



A PROJECT REPORT

ON

PADDY CULTIVATION: A CASE STUDY OF JAIDOH, WESTKHASI HILLS DISTRICT, MEGHALAYA.

SUBMITTED IN PARTIAL FULFILLMENT OF VI SEMESTER GEOGRAPHY PRACTICAL EXAMINATION, NEHU, SHILLONG FOR THE ACCADEMIC SESSION 2023-24

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CERTIFICATE

I, **EBENNEZER L. LYNCKHOI**, hereby declare that the subject matter of the Project work entitled **"Paddy Cultivation of Jaidoh Village, West khasi Hills District, Meghalaya"**, is the record of work done by me. The contents of the work did not form the basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and the same has not been submitted elsewhere for any Degree.

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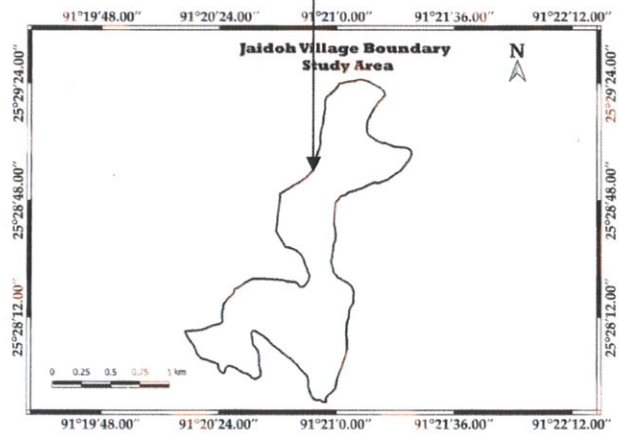
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Contents

Page

Chapter 1		
1.1 Introduction	_____	1
1.2 Statement To The Problem	_____	2
1.3 Objective	_____	2
1.4 Data Source And Methodology	_____	2
1.5 Literature Review.	_____	2
Chapter 2: Background of the Study Area		
2.1 Profile of the Study Area	_____	4
2.2 Location of the Study Area	_____	4
2.3 Relief	_____	4
2.4 Drainage	_____	4
2.5 Climate	_____	4
2.6 Natural Vegetation	_____	5
Chapter 3: Analysis & Interpretation of Paddy Cultivation in Jaidoh village		
3.1 Introduction	_____	6
3.2 Methods and Technique of Cultivation and Harvesting In Jaidoh	_____	8
3.3 Implements Used for Paddy Cultivation	_____	9
3.4 Production & Productivity Levels of Rice in Jaidoh Village	_____	11
Chapter 4:		
4.1 Findings and conclusion	_____	13
4.2 References	_____	16

Location Map of Jaidoh



List of Figures:

1. Location Map of Jaidoh
2. Indigenous Varieties of Rice in Jaidoh village.

List of Tables:

1. Monthly Rainfall of Nongstoin in mm
2. Land preparation table of Jaidoh village
3. Production & Productivity level of rice in jaidoh village

List of Plates:

1. Paddy Field
2. Pig Sty
3. Students interviewing with locals
4. Squash plantation field
5. Plantation area
6. Students interviewing
7. Students along with Teachers in Jaidoh village

Chapter 1

1.1 INTRODUCTION

Agriculture is the human enterprise by which natural ecosystem is transformed into ones denoted to the production of food, fibre and increasingly fuel. Agriculture, the leading primary economic activity may be defined as the deliberate tending of crops and livestock in order to produce food and fibres. Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. So also, it is the backbone of the economy of North-eastern states of India in terms of employment and it shares in the Net State Domestic Produce (NSDP). Rice cultivation is one type of agriculture which falls under intensive subsistence agriculture. However there exist other crops being cultivated. But rice serves to be a dominant crop. Cultivation of rice in the north eastern states can be done in different techniques either in paddy fields, terrace farming or uphill cultivation (dry rice).

Rice is a monocotyledonous angiosperm. Rice belongs to the genus **Oryza**, which contains more than 20 species, only two of which are referred to as cultivated rice:

- **Oryza sativa**, cultivated in South-east Asian countries and Japan,
- **Oryza glaberrima** is cultivated in West Africa.

Rice belongs to the family **Poaceae** and has two major subspecies which are called **Japonica** and **Indica**

- **Japonica** is a sticky, short grained type of rice, usually cultivated in dry fields.
- **Indica** is non-sticky and long-grained type of rice and is mostly grown in submerged fields.

