

# Agricultural Crop Concentration and Combination in Tiruvannamalai District, Tamil Nadu, India.

\*<sup>1</sup>Kannadasan. K, <sup>2</sup>Ganesh. A and <sup>3</sup>Jegankumar. R

<sup>1</sup>Research Scholar, Department of Geography Bharathidasan University, Tiruchirappalli, Tamil Nadu (India)

<sup>2</sup>Former Professor, Department of Geography Bharathidasan University, Tiruchirappalli, Tamil Nadu (India)

<sup>3</sup>Associate Professor, Department of Geography Bharathidasan University, Tiruchirappalli, Tamil Nadu (India)

## ARTICLE DETAILS

### Article History

Published Online: 25 May 2019

### Keywords

Crop Combination, Crop Concentration, Statistics, Arc GIS, Agriculture, Land use.

### \*Corresponding Author

Email: kannan.gis@gmail.com

## ABSTRACT

This study covers at crop concentration and combination. The concept of agricultural activities is to understanding the agricultural patterns. This patterns will strongly show the combinations of terrain and social balance of an area to map the cropping pattern the following analysis are required they include crop concentration and crop combination. The study area is lies between 11. 55° to 13. 15° North Latitudes and 78.20° to 79.50° East Longitudes. The simple statistical methods are used for this analysis. The spatial distribution of crop concentration and combination maps was prepared by using Arc GIS 10.2 platform.

## 1. Introduction

The agricultural plays an important role of all backbone of economic systems. The Quantitative measures of cropping distributions are necessary to understand the human and physical interaction of an area. Crop distribution is controlled by various natural and cultural phenomena. Distribution of crops and utilization of crops are varies with a particular climatic conditions and terrain. Due to the multiple agriculture practices, different crops combinations in fields. The concept of agricultural pattern is not dividing a land into different multipack, but also a method of understanding the agricultural patterns.

## 2. Aim and Objectives

The aim of the study is to bring out the cropping patterns of Tiruvannamalai District of Tamil Nadu.

- Describe the crop concentration of the study area.

- Bring out the crop combination of Tiruvannamalai District.

## 3. Data and Methodology

The study is analyzed based on the secondary data sets of Tiruvannamalai district statistics and economic department. Based on the year of 2011-12 G-Written data has been calculated for the study. Weavers and Bhatia methods is applied for present study.

## 4. Study Area

The district Tiruvannamalai lies between northeastern part of the Tamil Nadu state. The district covers at 6,191 sq.km. The area under forest in western part. Easter part of the area covers plain region. The location map shown in Fig. No.1

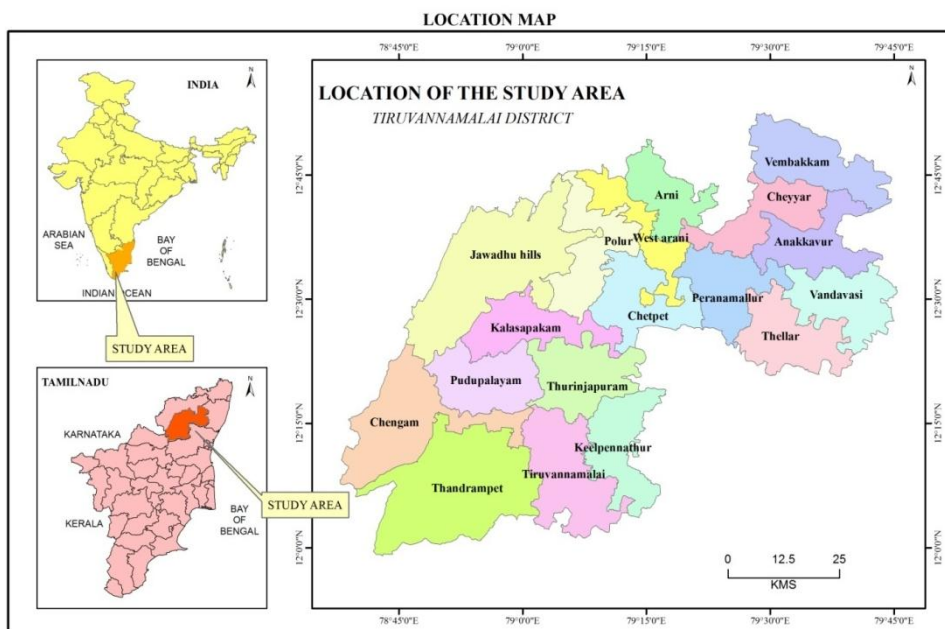


Figure No.1

## 5. Result and Discussion

### 5.1 Crop Concentration

The crop concentration is defined as spatial strength of crop is control by the prevailing agricultural and climatic conditions, existing over the physical and socio economic conditions of an area. Available economic data from the authorities of the district with the appropriate statistical method

$$\text{Index for determining concentration of crop 'a'} = \frac{\text{Area of crop a in the component areal unit / area of all crop in the component unit}}{\text{Areal crop 'a' in the entire country / area of all crops in the entire country}}$$

