

**Disappearing Grains: The Politics and History of Rice Grain Production  
in Assam**

**BY**

**BIPUL DEWRY**

**2012/G/SW/009**

**A dissertation submitted in partial fulfilment of the requirements for the degree  
Of Master in Social Work**



**Tata Institute of Social Sciences**

**Guwahati**

**2014**

## **DECLARATION**

I, Bipul Dewry, hereby declare that this dissertation entitled “Disappearing Grains: The Politics and History of Rice Grain Production in Assam” is the outcome of my own study undertaken under the guidance of Dr. Sanjay (Xonzoi) Borbora, Associate Professor, Tata Institute of Social Sciences, Guwahati. It has not previously formed the basis for the award of any degree, diploma or certificate of this or any other university. I have duly acknowledged all the sources used by me in the preparation of this dissertation.

07/03/2014

Bipul Dewry

## **CERTIFICATE**

This is to certify that the dissertation entitled ‘Disappearing Rice Grains: The Politics and History of Rice Grain Cultivation in Assam’ is the record of the original work done by Bipul Dewry under my guidance. The results of the research presented in this dissertation have not previously formed the basis for the award of any degree, diploma or certificate of this or any other university.

07/03/2014

Dr. Sanjay (Xonzoi) Borbora  
Associate Professor  
Tata Institute of Social Sciences  
Guwahati Campus

## **ACKNOWLEDGEMENT**

This dissertation would not have been possible without the valuable guidance and support of various people to whom I owe my sincere gratitude.

It has been a great privilege to work under my guide Dr. Sanjay (Xonzoi) Borbora, Associate Professor, Tata Institute of Social Sciences, Guwahati Campus. I am indebted to him for his enriching guidance throughout the study period of the topic undertaken for research. I am grateful to my Institute, Tata Institute of Social Sciences, Guwahati Campus for giving me an opportunity in the academic learning and critical understanding of various social issues.

I would like to extend my gratitude to Dr. V. Sawmveli, Meghali Senapati who taught me Research Methodology and remained always as source of motivation. I would also like to extend a big thanks to all my faculty members of TISS. I am thankful to the entire Library Staff, who helped me throughout the process. I would like to take the opportunity to thank all my respondents for helping me out in this project.

I would like to extend a big thanks to my friend Mr. Manjib Mochahary, Samjyoti Saikia and Nageswar Ramchairy, who helped a lot in collecting data and designing the chapters of the research. I would also like to thank Mr. Ritu Das, an employee of Agriculture Department, office of Baksa District for his cooperation in getting information from the field.

Words fall short and insufficient when it comes to owing my thanks to my parents and family. I thank them from the core of my heart for making the journey of M.A in Social Work possible in my life. I sincerely express my gratitude to numerous individuals, who made substantial contribution in enriching this journey

Bipul Dewry

<b>Contents:</b>	<b>Page No.</b>
Declaration.....	i
Certificate.....	ii
Acknowledgement.....	iii
Chapter 1.....	1-7
Introduction	
1.1 Historical Background of Rice Cultivation in Assam	
1.2 Methods of Cultivation	
1.3 Use of Modern Agricultural Technology and Green Revolution	
1.4 Statement of the Problem	
Chapter 2.....	8-10
Review of Literature	
2.1 High Yield Variety Seeds Promoting Institutions	
Chapter 3.....	11-16
Research Methodology	
3.1 Research Objectives	
3.2 Research Questions	
3.3 Research Methodology	
3.4 Collection of Data	
3.5 Data Analysis	
3.6 Limitations of the Study	
3.7 Profile of the State	
3.8 Profile of the Sample District	
Chapter 4.....	17-23
Analysis and Interpretation of Data	
4.1 Introduction	

- A) Names of the Various Indigenous Rice Grains given by the Farmers
- B) Some Names of the High Yielding Variety Rice Grains shared by the Farmers
- C) Season and Climatic Condition
- D) Present Status of the Indigenous Rice Grains
  - 1) Difference in the Quantity of Rice Production
  - 2) Unavailability of Labour
  - 3) Extinction of Other Crops
  - 4) Other Reasons
  - 5) Unfavourable Government Policy
- E) The Varieties Cultivated in the Regions
- F) Familiarity with the term Green Revolution

Chapter 5.....	24
5.1 Conclusion	
Annexure.....	25
Reference .....	26

## **Chapter 1**

### **Introduction**

Rice is the food that my family and I have consumed since my childhood. It was there three times a day: for breakfast, lunch and dinner. It is consumed not only by my family but the entire people living in the region. Whenever we go to our guest's house or any guest comes to our house we won't feel satisfied unless we take meal together with nicely cooked aromatic rice including meat and curry of fresh vegetables. This shows the cultural significance of rice in our society. I was interested to do this research as it has increased my curiosity to explore different varieties and types of rice that I was used to eating in my childhood but which I find difficult to find in the market today. I wanted to understand how this process started and what the current situation in Assam is in general, and in the district of Baksa in particular.

With the increase in population and blowing wind of commercialisation of products, a mindset in the people has developed that the production has to be increased to make food available and meet the demands and choices of foods of the growing population. There is also a rapid development of technologies that brings out new experiments timely and introduces new products. In such a way rice grains also has been experimented by various institutions bringing out new varieties in genetically modification and high yielding which can benefit the farmers more with increased in quantity of production. The adoption of such varieties by the farmers to benefit with more production has made them ignorant about the local and indigenous varieties which has made it endangered or extinct from their hands. The people of this region have started agriculture since history with those local and indigenous varieties discovering it from the nature. It has also been consumed since those days balancing the diet and recognised as part of lifestyle, culture and religion. Therefore the preservation of such varieties is utmost necessity to keep the peoples connection to the land of this region alive. Moreover, as revealed by the farmers, the taste of the indigenous or local varieties of rice is much better than the high yielding varieties.