Both types have many different varieties. It is usually grown as an annual plant, but in the tropics it can be grown as a perennial.

Rice was originally cultivated in tropical Asia, the oldest record dating 5000 years BC, but then extended also to temperate regions.

Rice is the most important staple food in Asia. More than 90% of the world's rice is grown and consumed in Asia, where 60% of the world's population lives. Rice account for between 35-60% of the caloric intake of three billion Asians.

Rice is a major food staple and a mainstay for the rural population and their food security. It is the second most cultivated cereal crop worldwide and is central to the lives of billions of people around the world. Rice prefers a tropical or warm climate, with a lot of rainfall. But if irrigation water is available, rice can also be grown in drier areas or during dry season. Rice is usually a self-pollinating plant, but cross pollination by wind is possible. Depending on the variety and soil, rice plants are usually between 1 and 1.8 meter tall. Rice is usually grown on heavier soils that have a good water holding capacity.

1.2 STATEMENT TO THE PROBLEM

Paddy cultivation is one of the most important economic and primary activities of the people of North Eastern States of India. It serves as their main bread earning activity. Even though there are similarities in terms of agricultural practice i.e. (rice cultivation) in both the districts. However there are some difference based on the local climate conditions, mode and methods of cultivation, techniques, soil factor and so on and hence these two areas produce rice which are different from one another and so the main aim and focus of the study is to find out these differences and to based them on either the physical factors or the human factor or both and hence draw conclusion from there.

1.3 OBJECTIVE

- To identify the different variety of rice and production.
- To identify and differentiate the tools/ machines techniques for rice cultivation.

1.4 DATA SOURCE AND METHODOLOGY

The main source of data is primary data through the method of a questionnaire and schedule which is undertaken to have an understanding on the study area and to get an insight on the topic studied. Secondary source from books, magazines, journals are also used.

1.5 LITERATURE REVIEW

Rice is one of the most important food crops and feeds more than 60 per cent population of India. The area under rice crop was 30.81 million/ha in 1950-51 which has increased to 43.86 million hectares during 2014-15 which is nearly 142

per cent higher. The rice production has registered an appreciable increase from 20.58 million tonnes in 1950-51 to 104.86 million tonnes during 2014- 15, which is nearly 5 times. The yield was 668 kg/ha in 1950-51 which has increased to 2390 kg/ha during 2014-15. It is grown under diverse soil and climatic conditions the productivity level of rice is low compared to the productivity levels of many countries in the world. Also about 90 % of the cultivated land belongs to Marginal, Small and Medium farmers which are another constrain in increasing the productivity of rice in the country. There is ample scope to increase the productivity of rice in the country. Cultivation of hybrid rice has potential to increase the productivity and needs to be promote

Rice Growing Regions:

The rice growing areas in the country can be broadly grouped into five regions as given below:

- i. **North-Eastern Region:** This region comprises of Assam and North eastern states. In Assam rice is grown in the Basin of Brahmaputra River. This region receives very heavy rainfall and rice is grown under rain fed condition.
- ii. **Eastern Region:** This region comprises of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Eastern Uttar Pradesh and West Bengal. In this region rice is grown in the basins of Ganga and Mahanadi rivers and has the highest intensity of rice cultivation in the country. This region receives heavy rainfall and rice is grown mainly under rain fed conditions.
- iii. **Northern Region:** This region comprises of Haryana, Punjab, Western Uttar Pradesh, Uttarakhand, Himachal Pradesh and Jammu & Kashmir. The region experiences low winter temperature and single crop of rice from May-July to September December is grown.
- iv. **Western Region:** This region comprises of Gujarat, Maharashtra and Rajasthan. Rice is largely grown under rain fed condition during June-August to October - December.
- v. **Southern Region:** This region comprises of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. Rice is mainly grown in deltaic tracts of Godavari, Krishna and Cauvery Rivers and the non-deltaic rain fed area of Tamil Nadu and Andhra Pradesh.

Chapter 2: Background of the Study Area

2.1. Profile of the study area:

The Jaidoh Village is located in Nongstoin C&RD Block, West Khasi Hills district, Meghalaya. It has a total number of 130 household with a population of 812, (419 males and 393 female) which account 51.6% male and 48.3% female. The sex ratio of Jaidoh village is 937 female per thousand males which is lower than that of the national level which is about 943 female. The total literacy rate of the study area is about 73.2 %.

