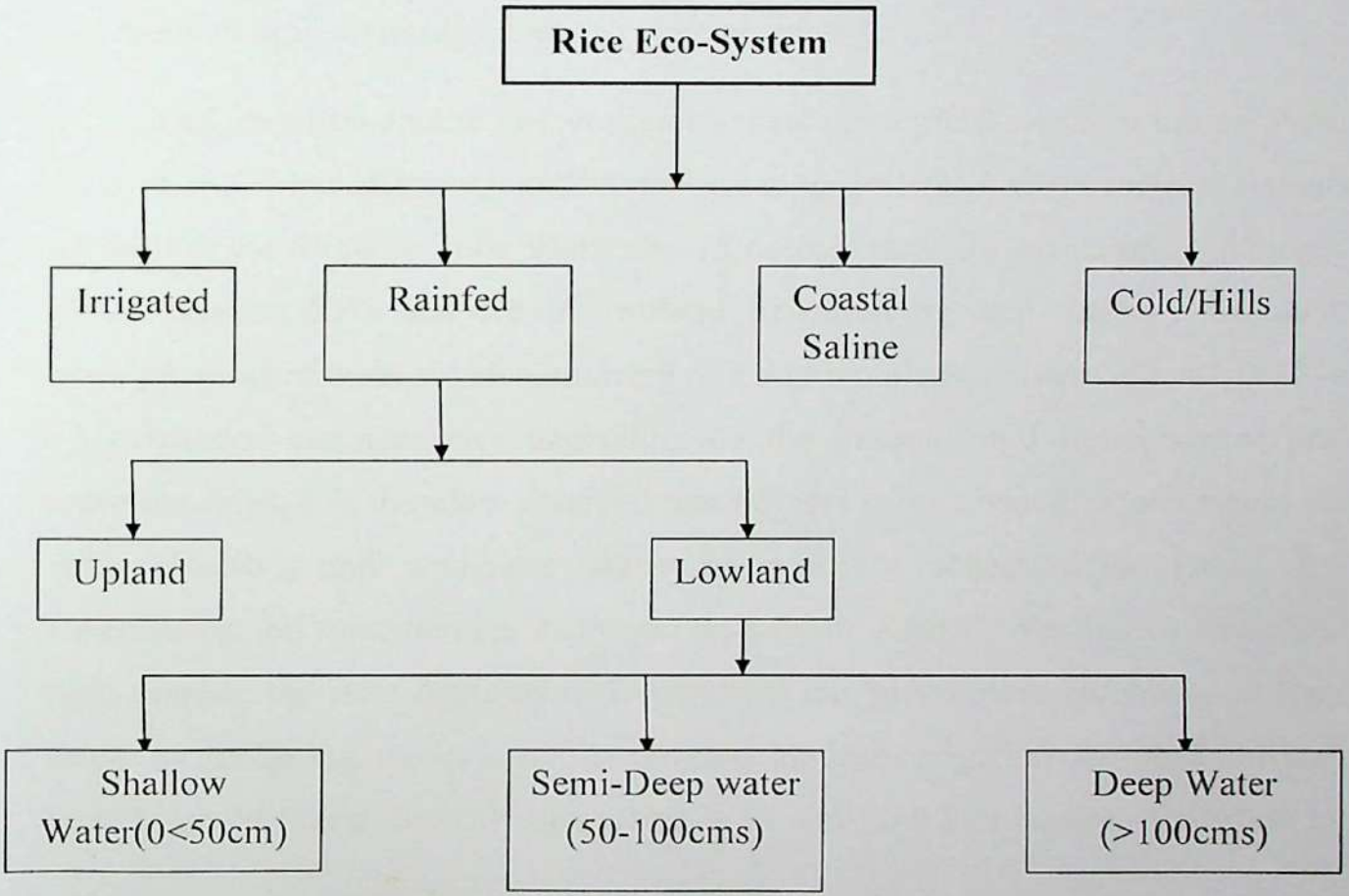
In the irrigated flood free ecology, 100 percent of the farmers have grown modern varieties, viz, Mala, Jaya, Biplab and Mahsuri. The cultivation of traditional varieties in the rainfed swampy situation is mainly owing .to the favourable seeding height attained by these varieties. From the time of sowing through the early vegetative phase, the temperature situation is not ideal for the

growth of Boro rice. Low temperatures cause slow seeding growth in susceptible varieties. In irrigated ecologies , where farmers have good control over the water supply , the shorter seeding height of improved varieties does not encourage the sue of traditional varieties, resulting in the predominance of improved varieties in irrigated ecologies.