Rice is the principal crop and prime food habit of Assam. It is widely cultivated in Assam since the history of people of different communities started to settle in this place. The climatic and physiographic feature of the state is very suitable for rice cultivation and

the crop is grown in agro-ecological situations widely. Different methods of cultivation are practiced in this region since then according to the topography. The topography of this state consists of both plains and hills. Accordingly in the hilly area like Karbi Anglong and N.C Hills *jhum* cultivation is practiced whereas in the plain areas there is lowland rice cultivation. According to the status paper on rice in Assam, deep-water rice cultivation is also done in areas like Lakhimpur and Dhemaji of the region and rice cultivation is done in a transplanting method.

*Baon* is deep-water rice cultivation and other types of rice cultivated in Assam seasonally are Ahu in autumn, Sali in winter and Boro in spring and summer rice cultivation. Hence, diverse varieties are grown according to the season and ecology of the region. “Joha” is a variety of scented rice locally found. In the districts lower Assam like Baksa, the farmers cultivate both Sali and Ahu types of rice grains both in summer and winter seasons. Other than that the farmers also planted other crops like Musur<sup>1</sup>, Kala<sup>2</sup>, Motor<sup>3</sup> and Tece<sup>4</sup>. These crops value adds to the agro-economy of the farmer’s households as it also can be consumed as well as earn cash by selling. It is seen due to various reasons the farmers slowly giving up the cultivation of the Ahu type and planting those value adding crops which has a bit changed the agro scenario of the area. The farmers also has adopted interest more in cultivating the high yielding varieties leaving a very less scope for the local and indigenous varieties. The local and indigenous variety which was cultivated from the unknown past is slowly losing its scope from some parts of the region which must be a serious concern to every single individual.

### **1.1 Historical Background of Rice Cultivation in Assam**

Jahanabi Gogoi in her books “*Agrarian System of Medieval Assam*” states that the history of cultivation of Assam does not have sufficient contemporary records. Therefore it is not that possible to ascertain accurately about the cultivation of Assam. In the 18th century the geographical features of Assam was covered with the entire plains district of present Assam excluding the Barak Valley and the undivided Goalpara district. Geographically the area could be divided into three major regions: the north bank, the

---

<sup>1</sup> Musur is a form of Dal tree.

<sup>2</sup> Kala is a form of Dal tree

<sup>3</sup> Motor is form of Bean.

<sup>4</sup> Tece is a form of oil seed tree.

south bank, and the Majuli island of Brahmaputra. The entire belt is region of the alluvial land and exhibits a highly fertile soil throughout. The hills surrounding Assam have some areas which consists of the land and the riverine tract of Brahmaputra, being subjected to rains and flood, were fertile enough to promote seasonal cultivation involving '*slash and burn*' of the grass and weed jungles. The island Majuli representing the chapari belt was created by the change of the course of the Brahmaputra towards the middle of the 18<sup>th</sup> century.

In the middle of the 17<sup>th</sup> century the Ahom Kings established big royal Satras<sup>5</sup> in the Majuli. It lay to south of Brahmaputra and was in an excellent stage of tillage. The cultivated track within it was bounded by thick forest which contained herds of wild animals including elephants. There were temporary settlers in the Chapari river bank area in the 19<sup>th</sup> century. The people of these settlers crops produced were mustard seeds, ahu<sup>6</sup> and bao rices, pulses, pumpkins and gourds. There were people making permanent settlement in the major area of the riverine belt extending on the banks of the Brahmaputra to a certain distance till the hill slopes. The flood caused by the Brahmaputra and its tributaries abundantly deposits alluvium in that area of land and make it suitable for permanent cultivation. The average rainfall of about 750-150 inches per annum made the lands soft and clayey so that transplanted rice cultivation could be easily done here. In the record of Fathita-i-Ibriya the north was more populous and abundantly cultivated. It meant the northern region of Goalpara and Kamrup district and the western part of Darrang. As reported the southern region was also under cultivation. This south bank was called rupit belt and the cultivation was done in most of its part from Kaliabar onwards. People who cultivated had made in all probability their earliest permanent settlement in that belt. The Chutiyas, the Kacharis, the Koches and the Ahoms in the Pragytisa-Kamrupa plain tracts made productive utilisation of the soil. The people of Bodo Kachari origin during the early part of Ahom occupation pursued the method of shifting cultivation. After the establishment of the Ahom rule, the region was gradually brought under the permanent rice cultivation. Early records show that the Ahom rulers in order to extend cultivation built large number of embankments to prevent frequent flood raids from the Brahmaputra and its innumerable tributaries, and gradually engaged people in clearing the jungle lands. Shihabuddin Tailash in the 17<sup>th</sup> century found that the entire region from Kaliabar in

---

<sup>5</sup> Royal Satras means the Vaishnavite monasteries that were started during the Ahom period. Sometimes, powerful Ahom nobility also supported these monasteries.

<sup>6</sup>Ahu is one of the type of rice which again has different varieties cultivated in Assam

Nagaon to Gargaon, the Ahom capital, the entire region was full of gardens, orchards and extensive rice fields. Another belt called the submontane belt which lies beyond the Rupit belt touching the foothills is a subject to heavy rainfall with an average of 80-120 inches per annum with full of jungles and weeds. This belt is predominantly inhabited by tribes like Bodo Kacharis, the Meches, the Garos and the Hajangs and most of these communities were under tribal chiefs with autonomous power under the Ahoms.

The British records show that these primitive tribes practiced method of shifting cultivation, widely known *jhum cultivation*. There were other tribes living beyond this region in the hills. They were the Akas, Daflas,<sup>7</sup> Miris,<sup>8</sup> Nagas, Mikirs etc called as hill tribes. The Ahom rulers had no direct control over their territories, but these tribes accepted very often Ahom suzerainty. These tribes in the method of terrace and shifting method in the hill slopes produces limited amount of rice. Instead of a plough system they used hoe and stick which was still practised till the recent time. Assam in that period was full of jungles and the Ahom rulers encouraged the subject population to encroach the jungles for creating new lands and adding to the existing ones to produce more crops. Such new lands were either made revenue-free or were given to the peasants for a lumpsum of its produce as revenue. In the beginning of with the time of Sukhapha the Ahom rulers and their officers opened big paddy fields, i.e., farm known as khats. They cultivated rice in a transplanted method, besides they also grew other crops including both edible and cash crops in that land. However there is no authentic record to estimate the exact volume of production of that time (Gogoi, 2000).