2.2 Location of the study area

The latitudinal extension of Jaidoh is 25°27' 45" North to 25° 29' 26" North and the longitudinal extension is 91°20'13" East to 91°21'23" East. It is a part of Nongstoin Block. It is about 12.5 km away from Nongstoin the district headquarter of West Khasi Hills District and 85.3 km away from Shillong which is the Capital of Meghalaya. It is bounded by Nonglwai in the east, Mawthungkper in the West, Nongkynjang in the North and Marshan Nongrim in the South. It covers an area of 1.878 Sq/ Km's.

2.3 Relief

Jaidoh covers mostly with gentle slopes, this covers the North, the north east and the south with height of 1410 meters above sea level to 1430 above sea level. The contour difference in the gentle slope is about 30 meters. Steep slope can be seen only in the north western part with a height of 1430 to 1480 meters above sea level. The lowest elevation of Jaidoh is 1410 meters above sea level and the highest is 1480 meters above sea level.

2.4 Drainage

Drainage system is one of the main factors which shape agricultural land use. The main river of the study area is the Kynshi River which is situated in the eastern part of the village. This river goes through from north to south. This river is a perennial river. This river provides water for many purposes, either for agriculture, drinking, and domestic uses or for other purpose. There are many small streams in the village, some of them are perennial streams, and some are non-perennial streams. When we look at the pattern of these streams, they are mostly dendritic pattern, this shows that these rivers go according to the slope of the land.

2.5 Climate

The climatic conditions of the study area are similar to that of the West khasi Hills District. It experienced four distinct seasons that is, spring, summer, autumn and winter. Its climate is being affected the relief of the region. It experienced a monsoon climate with a warm rainy summer and a cold and dry winter. The average temperature of the coldest month and hottest

month is 17°C and 24°C respectively. The region experience low rainfall during winter with 0 mm during December and the highest rainfall is experience during the month of July with 1567.6 mm.

Table No 1 Monthly rainfall of Nongstoin in mm

Month	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Rainfall	14.6	21.1	42.8	258	430.8	877.2	1567.6	401.2	752.8	293.8	11.4	0	4671.3

Source: Directorate of Agriculture Meghalaya, 2020

2.6. Natural Vegetation: Natural vegetation of the project area is fairly poor due to tremendous biotics such as recurring fire hazard, timber, fuel wood and charcoal burning etc. The area consists mostly of degraded and open forest with scattered pocket of trees.

CHAPTER 3:

Analysis & Interpretation of Paddy Cultivation in Jaidoh Village

3.1. Introduction

Indigenous varieties of land paddy are cultivated especially in the hill state in jhum lands (slash or burn fields), pan kheti (wet rice cultivation) and dry rain fed cultivation. In the study area wet rice cultivation is practiced. Whereby the fields are plough with the help of bullocks and buffaloes and also the use of tractors and power tillers in the recent years.

The arable land in the study area is dedicated to the cultivation of paddy because it serve as a source of livelihood to the villagers of the study area, the paddy produce is self consumed without any surplus left be sold in the local market. This is due to the fact that consumption exceeds production and hence there is no surplus left. The production of paddy differs from one farm to another. The usage of fertilizers and manures also differs. In Jaidoh village the percentage of farmers using fertilizers exceeds the ones using organic manures i.e. 70% uses fertilizers the rest 30% uses organic manures. In Jaidoh village about 55% uses human labour and 45% uses power tiller.

Name of village	Nursery preparation	Field preparation	sowing	weeding	Harvesting
Jaidoh	May-June	June-mid July	July	September-midOctober	November-December

Table.1: Land preparation of Jaidoh village

From here we can see that there are differences in the pattern and the periods of land preparation right from the nursery management to the period of harvest. The main factors for this difference is the onset of rainfall, the intensity of rainfall and the amount of rainfall received by these areas. Even the intensity of rainfall differs, apart from rainfall; the edaphic factor also plays an important role. In Jaidoh, the types of soil are of clayey and loamy in texture and hence these types of soil can retain water up to a long extend thereby not indulging the local farmers to begin paddy cultivation.

