



**AN ANALYSIS ON CROPPING PATTERN AND CROP  
COMBINATION OF KHANAKUL –I BLOCK IN HOOGHLY  
DISTRICT, WEST BENGAL**

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**Abstract**

Crop combination exposes the characteristic features of agricultural land use clearly. It gives the idea of crop rotation in a particular season of a region .The present study is an analysis to explain the crop combination in agriculture in Khanakul-I block of Hooghly district. This study has been done to find out the change of the principal crops with the change of weather in different seasons of a year. Weaver’s method of crop combination is applied here. Crops are cultivated in the study area in different combinations throughout a whole year. Fertile soil, suitable agro-climatic conditions, advance irrigation facilities, availability of agricultural labours etc. help to cultivate crops following the methods of crop combination.

Key words: Crop combination, crop rotation, principal crops, agro-climatic conditions.

**INTRODUCTION:**

Agricultural production contributes maximum share to human and animal food. It also provides the raw materials of some industries. Some of economic activities develop on the basis of agriculture (Andrabi, 2019). Crop combination refers the number of crops which have been entered in a region in a given period. Agricultural land use is clearly expressed by crop combination (Siddika,2016). Crop combination exposes the relationship of crops with seasonal weather in a region (Parihar,2018).The crop combination is a dynamic and spatial variable concept. Now days, advanced agro-technology helps to change in crop combination. In highly subsistence agriculture, large number of crops may enter in crop combination types. But where agriculture practice depends on market oriented economy, there crop specialization takes place. Besides Physical, climatic, socio-economic setup controls the crop combination in a region. Human activities, price fluctuation in market, purchasing power of people directly effect on the selection of crop and method of cultivation (Hanumant, 2017). The strategies of green revolution for rice and potato cultivation are properly taken in the study area. The agro-climatic conditions of this district are suitable for production of multiple crops throughout a whole year. These conditions offer a great scope to agro-based industry. This paper is highlighting the changing pattern of crop combination with the change of seasons in Hooghly district of West Bengal.

**STUDY AREA:**

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Khanakul-I block of Hooghly district is selected to analyse the seasonal change of the crop combination. It is an agrarian area. Agriculture is the backbone of economy of this block. Economical development of this region depends on its agricultural production of crops. This region lies on the flood plain of Mundeswari and Dwarakeswar river. The area is extended between 22°41'10"N-22°46'48"N and 87°44'38"E-87°57'4"E. The block is surrounded by Pursurah and Arambagh block in north; Khanakul-II block in south; Paschim Mednipur district in west and Howrah district in east. Khanakul-I block includes 13 gram panchayets. The study area is located in tropical monsoon climatic region.

**OBJECTIVES:** The main objectives are-

1. To identify the cropping pattern of Khanakul-I block during Pre-Kharif, Kharif and Robi seasons.
2. To identify variation of crop combination during Pre-kharif, Kharif and Robi seasons.