## **1.2 Methods of Cultivation**

In Assam the method of cultivation mainly depend on ethnic heritage and geographical situation of the lands. This is not only in Assam but similar situation in the whole northeast region. The agriculture system in this region as a whole was largely marked in tribal ways of farming (Gogoi, 2002). The Bhuyans, the Ahoms and small groups of people in the earlier times developed an agricultural tradition and were associated with high yield transplanted varieties of rice cultivation (ibid.). This shows that period therefore witnessed both tribal and non-tribal methods of cultivation. It is believed that the age-old and less productive method is mostly carried by the tribes and some of the

---

<sup>7</sup> Daflas are currently known as Nyishis in Arunachal Pradesh.

<sup>8</sup> Miris are now designated as Mishings. They are plain tribe predominantly concentrated in upper Assam

commonality and the modern and high yielding method were practised by the advanced community like the Ahoms. Sali rice<sup>9</sup> was mostly associated with the plains' people, particularly the Ahoms, was transplanted wet rice. Besides, it being a long maturing type, its cultivation also involved a lengthy process, from adjacent streams were reclaimed for its cultivation. A description of wet rice cultivation method as existed in this region till the 19<sup>th</sup> century is found in R. Brown's Statistical Account of Manipur, a method which is still followed in Assam. Brown says:

In June the rains set in, the field is brought by successive ploughings and the harrowing into a state of liquid mud, and in this the 'pung hul' (seed) is cast. The seed for the 'pung hul' is first quickened by being moisture with water and kept in a covered basket until it shoots. As this seed floats on the surface of the mud, it has to be carefully watched until it takes root, and three or four leaves spring up, in order to protect it from wild duck and other birds. After this transplanting is done to make the crops grow. The seeds for the plants, which are destined to be transplanted, are usually sown very close, in plots carefully prepared for the purpose. When the transplanting season arrives, the plants are pilled in handful out of the ground; and having been taken to the field, they are one by one separately inserted in the mud... they soon spring up and afford an excellent crop (Brown, 1874).

### **1.3 Use of Modern Agricultural Technology and Green Revolution in India**

Radhika Ravindaran in her thesis states that green revolution is a technological innovation to bring solution to the food problem in India. It first initiated in states like Punjab and Haryana. The primary objective was to increase in food production to make it sufficient for the population of the entire nation. The objective of the green revolution might be achieved but the social side effect it has caused is not been entirely beneficial in most regions where the new seed varieties were introduced for commercial farming. This adoption of cultivation according to the guidelines of the Green Revolution to achieve production in a large scale has made the society to face many side-effects. The kind of side-effects the society has experienced shows that the technology used in the green revolution is found unsuccessful on one side though there is a large scale production. Ravindran in her thesis further states that the social side effects must be taken into concern and put forward before the large-scale introduction of a new technology. Such preparation for the technological change requires, at the very least, a great deal of time and effective implementation. Every change in the normal way of doing things requires an adjustment of

---

<sup>9</sup> Sali rice is a rice variety cultivated in the plains in the month of April

time, while the population needs to restructure its social system to accommodate the change. While the technology can change rapidly, political and social institutions generally change very slowly. Furthermore, they almost never change in anticipation of a social need, but only in response to one. It is never possible to move away from the undesirable effects of the modern technology. To a certain extent it depends on government policies and administration, organisational and legal structures of the country. But to a large extent no government would be willing to undertake the risk of change unless there is some movement from the grassroots levels. It is in this context that alternate technology movements in the country gathered their meaning (Ravindran, 1986).

According to the activist web portal on the green revolution, traditional farming methods gave way to farming with high-yield seeds, fertilizers, and pesticides. In a few decades after the implementation of the green revolution it has become evident that its benefits are associated with unanticipated harmful effects of chemicals. Quoting an article in the Times Magazine the portal further states:

*“Numerous studies have linked the use of pesticides and chemicals to diseases such as cancer. Researchers attribute an increase in stillborn babies, and ailments such as renal failure, to the misuse of pesticides. Widespread use of pesticides has contaminated drinking water supplies and is linked to other life-threatening diseases”<sup>10</sup>.*

The regions which were fertile once are now remaining barren due to the uncontrolled use of pesticides and chemicals that has poisoned the soil and water of that place. India must be aware and address such issues now. India needs is a sustainable farming system to produce good yields, protect the environment and try to avoid from another food crisis in the near future.

In spite of the past experiences of side-effects of the green revolution in different societies the government is taking various initiatives to introduce green revolution in Northeast India. In Assam such initiatives is carried forward as pilot projects in few districts. In Baksa district this pilot projects have implemented in some villages.

#### **1.4 Statement of the Problem**

---

<sup>10</sup> More details can be found on <http://eksparsh.wordpress.com/2010/06/20/impacts-of-green-revolution-in-india/>

The Assam Agricultural University, Jorhat have been maintaining 3436 indigenous rice germplasms (Das and Ahmed, 1995). Natural calamities such as earthquake, floods are a regular phenomenon in the region including deforestation, over *jhuming* (shifting cultivation), lack of proper irrigation system and excessive rainfall compel the farmers to minimize the rice cultivation. All these factors are leading to genetic erosion besides advent of HYV of rice has become dominant, replacing many indigenous rice grains.