Indigenous varieties of rice in Jaidoh village

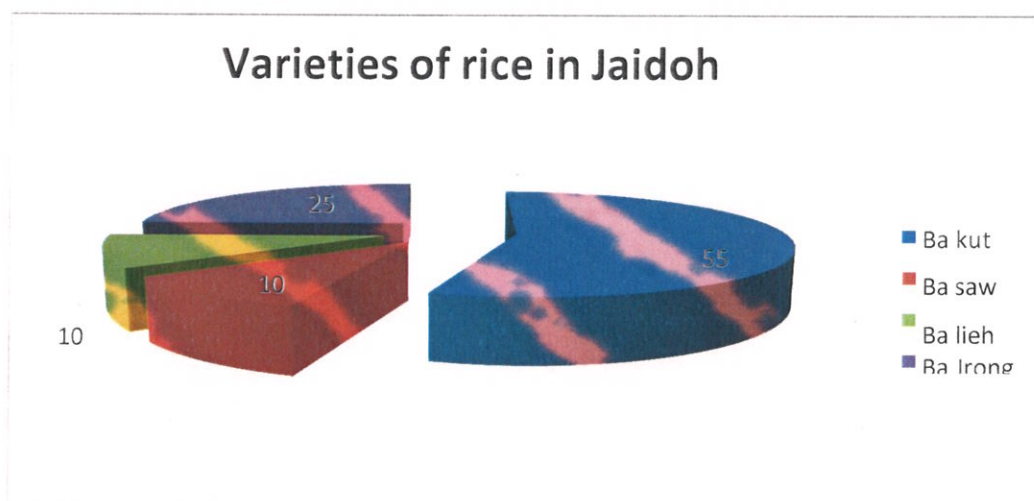


Fig.1 varieties of rice in Jaidoh village

The figure 1 shows the percentage share of variety of rice cultivated by the farmers of Jaidoh village in which 55% of the farmers cultivate 'Ba Kut' due to its high productivity and higher resistance to pest and insects.

3.2. Methods and techniques of cultivation and harvesting of rice in Jaidoh village

Jaidoh village is an agglomeration of villages and also in this area rice is the staple food crop where majority of the farmers practiced paddy culture, however majority of the villagers also practiced other agricultural practiced where Potato and Squash are the main crop usually for cash benefits and also for own consumption. Focusing on the paddy cultivators, here are some of the types of paddy grown in this area Kba Kut, Kba lieh, Kba Jrong and kba Saw.

Preparation of the land

1. **Seed Bed Preparation:** The seed beds are being prepared in a plot of land situated near the paddy field. Making buns and also spreading the seeds in the buns. The preparation of the seed bed usually starts from the month of May till mid June.
2. **Nursery Management:** the seeds are left to germinate fully and it takes a period of two to three weeks for full germination from the period of sowing. In similar fashion the germinated paddy are transferred to the paddy field once the paddy field are ready
3. **Preparation of the Field:** the field are prepared right from the month of December January by storing the water in the field channeled from the nearby water system be it a stream or a river. Ploughing of the field is usually done during the month of May or June .ploughing of the field is carried out either with the help of tractors or by human labour. The fields are plough twice before sowing. The first is done to break down the soil and the second is under taken right before sowing and this involves the leveling of the paddy fields. Excessive water is usually drained out to avoid destruction to the crops.
4. **Transplantation:** once the seeds are fully germinated they are transplanted to the field. Before sowing the paddy some fertilizers and insecticides are used in the field namely urea, DAP (diammunio phosphate). The paddies are sown in the wet field during the month of June till mid July. The paddies are sown by hand and the same process is carried out as in the village of Jaidoh.
5. **Weeding:** the process of weeding is carried out during the month of August and beginning of September. The work is carried out by both men and women and usually of family members as the farmers cannot afford to employ

laborers. As they themselves are poor the process of weeding usually takes up to a period of one month in some cases but in other cases it takes usually about three weeks. Unwanted growth in the paddy fields is removed by hand.

6. **Harvesting:** the process of harvesting begins from the month of September and ends in the month of November. The fields are dried up before harvesting. In a similar fashion of harvesting the paddy straws are cut from the field and are stocked in one place for threshing. The process of threshing involves beating up the hay stacks onto rocks and thus this process removes the paddy from the hay stacks and the final product are packed in packages.

3.3. Implements Used For Paddy Cultivation

Various implements are used for paddy cultivation by the farmers and village people in Jaidoh. This implement serves great purpose in the preparation of the land to weeding and harvesting. The implement varies from simplest to modern day tools.