2.3 RICE-ECO SYSTEM :

Rice is grown under varying Eco-systems on a variety of soils under varying climatic and hydrological conditions ranging from waterlogged and poorly drained to well drained situations. Rice is also grown under rain fed as well as irrigated conditions. These different Eco-systems are indicated in Figure 2.1

Figure 2.1



2. 4 WATER MANAGEMENT AND IRRIGATION :

Water management in Boro rice is a very important aspect and farmers are found to be using canal water stagnated water and bamboo bore wells for irrigation. It is noteworthy that bamboo bore well is a local innovation in the areas where ground water level is high. It is noteworthy that bamboo bore well is a local innovation in the areas where ground water level is high. It is easy to install, cheap and uses a pipe made of bamboo strips iron rings and coconut rope which is quite cheap and easily available. In favourable monsoon years they successfully grow Boro rice but during unfavourable years they cultivate wheat, linseed, lentil and rape mustard to maximize their gains. Water level being high in the area made irrigation relatively easier and bamboo bore wells brought it within reach of small and marginal farmers. Relationship between fast expansion of area under Boro rice and bamboo bore wells also needs to be investigated.

The irrigation source has an important role in agriculture from the points of view of water use efficiency and impact on crop growth. Among the respondents 85 percent use Shallow Tube Wells and 15 percent have lift irrigation. A majority of the farmers have adopted intermittent irrigation to keep the soil saturated, although most of them are also unaware of irrigation measurement. A total of 12 to 15 irrigations are necessary depending on the intercity and frequency of pre-monsoon rains. It is therefore essential that farmers know about and understand the most effective and economic water management schedule for Boro rice. Considering the uncertainties in the production of Kharif crop due to flood and high rainfall, the state Agriculture Department has given more emphasis on Rabi crops by assigning top priority to develop assured irrigation facilities through installation of Pump Sets(Shallow Tube Well and Low Lift Pump). Irrigation by

way of Shallow Tube Well and Low lift pumps is considered to be the efficient method of water utilization for crop growth. It has high water use efficiency because water can be applied to the crop at regular intervals i.e., as and when plant needs.

The Central Ground Water Board (CGWB) report indicates that the state has the ground water potential for installation of 8 lakh Shallow Tube Wells. The State Govt. has also been exploring the potentialities of optimum utilization in the state with support from central and state sponsored schemes. However, there exists gap between irrigation potential created and actual utilization and thus there is less coverage of assured irrigation.

To attain the objective of optimum ground water use as assured means of irrigation there has been substantial increase in the installation of shallow Tube wells in last three years under the initiative of state Agriculture Department as more than 4.12 lakh Shallow Tube Wells and 0.47 lakh Low lift pump sets were installed till the end of march 2013 and created irrigation potential for 9.18 lakh hectares crop land of which 5.43 lakh hectares crop land under utilizable/ assured irrigation.

The achievements made by Agriculture Department in providing irrigation facility to the farmers still 2012-13 is presented in the table 2.3.

Table- 2.3

Irrigation Potential Created by the Agriculture Department

(Cumulative Status as on March 2013)

Component of irrigation	No. installed/Achievements
STW(Nos)	297304 (diesel) 114921(electrical)
LLP (Nos)	28456(diesel) 18566(electrical)
Irrigation potential created	9.18 lakh hectares (33% of Net Cropped Area)
Area under utilizable/ assured irrigation	5.43 lakh hectare (19% of Net cropped Area)

Source: Directorate of Agriculture, Assam

2.5 FERTILIZER:

Fertilizer is an important input, which plays dominant role in augmenting the productivity of Boro rice. The appropriate nutrients doses are 100:40:30kgN:P_2O_5:K_2O per hectare along with 20kg per hectare of $ZnSO_4$ for optimum yield of Boro rice. Therefore thrust has been given on "Integrated Nutrient Management" (INM) to make a major breakthrough in this direction with the following objectives:

i. Less dependence on inputs from outside source and encourage farmers to utilize on farm resources.

ii. Economize the production cost by using optimum dose of fertilizer.

As The trend in use of bio-fertilizer, compost and green manures and organic farming have been increasing gradually as the application of chemical fertilizer is posing major threat in depletion soil nutrients. Much stress has been given by the state government on timely availability of fertilizers at the door step of farmers during peak period of cultivation. At present, there are 6855 fertilizer sale point and 416 whole sale point in Assam .