Another reason is due to introduction of unfavourable agricultural policies by the central and the state governments has made farmers more marginalised lacking of proper market as well as price for their produce. The price rise of every commodity has made the cost of production very high whereas the selling price could not meet the same for which they have to incur losses. These are some discouraging factors for the farmers of the region for which they are compelled to incline towards High Yielding Variety Seeds to earn more cash from their produce to sustain their livelihood. Continuation such discouraging factors will make the farmers totally forget the local and indigenous varieties and no one will remember even its names. It will make the upcoming generations ignorant of these names, its traditional practice and cultural significance.

## **Chapter 2**

### **Review of Literature**

It is from the centuries that the farmers of the third world countries have evolved crops and plants that provide us nutrition. In India the farmers have evolved 200,000 varieties of rice through their innovation and breeding. The varieties are like Basmati, red rice, brown rice and black rice. There are also rice that grew 18 feet tall in the Gangetic flood waters, and saline resistant rice that could be grown in the coastal water (Shiva, 2000).

Indian farmers have traditionally grown diverse varieties since the unknown past matching with diverse land situations encountering with varying growing season. They did not stop the innovation and are dedicated to conserving the native seed diversity and are still in the process of breeding new variety of seeds. It is believed that the seeds are not only source of future plants and food but also storage of culture and history. There has been debate that the important symbol of the food security is where preservation of native seeds lies in the hands of the farmers. Since the ancient times the custom of exchanging seeds by giving equal quantity of seed from his field in return for the seed he gets. This free exchange of seeds also means exchange of ideas and knowledge, of culture and heritage. In most part of the country paddy or rice has religious significance.

For the farmer, the field is the mother; worshiping the field is a sign of gratitude toward the earth, which, as mother, feeds the million of life that, are children. About 75% of the Indian population derives their livelihood from agriculture and the globalisation has made an adverse impact on the Indian agriculture. This impact has become a global significance and being experienced in every society. The monocultures are replacing bio diverse crops and small farms and small farmers are pushed to extinction. The farming is made more profitable by creating markets for genetically engineered seeds, herbicides, and pesticides. The farmers have no way but transforming themselves from producers into consumers of corporate patented agricultural products. The expansion of market has globally destroyed the local and national markets. This made the global economy very rich making the rich nations to rob the poor of their right to food and even their right to life as

the vast majority of world's people earn their livelihood by producing food whereas in the industrialised countries only 2 percent of the populations are farmers. Currently, ten corporations control 32 percent of the commercial seed market, valued at 23 billion dollars, and 100 percent of the market for genetically engineered, or transgenic seeds. These giant multinational corporations also control the global agrochemical and pesticide market. Corporate houses such as Cargill and Monsanto are involved in shaping the international trade agreements. The excessive monopolistic control over agricultural production along with structural adjustment policies designed by World Trade Organisation (WTO) and other institutions favour in exports of food from the United States and Europe to the third world. The introduction of North American Free Trade Agreement (NAFTA), the import of Mexico's food supply has increased from 20 percent in 1992 to 43 percent in 1996. This compelled the Mexicans to lose their jobs and 40 million have fallen into extreme poverty. There are cases like the economy of Philippines has been destroyed due to the imports of sugar in the country. In case of India the prosperous rubber plantations in Kerela were rendered unfeasible due to rubber imports. In Kenya the imports of maize has brought prices crashing for the local farmers making them unable to recover even their basic their costs of production (Shiva, 2000).

Advertising through different campaigns such as promotional films the corporate houses' always looks forward to sell their new hybrid seeds to the farmers. This selling of hybrid seeds to the farmers has become their primary motive. These hybrid seeds began to replace the local farmers' varieties or indigenous crops. The new hybrid seeds are vulnerable to pests requires more pesticides to cultivate. Along with the hybrid seeds the poor farmers' also buys chemicals on credit from the same company. Such buying of seeds as well as pesticides has made the farmers spent more on the cost of production in the cultivation. There are results that such crops failed due to heavy pest incidence and many farmers incurred loss and could not repay the loans they took to buy the seeds and pesticides. Finally, many farmers had to commit suicide by consuming the same pesticides that made them got into the debt. As Shiva says, shaping of chemical corporations, recently into "life sciences" corporations, declare that the world cannot be feed without them and their patented products (Shiva, 2000). This means more farmers are going to fall prey under such nexus.

Relating the above review of literature with Assam, the Assam Agricultural University, Jorhat have been maintaining 3436 indigenous rice germplasms (Das and

Ahmed 1995). Different methods of cultivation are practiced in this state according to its topography. In the hilly areas *jhum* cultivation are practiced and lowland cultivation in the lowland areas. There is also deep-water rice cultivation done in a transplanting method in districts like Lakhimpur and Dhemaji. Baon, Ahu, Sali and Boro are different types of rice cultivated in Assam in different seasons.

There are scented rice varieties locally called “Joha”. In Majuli atleast 100 indigenous types of rice are grown under different ecological conditions. Winter rice is again classified as Lahi, Joha soft rice; Boro rice (breakfast type) and cooked rice (staple food). Based on the husk cover the varietal nomenclatures are usually assigned locally. They are Tulsibaon, Bogibaon and Kenkuabaon in blackish and reddish in colour. Dhubri and Goalpara districts are also endowed with indigenous rice landacres like Malshira, Monohar, kartiksali, Bornidhan, Paroma, Bhola, Nepali Bhog etc. All these belong to winter (sali) rice variety. Many potential areas in districts like Dhubri, Barpeta, Nalbari, Nagaon, Morigaon, Cachar, Karimganj, Hailakandi, Darrang, Sonitpur, Lakhimpur, Dhemaji are still to be explored intensively. In Assam a festival named Baisagw<sup>11</sup> (Bihu in Assamese)” also called by different names in different communities is celebrated three times a year. The three bihus are Rongali (Rongjali in Bodo), Kati (Kati Ghasa in Bodo) and Mag bihu (Domasi in Bodo) are celebrated. These are the cultural festival evolved from an agrarian economy three times a year. Rongali bihu is celebrated at the time of pre seed sewing season, Kati bihu is when the crop attains the milky stage and the Magh bihu is after the harvest of the winter paddy. <sup>12</sup>The communities who practices Hindu religion in Assam gives rice along with money and traditional costumes as an indication of religious regard to the priest after practicing religious ceremonies. Before consuming the new crops it is being worshiped and even conducted feast by the communities. This symbolises people’s intimacy with nature.