The following are the implements used for paddy cultivation

- I. **Hoe:** locally known as '*mohkhu*' is commonly use in shifting cultivation. This is also used in preparing of the field for digging and ploughing the field.
- II. **Spade:** the spade locally known as '*lyngka*' is used for making canals in the paddy field and also for digging.
- III. **Dao:** the dao is used during the initial stage of land preparation to remove unwanted growth in the field as well as in the nursery field.
- IV. **Knife:** there are different types of knives; however the one which is used here is locally known as the '*rashi*' which is used to sever the paddy stem from the stalk.
- V. **Bamboo basket:** bamboo basket locally known as '*shang*' is used for carrying the paddy, they are round in shaped with an open wider upper end and it is small in size. These small baskets are used for measuring the rice.
- VI. **Bullocks:** they are used for ploughing the field with the help of a tool known locally as a *lyngkor* which is attached to the bulls with the help of a rope. Apart from these traditional inputs there are also other inputs such as the

tractors and also the use of fertilizers, insecticides and fungicides.

Tractors: the use of tractors and power tillers shows the transition from bullocks to the use of machines. The use of tractors helps in the limited time consumption and reduces the time required for ploughing the field. The cost of this type of input ranges from Rs 300 per hour to Rs 350 per hour depending on the availability of these machines.

Urea: Urea is widely used in fertilizers as a source of nitrogen. This is commonly used in Jaidoh village whereby majority of the farmers use urea in their paddy field in order to increase production. Due to the low productivity of the sandy soil, the nutrient is enhanced by inputs of urea in the field and which ranges from 1 kg to 100 kg of urea depending on the size of the paddy field. And it is used before sowing of the paddy in the field.

3.4. Production and productivity level of rice in Jaidoh village

In Jaidoh village varies depending on the differences in the climatic conditions and other natural factors like pests and insects etc and also the uses of fertilizers to enhance the productivity. Productivity differs from one household to another within the same village and hence the productivity differs as the total area under cultivation. The tables below give the paddy productivity of 20 households from each village.

Table3.4. 1: Jaidoh paddy report

Household no	Area in hectare	Production in kilogram	Yield kilogram /hectare
1	0.1845	250	1355
2	0.5784	800	1383
3	0.4129	750	1816
4	0.2910	300	1030
5	0.3797	650	1711
6	0.9411	1900	2018
7	0.3790	700	1846
8	0.3480	550	1580
9	0.1803	200	1109
10	0.4895	900	1838
11	2.428	3500	1411
12	0.3854	650	1686
13	1.546	2000	1293
14	0.9455	1150	1216
15	0.8698	1300	1494
16	1.645	2100	1276
17	1.7856	3000	1680
18	0.6584	800	1215
19	0.3683	650	1764
20	0.5986	950	1587
Total=20	16.002	23100	1443.56

In the table showing the production of paddy of Jaidoh village, the highest yield in kilograms per hectare is 2656, and the lowest being 1111 kg/ha.

The differences of production among the households as well as the villages is brought about by the amount of fertilizers and manures used, the types of implements adopted and also the types and varieties of paddy which differ in quality. The households having high yield have better access to quality rice seeds, better implements such as tractors, power tillers and good financial condition which support them to employ labourers. In the other case the middle class farmers does not have better access to these inputs and hence this acts as one of the drawbacks for low productivity apart from the climate and the soil factors.

Chapter 4

Findings and conclusion

Findings

Agriculture is the principal source of livelihood for the majority of the people in Jaidoh village. It also acts as the main occupation of working population as it engaged more than 70% and 60% in jaidoh village respectively. The study is undertaken to understand the differences in the climatic factors and the edaphic factors in these two villages and their impact on the production of paddy.

Most of the villagers are dependent on agriculture for their income. This is in the form of field crops and vegetables etc. the farmers in both the area of study opined about the negative return from the field.

The agricultural production system is mainly rain fed in both the areas. Monocropped at subsistence level. Pressure on rural land, tribal population, economic backwardness of the area, low technological level, low productivity coupled with low per capita income are major features of these two areas.

The positive feedback that they get is the crop acts as a source of food for the villagers and no surplus is marketed. This is positive in a sense that the villagers does not have to spend money on buying rice as the rice that they cultivate can sustain them for the entire year, but in some cases, there are households that faces problems of shortage of rice which is not sufficient for the entire year, however this does not act as a major problem faced by them as they do get something inreturn from the field rather than getting nothing.