2.6 AREA UNDER DIFFERENT CROPS:

In Assam, the soil, topography, rainfall and climate in general are conducive for agricultural activities mainly for paddy cultivation. However, the area covered under paddy cultivation was 2.3 percent less[(-) 0.58 lakh hectare] during the year 2012-13 over 2011-13 over 2011-12, occupies 88.5 percent of the net cropped area and 59.8 percent of the gross cropped area in the state which was 90.6 percent and 61.2 percent of the net cropped area in the state which was 90.6 percent and the gross cropped area respectively during the year 2011-12. As per final estimates the coverage area covered for normal paddy cultivation during the year 92.4 percent of the total area under food grains in the state leaving 7.6 percent area for cultivation of other food grains.

However, there has been a gradual decline in respect of area covered for cultivation of Autumn Rice, which has switched over to the summer rice due to each to its higher productivity and hazard risk. During period 2004-05 to 2012-13, the area under autumn rice cultivation recorded 45.4 percent decline over the

period of nine years. The final forecast estimates show that the area under autumn rice has declined from 4.36 lakh hectares in 2004-05 to 3.13 lakh hectares during 2010-11 and further to 2.38 lakh hectares in 2012-13.

The area covered under winter rice, the principal Kharif crop of the State, which was declines due to serious drought like situation experienced by the state during the year 2006-07 (14-98 lakh hectare) as against 17.07 lakh hectare in 2005-06 had increased to to 16.47 lakh hectare during 2007-08 due to improvement of normal seasonal rainfall, weather condition and irrigation support. The area coverage under the crop has recorded marginal fall (1.01 lakh hectare or 0.19 lakh hectare). However, the area coverage under the crop has recorded 12.8 percent or 2.1 lakh hectares increase during 2012-13 compared to the area under the corp during 2007-08.

According to the final estimates the area covered for cultivation of Summer rice or Boro rice during 2012-13 was 3.93 lakh hectare which was 1.5 percent less than that of 2010-11. Compared to the area covered during 2006-0793.12 lakh hectare), the area under summer rice during 2012-13 was about 26.0 percent more.

The trend of crop-wise land utilization in Assam during the; last nine years may be evident from the table 2.4.

Table 2.4

Area under crops in Assam during the period 2004-05 to 2012-13
(In lakh hectare)

Year	Autumn Rice	Winter Rice	Summer Rice	Total Rice	Wheat	Total Pulses	Total Food Grains	Total oil seeds(excl. coconut)
2004-05	4.36	16.36	3.11	23.83	0.64	1.08	25.82	2.77
2005-06	3.98	17.07	3.15	24.20	0.50	1.00	25.97	2.47
2006-07	3.79	14.98	3.12	21.89	0.60	1.07	23.82	2.70
2007-08	3.54	16.47	3.23	23.24	0.56	1.13	25.18	2.66
2008-09	3.51	17.73	3.60	24.84	0.50	1.14	26.70	2.53
2009-10	3.46	17.89	3.94	25.29	0.60	1.19	17.33	2.77
2010-11	3.13	18.59	3.99	25.71	0.45	1.26	27.67	2.72
2011-12	2.76	18.76	3.94	25.46	0.40	1.32	27.43	2.76
2012-13	2.38	18.57	3.93	24.88	0.34	1.42	26.92	3.05

Source: Directorate of Economics and Statistics , Assam

2.7 AREA UNDER HIGH YIELDING VARIETY (HYV) :

Total area under HYV of Autumn rice, winter rice and Summer rice was 16.91 lakh hectares during 2012-13. The area coverage under HYV Rice was 68.0 percent of the total area under rice during 2012-13. The area under HYV Rice coverage remained 60 percent or more during the period 2006-07 to 2012-13. However, the area coverage under HYV Rice was more than 66 percent for last three consecutive years, i.e., 2010-11 to 2012-13. According to Agriculture Department increasing concentration of area under HYV Rice assisted to bumper

production of rice in the state vis-à-vis put additional impetus for enhancing productivity and farms income. Moreover, the productivity of HYV summer rice is more than winter rice and autumn rice due to of package of practices during summer season as free from any risk. Considering the productivity, cultivators preferred the seed of HYV rice viz, Mala, IR-36, Lachit, Mahsuri, Joya, Ranjit, Ratna, China Boro, Biplab, Bahadur, Kaveri, Krishna etc. Total area under HYV rice is shown in table 2.5.