## **2.1 High Yield Variety Seeds Promoting Institutions**

Institutions like Assam Agricultural University, Jorhat and International Rice Research Institute, Meghalaya are the two main institutions that keep conducting research in North-eastern region of the country regarding the high yielding variety rice grains.

---

<sup>11</sup> Bwisagu is a Bodo term

<sup>12</sup> Source: [http://genecampaign.org/reports/conservation\\_of\\_Indegenous\\_rice%20.pdf](http://genecampaign.org/reports/conservation_of_Indegenous_rice%20.pdf) (accessed on April14, 2014)

Besides the Agriculture departments of the respective states implement the production of those through various schemes with the local farmers.

## **Chapter 3**

### **Research Methodology**

#### **3.1 Research Objectives**

- To explore the diverse variety of indigenous grains cultivated in the Baksa district of Assam.
- To study how the introduction of High Yielding Variety (HYV) Seeds have managed to replace the indigenous grains in the area.
- To explore the market and price conditions of the indigenous rice grains.
- To find out how the green revolution has effected in various aspects of human life'

#### **3.2 Research Question:**

In the course of my research, there were many instances when local farmers were keen to share their experiences. My field area was interesting because most farmers had given up saving local varieties of seed. However, farmers said that the local market (Singra), situated 20 km from Barama (core field area), was known to have many local varieties. The farmers often mentioned that it was difficult to keep the local seeds for a lot of reasons. Given the confusing and complicated responses, I framed the following research questions:

- What is the status of indigenous rice gain cultivation in Baksa district of Assam?
- What are the crops do you cultivate or plant other than rice?

- What are the types of indigenous rice grains are cultivated in Baksa district of Assam?
- What is the impact of introduction of HYV rice seeds on the indigenous rice grain cultivation?
- What is the impact of green revolution in various aspects of human life?

### **3.3 Research Methodology**

This study is purely a qualitative research designed to find out the endangered or extinct indigenous rice grains due to the adoption of modern high yielding rice varieties by the small and landless farmers in Baksa district of Assam. The methodology of obtaining valuable primary data has been designed in such a way keeping in mind the limitations of the qualitative data. The methodology adopted for the purpose of this study is purely qualitative. The materials used in this study include both primary and secondary data collected from multiple sources. The primary data has been collected by conducting in-depth interviews with the rural farmers in Baksa districts. The interviews were conducted with the small and landless farmers in a two villages under Barama Development Block. A semi-structured questionnaire method was used in order to collect the primary data. Secondary data were also collected from various sources to supplement the views and opinions from the field. Few of the secondary information are collected from the Agriculture Department office of Baksa district.

### **3.4 Collection of Data**

The primary data was collected in the month of January and February, 2014. Two semi-rural villages named Bhogpur (Naktipara) and Juluki in Barama Development Block were selected as field area. The sample for the study was selected keeping in mind certain factors. The criterion for the selection of respondents was those farmers small or landless who have been engaged in farming for the last twenty years or even more than that who has been farming since his early days. The data was collected through one-to-one interviews. In the beginning it was designed to collect randomly but it failed because due to the inability to meet groups and obtain information. The method of data collection was hence redesign to adopt different methodology. Later on snow ball sampling method was adopted where different people were met at different locations during friendly chat and

unknown people helped in the process of data collection where they shared information and suggested names of the small as well as landless farmers.

### **3.5 Data Analysing**

The data collected is of qualitative in nature. Hence, a qualitative analysis has been adopted while seeking answers to the research questions of the study. A semi-structured questionnaire was used to gather information and further analysed. The experience and opinions of various respondents were segregated into different themes. Tables have been used to present the data collected from the small farmers and Agriculture department officials of Baksa district.

### **3.6 Limitations of the study**

This study is primarily designed to understand the endangered and extinct indigenous rice varieties cultivated by small and landless farmers in two semi-rural villages of Barama Development Block in Baksa district of Assam. The farmers interviewed for this qualitative study even fails to recall many of the rice grains people used to cultivate in the past.

### **3.7 Profile of the State:**

Assam is located between 24° N and 28° 18' N latitude and 89° 4' E and 96° 0' E longitudes. As one of the seven states of the Northeast India, it is surrounded by states Meghalaya, Tripura, Manipur, Nagaland, Mizoram and Arunachal Pradesh. It also shares international border with countries like Bangladesh in the south and West Bengal in the west and Bhutan and Aurnachal Pradesh in the North. The state in all directions is surrounded by many hills. As per the 2001 census the total geographic area of Assam is 78523 sq. kms with a population of 2.6 crores.

The state has 27 districts covered with full of natural resources. There are two hill district areas and four districts under Bodo Territorial Council. The state can be divided into three distinct regions the Brahmaputra valley, the Barak valley and the hill region

The total population of the state according to the census of 2011 is 31.2 million. The sex ratio is 958 women for every 1000 men that shows 15.9 million are men and 15.2 million are women. The density of population is 398 persons per square kms (census of India 2011). For the sex ratio, the number is 958 women for every 1000 men in the state (census of India 2011). The urban and rural population is 14.08 and 85.92 (census 2011). According to rural development statistics total SC population is 27.43 lakhs and ST of 35.03 lakhs in 2009-2010 (GOI, NSSO, Primary data (2009-2010)). 11.55% and 14.75% of SC and ST population resides in rural areas of Assam.

There are two main rivers namely Brahmaputra and the Barak flowing through the state. The two rivers have 40 and 7 major tributaries each. The Brahmaputra valley occupies the largest area of about 5.6 million ha with 24 administrative districts while the Barak valley is about 0.7 million with three districts. The Barak River flows from east to west through undulating plains. The two hill districts namely Karbi Anglong and North Cachar Hills occupies about 1.5 million ha. Thus the state has three distinct physiographic units- the plains, the plateaus and the hills.