The higher index values represent high concentration and lower values present low concentration or the index values are directly proportional to concentration. By using the index value that study area is classified into four categories known as Very high, High, Moderate and Low. But it is classified with the values.

The following Table No.1 shows the index of crop concentration of the Tiruvannamalai District, It shows that Figure no. 2.a and 2.b depicts the crop concentration of the study area of Tiruvannamalai District.

### 5.2 Paddy

Paddy is the major important crop in the study area of Chengam, Pudupalayam, West arni and Vembakkaam are major producer of paddy. Chengam, Pudupalayam are the major concentrations of paddy and high paddy concentration found in Chengam, Pudupalayam, and west Arani. The moderate concentration of paddy is found in Anakkavoor, Arani, Cheyar, Kalasapakkam, Peranamallur, Polur, Thellar, Vandavasi. Low concentration of paddy found in Thirinjapuram, Thruvannamalai, Chetpet and Jawaduhills.

### 5.3 Cholam

Cholam is another popular crop in this study area, cholam is highly concentrated is Anakkavoor, AraniChetpet, Cheyar, Kilpennathur, Peranamallur, Thellar, Thirinjapuram the middle concentration of Cholam presents in Chengam, Kalasapakkam, Polur, West arni, Vandavasi. The low concentration of Cholam is present in Jawaduhills, Pudupalayam

### 5.4 Ragi

Kilpennathur in the highest producer of Ragi in the study area, during this year 2011-2012 is 7396.49 ha of land is used to cultivate Ragi.Thellar, Thirinjapuram, Chetpet show the

has helped to understand the clear maps of complex agriculture. The crop concentration maps were prepared by the location quotient method of Bhatia (1965). This study is applied to block level of the study area to find the spatially high strength of the individual crop. The formula as follows

Moderate concentration rest of blocks have Lowest concentration of Ragi.

### 5.5 Green Gram

Pudupalayam, Thruvannamalai in the highest producer of Green gram of the study area, during this year(2012) 3047.885 ha of land is used to cultivate Greengram. Chetpet, Kalasapakkam, Thandarampat, polur show the moderate concentration rest of blocks have lowest concentration of Greengram.

### 5.6 Red Gram

Jawaduhills in the highest producer of Redgram the study area, during this year 2011-2012 is 1368.8 ha of land is used to cultivate redgram. Thirinjapuram, Thruvannamalai, Vandavasi, Vembakkaamshow the Moderate concentration. Remaining blocks are having the lowest concentration of Red gram.

### 5.7 Black Gram

The Kilpennathur, Peranamallur, Thandarampat, Thirinjapuram, and Vembakkaam these blocks found as a high concentration of black gram. Then remaining blocks have the Moderate and Low concentration of black gram.

### 5.8 Pulses

Polur in the highest producer of pulses the study area, during 2011-2012, 1719.2 ha of land is used to cultivate pulses. Jawaduhills, West arni, Chengam, Thandarampat these blocks having an Moderate concentration and remaining blocks have Lowest concentration of Pulses.

### 5.9 Fibre

Chengam in the highest producer of Fibre the study area, medium concentration found in the block Thruvannamalai, Thandarampat, Jawaduhills. That remaining blocks having lowest concentration of Fibre.