There are many drawbacks that the farmer faces in practicing paddy cultivation. The majorproblems include the following

1. Late onset of rainfall disturbs the period of sowing and hence disturbs the entire routine. An also brings down the production of rice whereby the farmers have to switch to other methods of irrigating the field which is a difficult problem if sufficient water is not available nearby hence costing lots of expense.
2. Small land holdings also pose a great drawback to the farmers. Small land holdings means that return from the field is less and with an increase in population these small land holding are fragmented into smaller land holdings thereby posing greater problem to the farmers.

3. Pest and insects also pose a great problem whereby the presence of crabs in the paddy field leads to the destruction of the paddy field as these crabs seep holes in the paddy field in search of food and this in turn creates borrows and holes in the paddy field which leads to out flow of water from the field and hence destroys the crop. The lack or the delay in the availability of tractors and power tillers also pose a problem for the farmers as this will lead to a delay in the onset of paddy cultivation.

4. Other problems include land degradation due to heavy rainfall and low productivity of the soil hence costing the farmers more expense in the purchase of fertilizers and manures to enrich the soil nutrients and in succeeding years this will cost the farmers more as he has to input more fertilizers in the field (urea, which destroys the true nature of the soil.).

Conclusion:

The area being a rural background has to come a long way to cope up with the change of time and also cope up with the increase of population thereby indulging the increase in the production of paddy. However these problems can be overcome.

The area is not at all behind any other part of the country in terms of resources. There are full of resources but they are not fully utilized for the livelihood of the people. The mindset of the people is not production oriented but they are keener on the survival factor.

Finally we may be concluded with the following suggestions.

1. The most important task is to motivate the farmers to adopt scientific mode of cultivation. To motivate the farmers through publicity and effective plans and programs. To introduce the farmers to HYV seeds and also to technique and implements to cultivate paddy in a proper manner to enhanced production.

2. The second suggestion is to avert from the use of fertilizers such as urea as this destroy the soil and also reduces the soil nutrients in succeeding years thereby reducing the production. But rather they should use organic fertilizers such as cow dung and also the ashes of burned fire woods can be used as organic fertilizers.

3. The small land holdings of the farmers can be sorted out at the village level by consolidating land holdings through voluntary cooperative society and hence the returned can beshared among the farmers.

With these suggestions there is hope for achieving better production of paddy in the near future and also sustaining the productive level of the soil and at the same time conserving the natural environment. This is beneficial for both the biotic and the abiotic factors as a whole.

References

- Directorate of Rice Research (Dr); Rajendra Nagar Andhra Pradesh; website
Www.Drricar.Org
- Census of India 2011; Meghalaya; District Census Handbook;
- Agricultural Statistics at A Glance, Custom & DGCIS 2015 & Information Collected From trade division; **A Status Note On Rice In India**
- Taher and Ahmed (1998) "Geography Of North East India"
- Sarma. S, Passah.P.M; Jaintia Hills- A Meghalaya Tribe; Its Environment, Land and People, Reliance Publishing House, New Delhi.
- Borthakur.D.N; Agriculture of the North Eastern Region, Beecee Prakashan Publication, Guwahati.
- Dikshit.K.R, Dikshit.J.K; North East India; Land, People and Economy, Springer Dordrecht Heidelberg, New York, London.
- District Statistical Handbook of West Khasi hill district (2011).
- Zimba.D.T; Geography of Meghalaya; Zimba.D.T Publications, Maya Villa, Kench Trace, Bishnupur Shillong-793004

LIST OF PLATES



Plate.1- A Paddy field



Plate.2- Pig sty

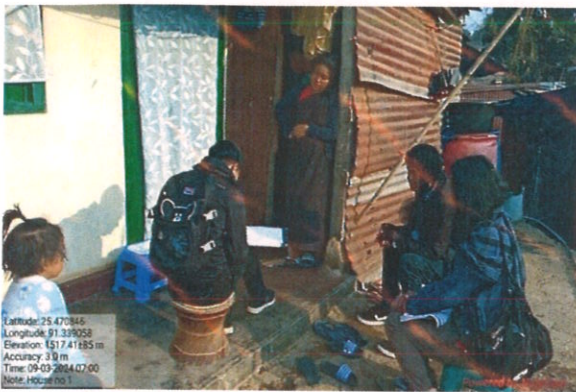


Plate.3- Students interviewing locals



Plate.4- Squash Plantation Field



Plate 5. Plantation area



Plate.6- Students interviewing



Plate.7- Students along with Teachers in Jaidoh Village