The economy of the state is mainly based on agriculture but compared to other states the overall growth rate of agriculture is low. With such a growth rate it is not sufficient to generate surplus for investments in other sectors or deliver purchasing power in rural sector. The use of advance technology in agriculture is still in its initial stage with poor irrigation facilities besides the land holdings are fragmented almost every year (HDR, 2013). With minimal crop diversification the inadequacies cripple the growth of the agricultural sector. The growth of the economy is very low because the industrial infrastructure is at the emerging stage. Oil and tea are two major industries of the state.

The education index has also increased from 0.516 (1999-2000) to 0.636 (2007-2008) registering an improvement of about 23 %. It is however, a matter of concern that improvement in the health index of the state has not been as impressive as income and education index. The health index, which was 0.339 (1999-2000) has risen to 0.407 (2007-08) indicating an increase of about 20 % during the period, which nevertheless, higher than the relative national increase of 13 % during the same period. (Chief Ministers vision for women and children 2016 vision). The infant mortality rate has been reduced considerably in Assam. As per the SRS (December, 2011), Infant Mortality Rate (IMR) in Assam (2010) is 58 per 1000 live births against 47 for the country as a whole. But the

IMR has improved considerably during 2000-2011. In 2000, the IMR for the state was 74.5 against the all India figure of 67.8. There has been improvement by 22 % in Assam vis-a-vis 30 % for the country. This improvement is due to continuous and multipronged initiatives of the government. Despite a marginal reduction in the Infant Mortality rate from 61 per 1000 live births (2009) to 58 per 1000 live births (2010), Assam continues to rank among the four highest IMR states in the country, next only to Madhya Pradesh (62 per 1000 live births), Uttar Pradesh and Orissa (61 per 1000 live births) and far higher than the national average of 47 per 1000 live births. Within the North East region, all the other states have better IMR as compared to Assam. According to the SRS (July, 2011) and the TFR in Assam (2009) is 2.6 which is at par with the all India level, the TFR in rural (2.8) areas of the state is higher than the urban areas (1.5). Since, 2001, the TFR in the state is showing a secular decline from 3.0 to 2.6, the rate of decline being equivalent to the national level. The fertility rate is close to the all India average at 2.6, with the birth rate (21.9) and death rate (7.2) lower than the all India average.<sup>13</sup>

According to the Annual Plan of Assam the urban poverty is 21.8% and the rural poverty is 36.4%. The above percentage shows that rural poverty is more than the urban poverty. Since 1982 till 1999-2000 the absolute poverty increased to 9.5 million and the percentage of people was 36.09%. (Ministry of Urban Development and Poverty Alleviation, GOI as cited in HDR, Assam 2003).

### **3.8 Profile of the Sample district:**

According to the Government of India's district profile of Baksa, it is mentioned that this district was formed following the formation of the Bodoland Territorial Council accord signed on 2003 with four other districts. The Bodo's believed that "Baksa" is originally "Bagsa" is name originated from a kind of rice grain. It is a kind of broken and uncleaned rice grain which is gained after milling the rice.<sup>14</sup>

According to another source the "Bagsa" is originated from the Bhutanese language e denoted as "Bagsa Duar". "Bagsa" means one kind of rice and "Duar" means entrance point. It was also assumed that "Baksa" is the misspelt from of 'Bangsa' and 'Dzonkha' which means farm house. It was believed to be one of the corridors of

---

<sup>13</sup> [http://planassam.info/Chief\\_Minister\\_Vision\\_for\\_Women\\_Children\\_2016.pdf](http://planassam.info/Chief_Minister_Vision_for_Women_Children_2016.pdf) (Accessed on April 10, 2014)

<sup>14</sup> <http://baksa.gov.in/index.html> (accessed on April 10, 2014)

Bhutanese king and subjects for trade and passage to the plains. The name Baksa is officially accepted now. At present the inhabitants in this district are communities like Bodo-Kachari, Assamese, Sarania-Kachari, Koch-Rajbonshi, Adibashi(Tea Tribe). There are Bengali, Nepali and religious minorities also.<sup>15</sup>

The district is covered by lush green forest and varieties of flora and fauna shows the richness of the vegetation. The soil is also rich for various types of crops for cultivation. The cultivation in some areas is also affected by floods caused by the Paglayadiya River. The climate of the district is sub-tropical in nature with warm and humid summer and also followed by cool and dry winter. The average rainfall of the district is found to be 76 mm in the recent years.<sup>16</sup>

---

<sup>15</sup> <http://baksa.gov.in/index.html> (accessed on April 10, 2014)

<sup>16</sup> <http://baksa.gov.in/index.html> (accessed on April 10, 2014)

## Chapter 4

### Analysis and Interpretation of Data

#### 4.1 Introduction

This chapter presents the analysis and findings of the study. The findings have been categorised under the following heads:

##### A) Names of Various Indigenous Rice Grains given by the farmers:

All the farmers shared in their interaction that there are two main types of cultivation Sali and Ahu which again have different varieties.