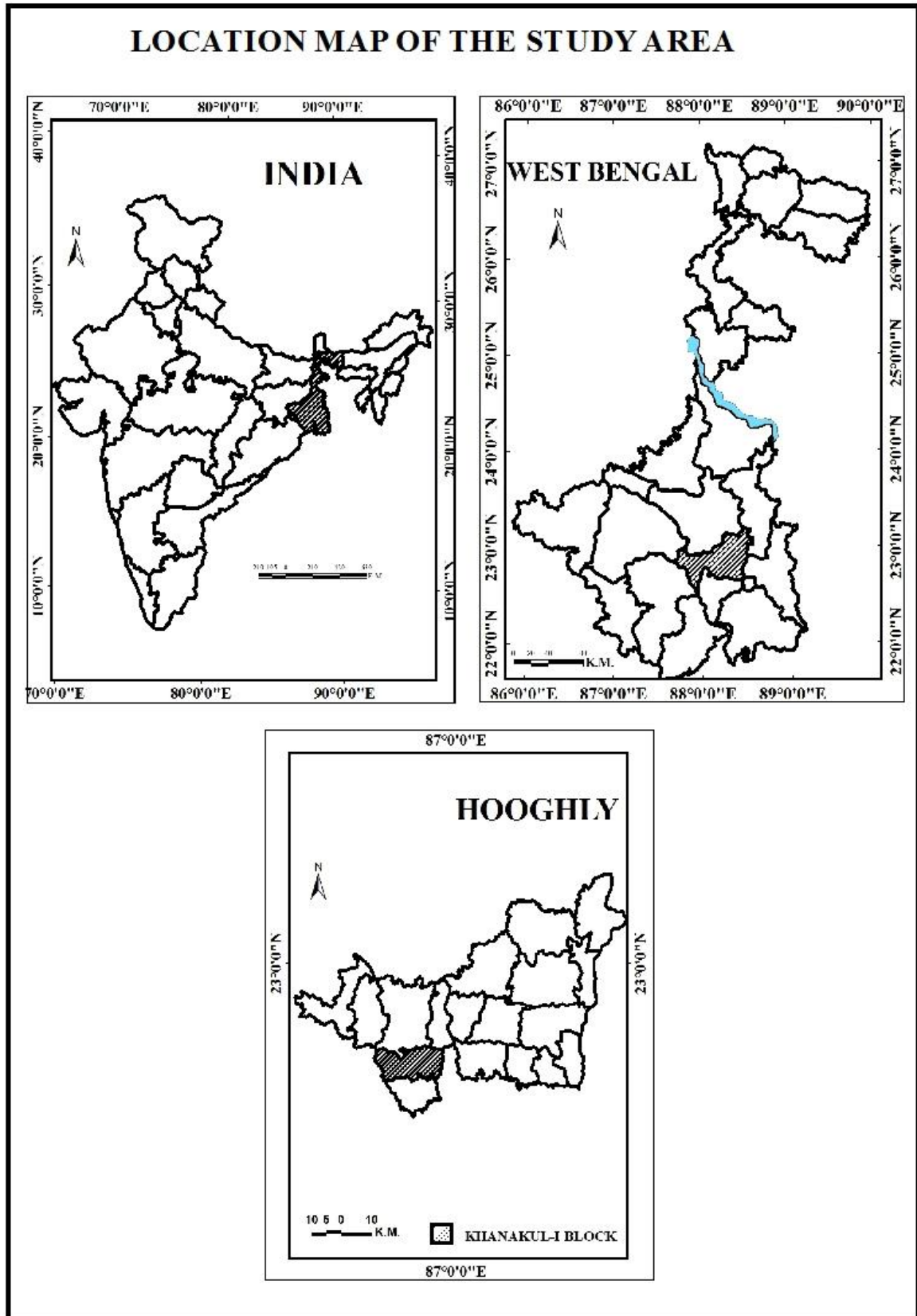
**DATABASE:** The present study is based on secondary data. Data has been collected from A.D.O. office, District census handbook, district website etc.

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LOCATION MAP OF THE STUDY AREA





### METHODOLOGY:-

1. Gram panchayet wise crop combination of Khanakul-I block during pre kharif, kharif and Robi seasons have been computed separately using the formula-

$$d = \sqrt{\sum d^2/n}$$

[d= the difference between the actual crop percentage and the percentage of theoretical distribution. n = no. of crops in a given combination. ]

2.The calculated data was tabulated using Excel software and crop combinations were determined up to Gram Panchayet level.

3.Thematic map of crop combination for Pre-kharif, Kharif and Robi seasons have been prepared using GIS software to show the spatial variation of crop combination in different Gram Panchayets of Khanakul\_I block.

### RESULT AND DISCUSSION:

#### CROPPINGB PATTERN:

Cropping pattern means which types of crops are cultivated in the study area in the different seasons in a year.