Table- 2.5

Area under high yielding variety rice (Area in lakh hectare)

Year	Autumn Rice	Winter Rice	Summer Rice	Total HYV Rice Area	Percentage
2005-06	2.35	9.50	2.65	14.5	59.9
2006-07	2.15	8.63	2.67	13.45	61.44
2007-08	2.23.	8.94	2.78	13.95	60.00
2008-09	2.24	9.75	3.14	15.13	60.90
2009-10	2.29	10.2	3.41	15.9	62.80
2010-11	2.13	11.34	3.54	17.01	66.20
2011-12	2.19	12.8	4.02	19.01	74.60
2012-13	1.60	11.70	3.61	16.91	68.00

Source: Directorate of Agriculture, Assam

2.8 AGRICULTURAL HOLDING:

According to the agricultural census 2010-11, there were 27.2 lakh operational holdings in Assam covering and operated area of 29.99 lakh hectares as against 27.5 lakh operational holdings covering an operated area of 30.49 lakh hectares in 2005-06 and 27.1 lakh operational holdings covering an operated area

of 31.10 lakh hectares in 2000-01. Thus, the agricultural in the state by 3.69 percent in 2010-11 over 2000-01 which largely affected by soil erosion of ever widening Brahmaputra river, increasing urbanization, industrialization, expansion of road ways and other infrastructural development activities, conversion of agricultural land for setting up of industries as well to homestead land to accommodate ever increasing population etc. The table 2.6 depicts the trend of number of holding and area between the Agricultural censuses,2000-01, 2005-06 and 2010-11.

Table 2.6

Agricultural Censuses 2000-01, 2005-06 and 2010-11

Size Class (In hectare)	Number of holding			Area Operated (In hectare)		
	2000-01	2005-06	2010-11	2000-01	2005-06	2010-11
Marginal Below 1.0	1699107	1752989	1831115	662780	760145	774796
Samll (1.0-2.0)	561039	591431	496574	730513	718383	687156
Semi-medium (2.0-4.0)	351521	317859	303528	957959	846006	817982
Medium (4.0-10.0)	95500	82933	84869	498797	425403	437372
Large (10.0& Above)	4970	4902	4137	263529	298606	27176
Total	2712137	2750114	2720223	3113578	3048543	2999070

Source : Directorate of Economics and Statistics , Assam.

The disaggregated data also shows that the marginal holdings with less one hectare of land accounted for 67.3 percent of the total holdings and 25.8 percent of

the total operated area of the state in 2010-11 compared to 63.7 percent of the total operated area of the Sate of Assam in 2005-06. It also reveals that the small holdings with size class between 1.2 hectare, shared 18.25 percent of the total holdings and 22.91 percent of the total operational area and the large holdings constituted only 0.15 percent of the total number of holdings and 9.1 percent of the total operated area in the state in 2010-11.

i. Household :

Household is a group of persons who commonly live together and would take their meals from the common kitchen unless the exigencies of work prevented any of them from doing so . It may be made up of related or unrelated persons or of a mixed type. A cook or a servant living in the house of his employer and taking his meals there is a part of that household.

ii. Main Worker and Marginal worker :

Work is defined as participation in any economically productive activity. Such participation may be physical or mental in nature. Work involves not only actual work but also effective supervision and direction of work. It also includes unpaid work on farm or family enterprise. A person who had worked for major part of the year, that is for six months or 183 days during the also one year preceding the date of enumeration, is termed as main worker but that who had worked for less than six months or 183 days is termed as marginal worker.

iii. Non-Worker :

A person who does not participate in any economically productive activity is termed as non-worker . He may be either performing household duties or is a student or dependent or retired person or rentier or begger or an inmate of

institution or other non-workers. Other non-worker is usually a person who is seeking job or is available for work.

iv. **Cultivator** :

A cultivator is a person engaged in cultivation of land owned or held from Government or private persons or institution for payment in money, kind or share. Cultivation includes supervision or direction of cultivation. Cultivation in turn involves ploughing sowing harvesting and production of cereals and millet crops such as paddy, wheat, jower, bajra etc. and other crops such as sugar cane ground nut etc. and pulses, raw jute and kindred fibre crop, cotton etc. and does not includes fruits growing vegetable growing or keeping orchards or groves or working on plantations like tea, coffee, rubber, cinchona and other medicinal plantations.

v. **Agricultural labourer** :

Agricultural labour is a person who works on other's and for wage in money, kind or share. He has no risk in the cultivation. He has no right of lease or contract on land which he works.