The following figure-I describes the varieties of Sali type cultivation in Assam:

**Figure I**

<b>Names in Bodo</b>	<b>Names in Assamese</b>
Tengari mai	Tengrai
Potaisuri mai	Phulphagri
Pani khali mai	Pani khali
Kalom Dani mai	Kalom Dani
Jousa	Jousa
Tangaburi	Phulgas
Maima mai	Bordhana
Kheungkhua mai	Baudhan
Chamraj	Chamraj
Jwsa mai	Jaha
Thulungsi Jwsa	Thulungsi Jaha
Nepali Jwsa	Neplai Jaha
Koli jwsa	Koli Jaha
Tupra Jwsa	Dhunja Jaha
Siali jwsa	Khiali Jaha
Bollam Jwsa	Bollam Jaha
Maibra mai	Bora
Maima mai	Bordhana

Mai nagri	Nagri
Boka	Boka

*Sources: The researcher's compilation of rice varieties after the field visit*

The different varieties of Ahu rice are:

**Figure II**

<b>Names in Bodo</b>	<b>Names in Assamese</b>
Bamjura	Gaithajura
Dubisenga	Dubesia
Julbulia (extinct)	Julbulia (extinct)
Ekra	Ekra
Boga ekra	Boga ekra
Khorma	Khorma
Maima mai	Bordhana
Kheungkhua mai	Baudhan
Chamraj	Chamraj
Jwsa mai	Jaha
Thulungsi Jwsa	Thulungsi Jaha
Nepali Jwsa	Nepali Jaha
Koli jwsa	Koli Jaha
Tupra Jwsa	Dhunja Jaha
Siali jwsa	Khiali Jaha
Bollam Jwsa	Bollam Jaha
Maibra mai	Bora
Maima mai	Bordhana
Mai nagri	Nagri
Boka	Boka

*Sources: The researcher's compilation of rice varieties after the field visit*

**(B) Some Names of the High Yielding Variety Rice Grains shared by the farmers:**

**Figure III**

<b>Names</b>
Mukta
Moniram
Lucky
Aijung
Baismati
Ranjit
Bahadur
Eri
Sapor Aijung
Pausa
Bihari

*Sources: The researcher's compilation of rice varieties after the field visit*

**C) Seasons and Climatic Conditions:**

The farmers usually follows the Assamese calendar to keep track of the seasons and climatic conditions to start ploughing the field and sowing the seeds. The year in the Assamese calendar begins from the month of April, it starts raining in this month and the paddy field is filled with water making it suitable for the cultivation of the Sali varieties of rice grains. As the Sali varieties of rice grains needs more water to survive and breed are cultivated in the month of “Khoun”<sup>17</sup> and harvested in the month of “Pouh”.<sup>18</sup>

The Ahu varieties are sowed after the harvesting of the Sali variety cultivation. This variety is more suitable in the dry season and is cultivated in the month of “Syat”<sup>19</sup> and harvested in the month of “Ahin”<sup>20</sup> and khoun”.

**D) Present Status of the Indigenous Rice Grains:**

---

<sup>17</sup> Khoun starts from second week of July in English Calendar.

<sup>18</sup> Pouh starts from second week of December in English Calendar.

<sup>19</sup> Syat starts from second week of March in English calendar.

<sup>20</sup> Ahin starts from of third week of September month in English Calendar

Most of the farmers have stopped cultivating the indigenous rice grains due to various reasons. Currently, many farmers cultivate the high yield variety seeds such as Joya, Pusa, Baismati, Aijung (Sapor Aijung), Mala, Porimol, Bahadur and Ranjit etc. Among all these varieties the farmers cultivate Baismati, Aijung and Bahadur. The reasons as shared by the farmers are:

### **(1) Difference in the Quantity of Rice Production**

The production of varieties of the Sali cultivation is eight to nine mounds per bigha whereas the production of different high yield variety seeds provides them sixteen to eighteen mounds per bigha. Therefore the farmers are attracted more on the high yield varieties as they look for more production. If the small farmers need sufficient rice grains by cultivating the indigenous rice grains whole through the year than they have to cultivate both Sali and Ahu every year. The production of both the type makes a family of a small and landless farmer sufficient with rice grains acquiring nine to ten mounds from Sali per bigha and other eight to nine mounds per bigha from Ahu. But as the farmers have stopped cultivating the Ahu variety due to various problems they face in that season as cultivation of Sali do not give them sufficient rice grains to sustain whole through the year. The big farmers need not worry even if they cultivate only the Sali because they have more bighas of land which gives them more production for consuming in the family and sustain whole through the year. Therefore they prefer cultivating the high yield variety ones which gives them sixteen to nineteen mounds per bigha which becomes sufficient for the family by cultivating only once a year. In the other season the land almost remains barrel and some farmers prefer producing cash crops or vegetables.

### **(2) Unavailability of Labour**

The farmers have stopped cultivating the Ahu rice varieties due to lack of labour to harvest the paddy. It is because the harvesting season of the Ahu paddy is rainy that makes it difficult for the labourers to go to the paddy field through the muddy water to harvest the paddy. Again the labourers have to take back the same muddy water route carrying the harvested paddy to the house. It needs extra physical energy for the labourer stamping the muddy water to go the paddy field distributed by lots of leeches in the water. Therefore the labourers hesitate to do such work in that particular season preferring to look for other easy jobs. It becomes very difficult for the farmers to find labourers in this season to harvest

due to this reason. Besides everything winnowing the grains from the hay is also big problem for the farmers to run the rainy season.

### **(3) Extinction of other crops**

Kala, Musur, Motor and Tece (oil seed) etc are the other crops that the farmers grow other than paddy. It is not that difficult to grow these crops plantation as the farmers spread the seeds in between the paddy in the paddy field before the harvesting of the Sali rice varieties. It grows by itself and not much care has to be taken except keeping away the cows and goats. The farmers have stopped planting because they find difficulty in winnowing the seeds from its plants. These crops are value added in a household economic condition because it can sold in the market for a good price and even consumed at home. The Kala, Musur and Motor are consumed as curry with the rice and the Tece (oil seed) is used for oil that can be used for cooking. As if a family is free from curry and cooking oil from buying they saves money as also self sustained with the resources from their own paddy field and kitchen gardens.

### **(4) Other Reasons**

Some farmers have stopped cultivating Ahu because all other farmers have stopped cultivating it due to various reasons. If a farmer alone cultivates Ahu all the birds come and eat the newly produce grains and destroys his whole paddy. Earlier when every farmer cultivated the Ahu, it was available for the birds to eat in the whole paddy field and they could not destroy the cultivation.