Cropping pattern in pre khariff season: In Pre-kharif season 36.46% area of this block is used to cultivate ground nut, 36.46% for boro rice, 14.83% for sesame, 5.77% for other crops and 1.30% for jute.

Cropping pattern in Kharif season: In kharif season the principal crop is amman rice, which is cultivated in 76.49% area to total area of Khanakul-I block. Other crops are vegetables and aus rice.

Cropping pattern in Robi season: In Robi season 51.04% land is used for the cultivation of potato , 8.57% for mustard, 5.87% for vegetables, 2.02% for pulse and 1.05% for wheat. About 31.43% area is left as agricultural fellow land during this period.

#### CROP COMBINATION REGION IN PRE-KHARIF SEASON:

The main crops which are cultivated in the period of pre-kharif season in different gram panchayets are ground nut, boro rice, sesame. Besides in some places jute is also cultivated. Crop combination regions in pre-kharif season have been shown in table no. 1

Table.1-Crop Combination Region Of Khanakul-I Block In Pre-Kharif Season.		
Name Of G.P.	Crop Region Combination	Types of Crops
Kishorpur-I	3 Crop	Boro, Sesame, Ground nut
Kishorpur-II	3 Crop	Boro, Sesame, Ground nut
Ghospur	3 Crop	Boro, Sesame, Ground nut
Thakuranichak	5 Crop	Boro,Ground nut,Other,Sesame,Jute
Pole-I	4 Crop	Boro,Sesame,Ground nut,Others
Pole-II	4 Crop	Boro,Ground out,Sesame,Others
Khanakul-I	2 Crop	Boro,Ground nut
Khanakul-II	2 Crop	Boro,Ground nut
Rammohan-I	3 Crop	Ground nut, Boro, Sesame
Rammohan-II	2 Crop	Ground nut, Boro

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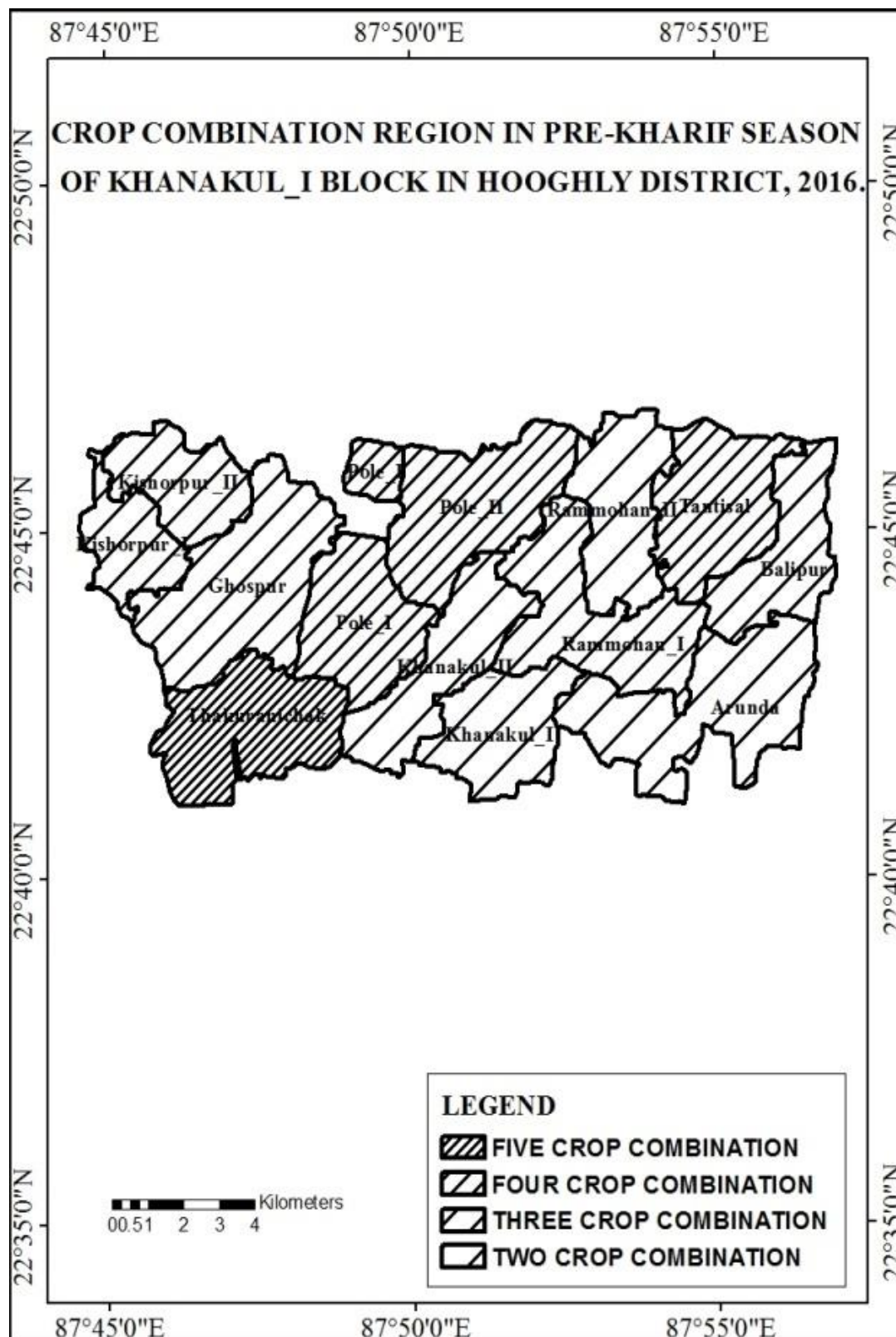
Tantisal	4 Crop	Ground nut,Boro,Sesame,Others
Balipur	3 Crop	Ground nut,Boro, Sesame
Arunda	2 Crop	Ground nut, Boro