2.9 RICE PRIODUCTION AND YIELD RATE :

It is worth mentioning that during the year 2012-13 the state of Assam could produce all time record production both in respect of rice(51.28 lakh metric tonnes) and total food grains(52.79 lakh Metric Tonnes). "..... the Ministry of Agriculture, Government of India has categorized Assam among the 'Highest Ranked States' for production of foodgrains. Hon'ble Union Finance Minister in

his budget speech has acknowledged Assam's contribution to increased rice production of the country. He has assured his support to the Eastern Indian States with Rs. 1000 crore allocation in their endeavour to take forward the green revolution in Eastern India farther. In recognition of commendable production of pulses, the state has received the Krishi Karman Award from the Hon'ble president of India.

The total production of rice in the state of Assam was 51.28 lakh metric tonnes in 2012-13 as against 47.16 lakh metric tonnes(MT) in 2011-12. Total production of rice in the Sate, thus, 8.74 percent more during 2012-13 compared to previous year's production. During the year 2010-11, total rice production in the state was 50.33 lakh MT. Despite area under Paddy fall by 0.58 lakh hectare (for winter paddy this fall was 0.19 lakh hectare) during the year 2012-13 over 2011-12, the weather condition and the pattern of overall rainfall in the state was normal both in terms of total rainfall [(-)5.0 percent deviation from normal] and it is spread except in the months of May, 2012 and August, 2012 with (-) 46.0 percent and (-) 30.0 percent deficit rainfall respectively without affecting the production of Kharif ctops, more particularly the winter paddy. This deficiency was covered either by "Excessive" rainfall that was occurred in the month of April, 2012 and June, 2012 with(+) 35.4 percent and in (+) 23.8 percent respectively. Moreover the state has experiences "normal" rainfall during the months of July 2012 and September, 2012. During the Kharif crop season, according to the state Agriculture Department, the state of Assam had experienced 1953.2 mm rainfall against the normal rainfall of 2001.0 mm.

The trend of yield rate of autumn rice was erratic during the period 2004-05 to 2012-13. The yield rate of autumn rice increased to 1016 kg per hectare during

2005-06 from 667 kg per hectare in 2004-05. It again decreased to 899kg per during 2006-07. The yield rate of the autumn rice increased to 1084kg per hectare during 2008-09. From 2009-10, the increasing trend of yield rate of autumn rice 982 kg per hectare has been continuing. During the year 2012-13, the yield rate of autumn rice has been expected to reach all time high level with 1317 kg per hectare which is 14.0 percent above the yield rate of 1155 kg per hectare 2010-11. The yield rate of autumn rice was 1242 kg per hectare in 2011-12.

The yield rate of winter rice remained high with 1894kg per hectare, 1993 kg per hectare and 1998kg. per hectare in 2009-10, 2010-11 and 2012-13 respectively. The productivity of winter rice was low during the year 2011-12 over the previous year due to "deficient rainfall" experienced by the state during the Kharif season. The yield rate of winter rice was low during the years 2006-07 and 2007-08 also compared to 2004-05 and 2005-06 mainly due to drought like situation and severe floods that the state had experienced during the peak Sali paddy season of the aforesaid years respectively. However, the yield rate of winter rice recorded 21.45 percent increase during the year 2010-11 over 2008-09 due to good seasonal rainfall.

The productivity of summer rice also continued to maintain its increasing trend during the period 2004-05 to 2012-13 except in the year 2005-06. The yield rate of summer paddy although remained marginally low during 2009-10(3.8 percent) compared to the yield rate of 2007-08, it recorded 8.1 percent more in 2012-13 compared to the yield rate calculated in the previous year. This is shown in table 2.7

Table- 2.7
Yield Rate of Autumn rice, Winter rice and Summer rice in Assam
(kg per hectare)

Year	Autumn Rice	Winter Rice	Summer Rice
2004-05	667	1598	1959
2005-06	1016	1543	1780
2006-07	899	1321	2017
2007-08	999	1380	2267
2008-09	1084	1641	2133
2009-10	982	1894	2180
2010-11	1155	1993	2577
2011-12	1242	1785	2744
2012-13	1317	1998	2965

Source : Directorate of Economics and Statistics, Assam

2.10 CROPPING PATTERNS:

Assam has a wide range of soil and climatic conditions and cropping pattern vary widely from region to region and to a lesser extent from one year to another year. In fact for devising cropping patterns, it is necessary to divide the state of Assam into homogeneous regions based on physical, climatological or agronomic. While making division, the climatic index and the soil group may be taken into consideration. The soil and the climate are the important factors for adopting of cropping patterns, hence they constitute a better criterion for crop-zoning.