### **(5) Unfavourable Government Policy**

The Government has introduced a policy of procuring rice grains and other food items from the people providing a minimum support price to them. Those food items are being sold in the public distribution system in a subsidized price to people belong to Above Poverty Line (APL), Bellow Poverty Line (BPL) and Antodaya Anna Yojna (AAY). The food items are bought through the Food Corporation of India and distributed all over the country. This scope of procuring food items by providing minimum support price in not been implemented in the north-eastern part of India including Assam. The Food Corporation of India do not want procure the rice grains from the states belonging to northeast India claiming that the moisture content in the rice grains in this region more.

Due to the high percentage of moisture content in the rice grains it cannot be stored for longer period of time.

This hesitance of the Food Corporation of India to buy the rice grains have left the farmers of the region nowhere finding any proper market to sell their produce. On the hand the fair price shops in Assam sells the rice grains in the PDS that is being imported from states like Hariyana and Punjab. Those rice grains are sold in a subsidized price which made the poor people attracted to buy ignoring the rice grains that is being produced locally by the farmers belonging to this region. This has made the farmers of the region to incur losses in their production. It also made the local farmers to lose interest in cultivation and migrate to cities to find jobs for their livelihood.

**(D) The Varieties Cultivated Currently in the Region:**

Most of the farmers uttered the names of aijung,<sup>21</sup> ranjit<sup>22</sup> and baismati<sup>23</sup> as they have been cultivating these three varieties since few years. These three varieties are the high yielding variety and the quantity of production is more and has a demand in the market. As shared by a farmer they sell the aijung and basmati at Rs. 200/- per mound few years back which they sell at Rs. 600/- per mound at present. From that example one can imagine the speedy increase in its commercial value.

Among the local varieties most of the farmers cultivate bordhana (maima in bodo), jaha (jwsa in bodo) and bohni (maibra in bodo) and the rest varieties are cultivated sometimes but very rare. These varieties are cultivated as they are required for making pitha (a snack made of rice by every community in Assam), Jou<sup>24</sup> (called by different names in different communities).

**(E) Familiarity with the term Green Revolution:**

It is the beginning stage of the green revolution in northeastern states of the India. The agriculture department in Assam especially in Baksa district is initiating its implementation through pilot projects. The farmers that the researcher has interacted with

---

<sup>21</sup> Aijung is a variety of high yielding rice.

<sup>22</sup> Ranjit is a variety of high yielding rice.

<sup>23</sup> Baismati is a variety of high yielding rice.

<sup>24</sup> Jou in bodo language is the local drink made of rice. It is also called in different terms by different communities.

are not familiar with the term Seuj Biplab (Green Revolution) neither have they had any idea about it. They only know that the agriculture department comes for survey to their villages and spreads awareness of forming a Pothar Porisalona Committee. But the farmers are aware that too much use of fertilizers and pesticides will spoil the fertility of their soil.

## **Chapter- 5**

### **5.1 Conclusion**

With the introduction of the High Yield Variety Seeds most of the farmers have inclined to adopt its cultivation. The farmers have gained more interest in the High Yield Variety Seeds as they gain more in terms of produce than the indigenous rice varieties. As a result many of the indigenous variety seeds are in the endangered position and many have already extinct. Such state of getting endangered and extinct is not a good symbol as the indigenous varieties have cultural significance to our society. It is even tastier to consume than the High Yield Variety ones. Therefore research to develop in the traditional method to for better production must be initiated and also linked with better market. Such research initiatives would encourage the farmers to cultivate the indigenous varieties by which they can be benefited as well as conserve the indigenous variety of rice grains.

Currently, the farmers believe that everything depends upon the individuals and how they prefer to accept things. On the observation of the researcher, the farmers of this region are still unaware of the side effects that societies of the other states have faced due to green revolution. Besides the agriculture department is very much positive about the implementation of a green revolution in the state. If the people accept the green revolution and the agriculture department uses similar methods as they have done in the other states, even Assam and other northeastern states have to face similar consequences like other states like Punjab and Haryana. The region not only will have serious health issues, degradation of the fertility of the soil but also lose all its indigenous varieties of paddy. It will open the field for the genetically modified seeds and make the corporate houses rich.

If this were to happen then it is the local tribal small farmers in backward districts like Baksa who will suffer the most. As it is, since they have lost most of their indigenous seeds, they are no longer self sufficient in the production of rice. They have to depend a lot on the agriculture department and the government to keep alive the practice of farming and agriculture in the area. As the indigenous varieties disappear, fewer people are willing to take to agriculture as their livelihood. The memories of childhood, with all the different kinds of local food and rice will then give way to only one kind (or maybe just a few kinds) of rice that taste the same throughout the length and breadth of the country. This will be bad for the country's agricultural and cultural diversity.

**Reference:**

Ahmed, T Chetia, SK., Chowdhury, R. and Ali, S. ND, Status Report on Rice in Assam, Titabor: Regional Agricultural Research Station.

Brown, R. (1874), *Statistical Account of Manipur*. A Mittal Publication

Gogoi, Jahnabi. (2002) *Agrarian System of Medieval Assam*. New Delhi: Concept Publishing Company.

Hore, D.K. (2005) Rice diversity collection, conservation and management in north-eastern India, *Genetic Resources and Crop Evolution*. Springer, 52:1129-1140.

Ngachan, S. V., Mohanty, A. K., and Pattanayak, A. (n.d) Status Paper on Rice in North East India, Hyderabad: Directorate of Rice Research. Retrieved from: <http://www.rkmp.co.in/sites/default/files/ris/rice-state-wise/Status%20Paper%20on%20Rice%20in%20North%20East%20India.pdf>  
(Accessed on April 10, 2014)

Ravindran, Radhika. (1986) *Choice of Technology: A Sociological Case Study of the Green Revolution*. Centre for the Study of Social Systems School of Social Sciences, Jawaharlal Nehru University.

Shiva, Vandana. (2000) *Stolen Harvest: The Hijacking of the Global Food Supply*. Cambridge: South End Press.