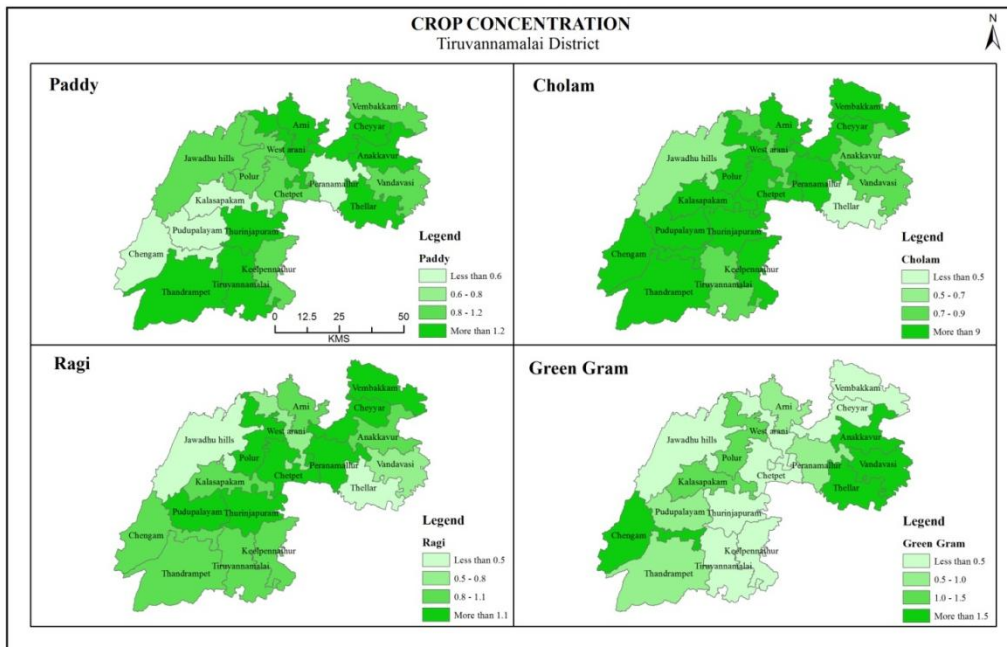


Figure No. 2 (a) Crop Concentration

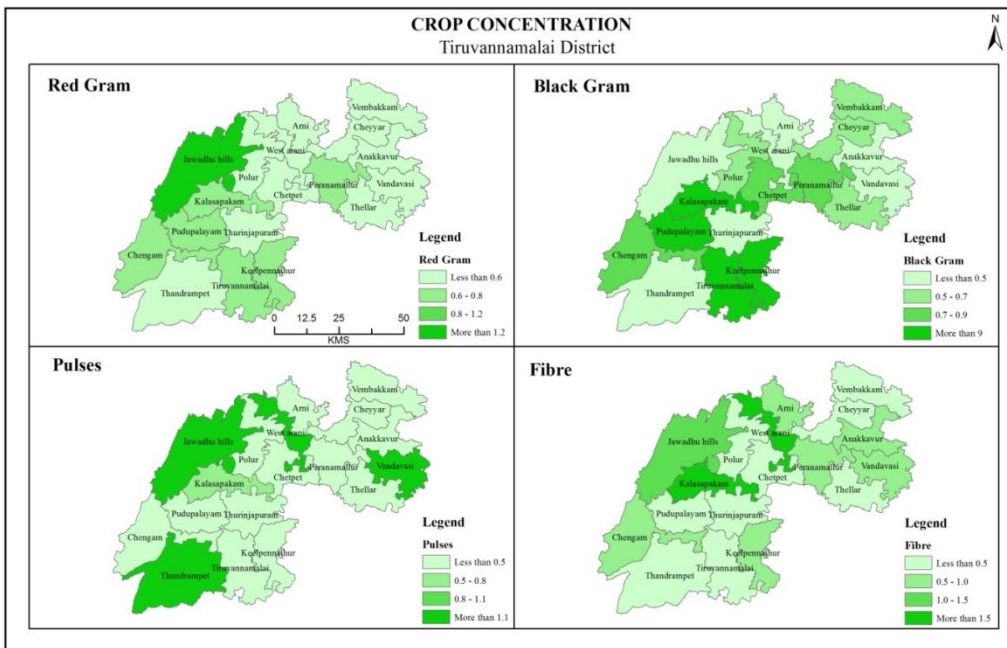


Figure No. 2 (b) Crop

**6. Crop Combination**

Generally the crops are grown in different combination and are rarely a single crop occupies a major portion of an area. Most of the farmers by inculcating the new advancement in agriculture they plan variety of crops of their lands. A main important of crop combinational may avoid over simplification. In very old methods, crop combination analysis is carried out by the simple statistical calculations. The statistical method is a good and favor method and it will bring out best possible combination. The weaver methods are applied for the study. For the single crop with 100%, two crop combinations are 50% and 10 crop combination is 10%. The following standard deviation formula is used for this study.

$$\text{Standard Deviation} = (\sum d^2 / n)^{1/2}$$

Where 'd' is found the difference between actual crop percent of a blocks of the Tiruvannamalai has the equivalent theoretical value. The result says that study area have three to eight crop regions. 8 crop region were found only Chengam block and 7 crop region available in Jawadhu hills, Pudupalayam blocks. 6 crop region found in Thirinjapuram, Vandavasi, Vembakkaam. 5 crop region present in Thandarampat alone 4 crop region found in 6 blocks and 3 crop region were found in 5 Blocks.