Source: - A.D.O. Office of Khanakul-I block, 2016.

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Two crop combination region-Two crop combination region are found in four gram panchayets namely Khanakul-I, Khanakul-II, Rammohan-II, Arunda. Boro rice is the principal crop, followed by ground nut.

Three Crop combination Region-Three crop combination region are found in five panchayets namely Kishorpur-I, Kishorpur-II, Ghospur, Rammohan-I, Balipur. Boro rice is the principal crop, followed by ground nut, sesame.

Four Crop combination Region-Four crop combination region are found in Pole-I, Pole-II and Tantisal panchayets.

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Five Crop combination Region- Five crop combination region is noticed in Thakuranichak. Major crops are boro, ground nut, other, sesame and jute.

**CROP COMBINATION REGION IN KHARIF SEASON:-**

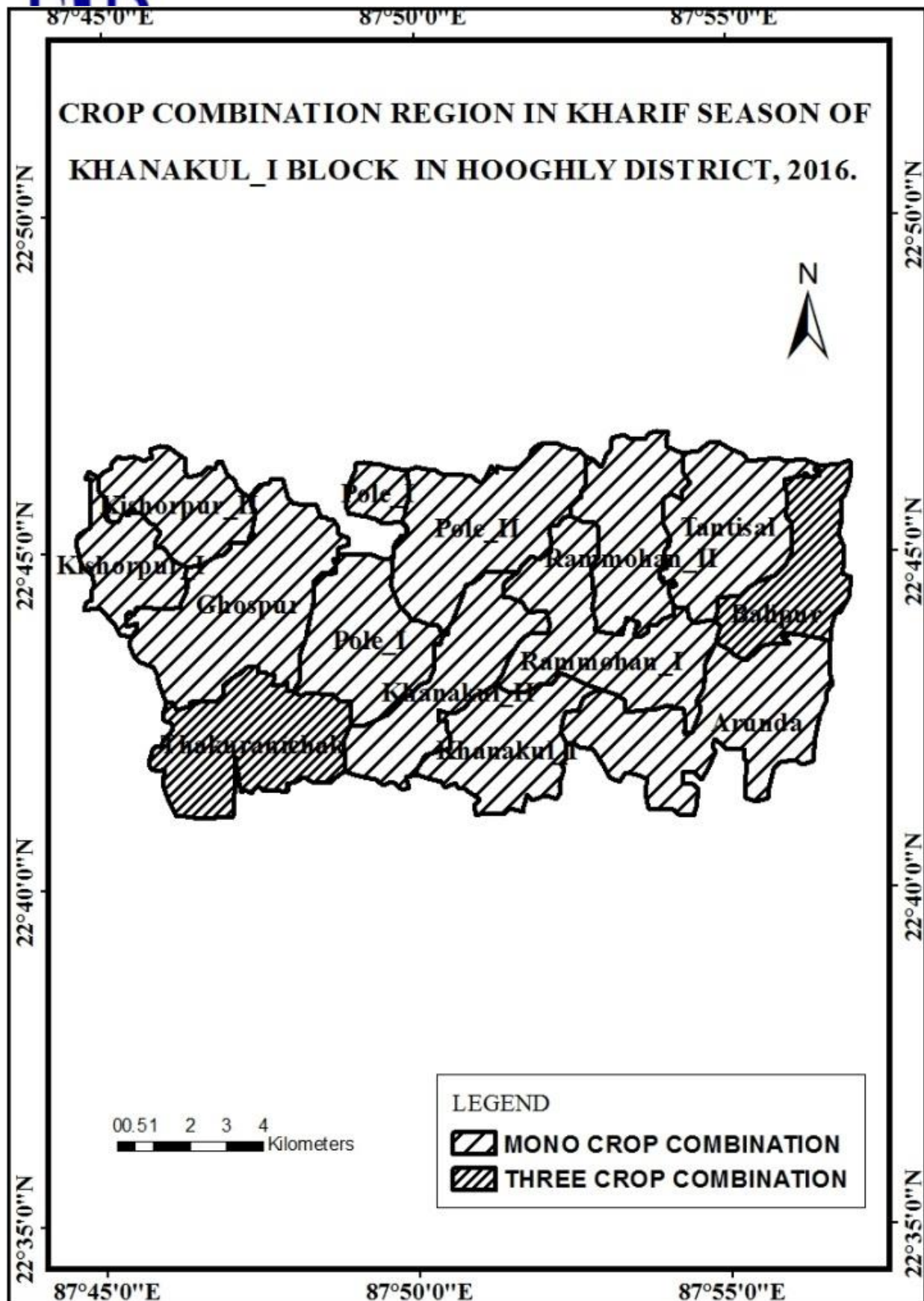
In kharif season, the dominating crop is Amman rice in this block. Rainy season is ideal time for the cultivation of Amman rice Crop combination region are shown in table no.2.

Table.2-Crop Combination Region of Khanakul-I Block In Kharif Season.		
Name of G.P.	Crop Combination Region	Types of Crops
Kishorpur-I	Mono Crop	Amman
Kishorpur-II	Mono Crop	Amman
Ghospur	Mono Crop	Amman
Thakuranichak	3 Crop	Amman, Aus, Vegetables
Pole-I	Mono Crop	Amman
Pole-II	Mono Crop	Amman
Khanakul-I	Mono Crop	Amman
Khanakul-II	Mono Crop	Amman
Rammohan-I	Mono Crop	Amman
Rammohan-II	Mono Crop	Amman
Tantisal	Mono Crop	Amman
Balipur	3 Crop	Amman, Aus, Vegetables
Arunda	Mono Crop	Amman

Source- A.D.O.Office of Khanakul-I block, 2016.