The cropping pattern in different agro climatic zones has been adopted by the farmers after long experience based on suitability of soil, profitability, availability of market and industrial infrastructure and quantum of water available. Techniques such as relay cropping, inter cropping, mixed cropping,, minimum tillage, weed control and use of fertilizers and pesticides have helped out only in

reducing the cost of cultivation but also in sustaining high level of production over a period of time.

Boro rice in Assam is mainly concerned in three agro climatic zones-the central Brahmaputra Valley Zone(CBVZ), the lower Brahmaputra valley Zone (LBVZ) and Barak valley Zone(BVZ) in addition to scattered areas in other zones. Of the total area under Boro rice in the state 37 percent is in CBVZ, so because of resource limitations , the survey is restricted to CBVZ.

2.11 PEST AND WEED MANAGEMENT :

Stem borers, case worms, leaf folders and rice bugs are reported as pests of Boro rice. Of these, yellow stem borer is reported as the major pest in all the three Boro rice ecologies at both the vegetative and reproductive stages. The survey has revealed that a majority of the farmers are aware of damage from insect pests an adopt appropriate management practices. Due to low temperature, weed growth during early vegetative phase of the crop is slow . Therefore, one hand weeding at tillering stage is effective to control weeds in the field.

The survey has revealed that the farmers are not particularly concerned about diseases in Boro rice. However, their responses and the researchers' own observations have revealed that brown spot, neck blast and stem rot are the most important diseases.

Integrated Pest Management (IPM) is the key component of sustainable agricultural production. Assam having a diverse eco-system with sub-tropical climate, the crop production is associated with loss of biotic stress problem, which share 20-30 percent of the yield loss. Excessive and injudicious use of chemical pesticides in the field result into development of pest resistance, pest resurgence,

pest replacement and pesticides residue problem intensification of agriculture with the introduction of HYV, Hybrid, STW, Mechanization and other advance inputs also enhance the pest population dynamics and pest status.

2.12 FIELD MANANGEMENT COMMITTEE (FMC) :

All the field management committee are formed as per the information from the District Agriculture Department to do so. FMC are formed in a very short notice and registered in the district Agriculture department to get agricultural schemes. However it is not a democratic organization and formed with well connected to the local agriculture department. Like any other 'society' it is not registered under society registration act.

2.13 STUDIES ON BORO PADDY IN INDIA – AN OVERVIEW:

A large number of studies have attempted to analyse the various aspects of Boro paddy cultivation in India. Though in recent years, the studies on Boro paddy cultivation has been the subject matter of considerable amount of empirical research, the formal studies relating to the problem of Boro paddy cultivation had begun in the later part of 20^{th} century alone.

The various studies on Boro paddy in various regions of India and Assam have been made by some social scientists namely M. Allauddin (1986), V. Ballabh. (1987), P. kumar (1986), M.B. Kazi Rahim(1992) F.A. Siddique(1999), K.C. Talukdar and P.D. Saikia(1988), A.K. Pathak(1995) and few others. These studies cover the process of Boro paddy cultivation in different parts of India. Thus it indicates as process of Boro paddy cultivation that is taking place in the traditional society in India.

In this connection V. Ballabh and B.M. Sharma(1987) had made an empirical studies on adoption of HYV paddy and wheat in flood-prone and flood free districts of Uttar Pradesh. They had compared and showed that the production of HYV paddy was higher than traditional type. A. de Janvry and P.Kumar (1986) had also made a study on the transmission of cost inflation in agriculture with subsistence production, especially in northern India M.B. Kazi Rahim and N Ali (1992) had studied the techniological gaps as the determinants of yield gaps in rice varieties in Birbhum District. They showed that was a vast yield gap among different rice varieties depending on adoption and non adoption of improved technologies.

K.C Talukdar and P.D Saikia of Assam agricultural University, Jorhat (1988) had made studies on methodology for simultaneous determination of factors and products prices of crops in Assam.

K.C. Talukdar and A.K. Sarma(1994) had also made studies on capital requirements for modernization of Indian Agriculture with special reference to Assam showed that without huge amount of investment on agriculture, modernization was not possible. K,C. Talukdar in the same year had also made a study on input costs, output prices and income policy simulations for major crops in Assam.

Through we have reviewed these works, yet we have not found authentic literature on problems and prospects of Boro Paddy cultivation in Mayang in the district of Morigaon in Assam. So problems and prospects of Boro Paddy is highly essential so as to identify and spell out the actual constraints standing in the path of development of Boro Paddy cultivation in the study area.