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Mono crop combination region:- Practice of mono crop combination has been found in eleven gram panchayets of Khanakul-I block. Amman rice is the principal crop cultivated in Kishorpur-I, Kishorpur-II, Ghospur, Pole-I, Pole-II, Khanakul-I, Khanakul-II, Rammohan-I, Rammohan-II, Tantisal, Arunda.

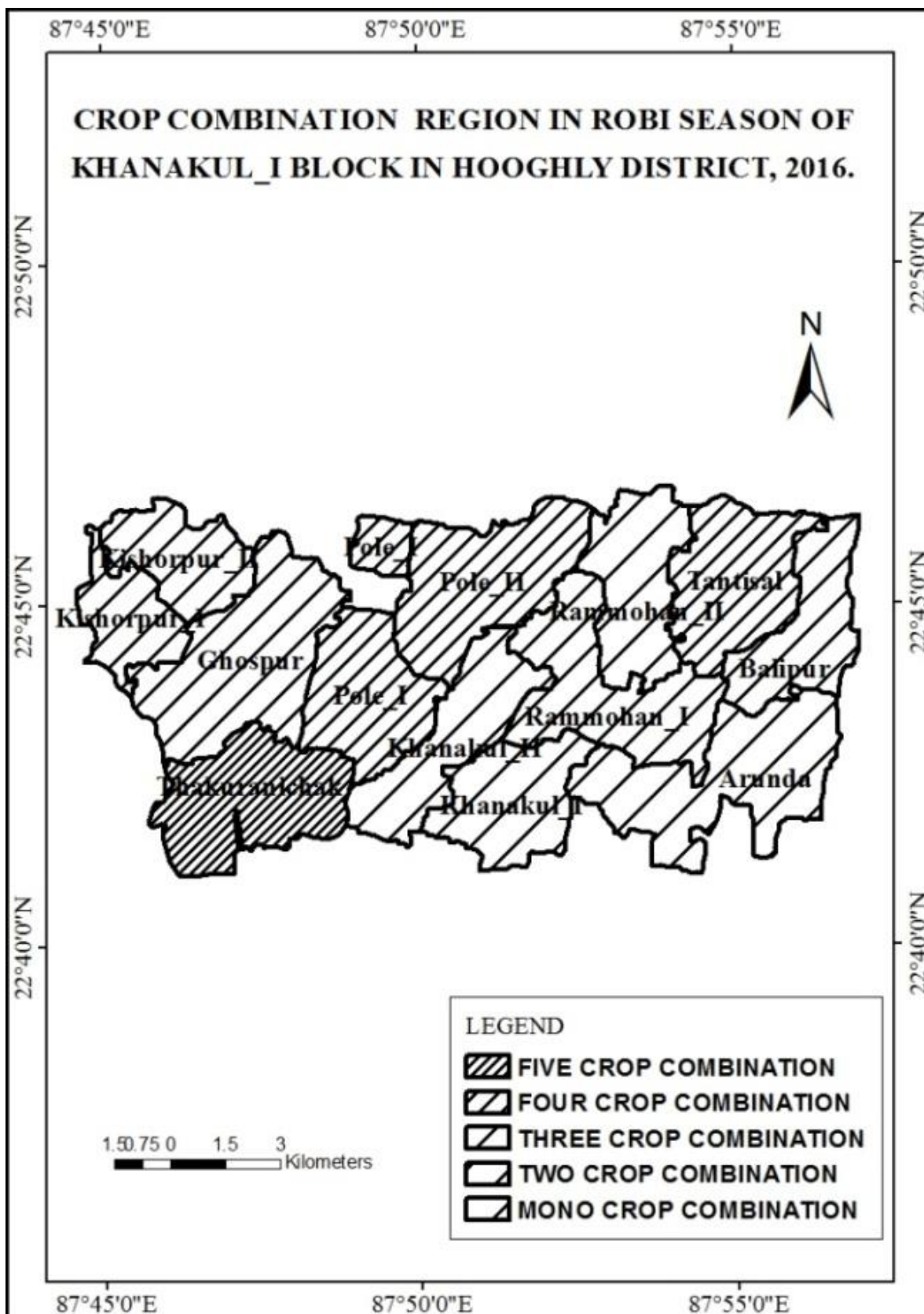
Three crop combination region:- Three crop region is noticed in two panchayets namely Thakuranichak, Balipur. The main crops are amman rice, aus rice and vegetables.

**CROP COMBINATION REGION IN ROBI SEASON:**

In robi season, cultivation in the study area is depended on the irrigation. Potato is the leading crop in Khanakul-I block. Other major crops are mustard, vegetable, pulse and wheat. Variation of crop combination is found in the different gram panchayet in the study area during this period.

Name Of G.P.	Crop Combination Region	Types of Crops
Kishorpur-I	3 Crop	Potato, Mustard, Vegetables
Kishorpur-II	2 Crop	Potato, Mustard
Ghospur	4 Crop	Potato, Vegetables, Mustard, Pulse
Thakuranichak	3 Crop	Potato, Mustard, Vegetables
Pole-I	5 Crop	Mustard, Potato, Vegetables, Pulse, Wheat
Pole-II	Mono Crop	Potato
Khanakul-I	Mono Crop	Potato
Khanakul-II	Mono Crop	Potato
Rammohan-I	Mono Crop	Potato
Rammohan-II	Mono Crop	Potato
Tantisal	Mono Crop	Potato
Balipur	Mono Crop	Potato
Arunda	Mono Crop	Potato

Source- A.D.O. Office of Khanakul-I block, 2016.





**Mono crop combination region-** mono crop combination is observed in four panchayets namely Rammohan-I, Rammohan-II, Tantisal, Arunda, Khanakul\_I, Khanakul\_II, Pole\_I and Balipur. Potato cultivation is concentrated in these panchayets.

**Two crop combination region-**Two crop combination is observed in Kishorpur\_II. Potato is the leading crop followed by mustard.

**Three crop combination region-**Three crop combination region is found in Kishorpur-I and Thakuranichak panchayet. Main crops are potato, mustard and vegetables.

**Four crop combination region-** Four crop combination is found in Ghospur. Major crops are potato, mustard, vegetables and pulse.

**Five crop combination region-** Five crop combination is noticed in Pole\_I. The crops are potato, mustard, vegetable, pulse and wheat.

#### **MAJOR FINDINGS:**

- 1.Ground nut is the leading crop in the pre Kharif season. Amman is the leading crop in Kharif season. In Robi season the leading crop is potato.
- 2.In Pre-kharif season, maximum Gram Panchayets are treated as three crop combination region and dominating crops are Boro rice, ground nut and sesame.
- 3.Mono crop combination is a common practice in the whole study area during Kharif season. Amman type of rice is dominating crop during this season.
- 4.In Robi season, variation of crop combination has been identified. Mono crop combination (Potato) is dominating in this area.

#### **CONCLUSION :-**

Variation in crop combination has been identified in the study area in different seasons of a year. In Pre-kharif season maximum crop combination is five crops and minimum two crop. In Kharif season maximum crop combination is three and minimum single crop. In Robi season maximum is five crops and minimum mono crop. The main causes for the variation of crop combination are relief, climatic conditions, soil fertility, availability of irrigation water etc. This region lies on the flood plain of Mundeswari and Dwarakeswar river. In Pre-kharif season the agriculture is totally depended on irrigational water. The crops in Kharif season are cultivated depending on the rain water during monsoon period. So rice is cultivated intensely in the study area. In Robi season variety green vegetables with potato have been cultivated intensely in the study area. Development of irrigational infrastructure, use of HYV seeds, application of advanced equipments for cultivation, development of farmer's skill with modern technological knowledge could increase the productivity and variety of crop combination in the study area in future. Recently many technological innovations are being applied to increase the agricultural production in the study area.

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