**Table-1 Index of crop concentration**

Sl. No	Block Name	Paddy	Cholam	Ragi	Green Gram	Red Gram	Black Gram	Pulses	Fibre
1	Anakkavoor	1.18	1.10	1.14	0.36	0.93	0.94	0.36	0.09
2	Arani	1.33	1.02	1.06	0.57	0.54	0.34	0.33	0.58
3	Chengam	1.46	0.74	0.62	0.42	0.85	0.35	2.54	5.29
4	Chetpet	0.90	1.16	1.21	1.17	0.80	0.70	0.02	0.05
5	Cheyar	1.21	1.15	1.20	0.30	0.74	0.74	0.33	0.02
6	Jawaduhills	0.83	0.54	0.09	0.47	6.44	0.00	5.18	2.44
7	Kalasapakkam	1.23	0.78	0.80	1.87	0.21	0.19	0.24	0.68
8	Kilpennathur	0.56	1.40	1.43	0.93	1.07	1.22	0.34	0.87
9	Peranamallur	1.19	1.17	1.22	0.06	0.88	1.12	0.17	0.15
10	Polur	1.07	0.73	0.73	1.79	0.21	0.14	6.35	0.80
11	Pudupalayam	1.47	0.43	0.42	2.08	0.43	0.51	0.38	0.44
12	Thandarampat	0.62	1.01	0.90	1.46	1.44	1.75	1.06	2.82
13	Thellar	1.30	1.18	1.23	0.27	0.36	0.36	0.22	0.35
14	Thirinjapuram	0.65	1.18	1.22	0.83	1.61	1.92	0.11	0.48
15	Thruvannamalai	0.64	0.96	0.93	2.08	1.02	1.28	0.41	1.46
16	Vandavasi	1.11	0.98	0.99	0.44	1.44	1.50	0.28	0.60
17	Vembakkaam	1.33	0.79	0.81	0.14	1.65	1.91	0.54	0.14
18	West Arani	1.34	0.93	0.95	0.69	0.35	0.21	3.33	0.14

**Table -2 Crop combination regions of Tiruvannamalai District**

Sl. No	Block Name	Crop Region	Crop
1	Anakkavoor	3	Paddy, Cholam, Ragi
2	Arani	3	Paddy, Cholam, Ragi
3	Chengam	8	Paddy, Cholam, Ragi, Green Gram, Redgram, Blackgram, Pulses, Fibre
4	Chetpet	4	Paddy, Cholam, Ragi, Green Gram
5	Cheyar	3	Paddy, Cholam, Ragi
6	Jawaduhills	7	Paddy, Cholam, Ragi, Green Gram, Red Gram, Black Gram, Pulses
7	Kalasapakkam	4	Paddy, Cholam, Ragi, Green Gram
8	Kilpennathur	4	Paddy, Cholam, Ragi, Green Gram
9	Peranamallur	3	Paddy, Cholam, Ragi
10	Polur	4	Paddy, Cholam, Ragi, Green Gram
11	Pudupalayam	7	Paddy, Cholam, Ragi, Green Gram, Red Gram, Black Gram, Pulses
12	Thandarampat	5	Paddy, Cholam, Ragi, Green Gram, Red Gram
13	Thellar	3	Paddy, Cholam, Ragi
14	Thirinjapuram	6	Paddy, Cholam, Ragi, Green Gram, Red Gram, Black Gram
15	Tiruvannamalai	4	Paddy, Cholam, Ragi, Green Gram
16	Vandavasi	6	Paddy, Cholam, Ragi, Green Gram, Red Gram, Black Gram
17	Vembakkaam	6	Paddy, Cholam, Ragi, Green Gram, Red Gram, Black Gram
18	West Arani	4	Paddy, Cholam, Ragi, Green Gram

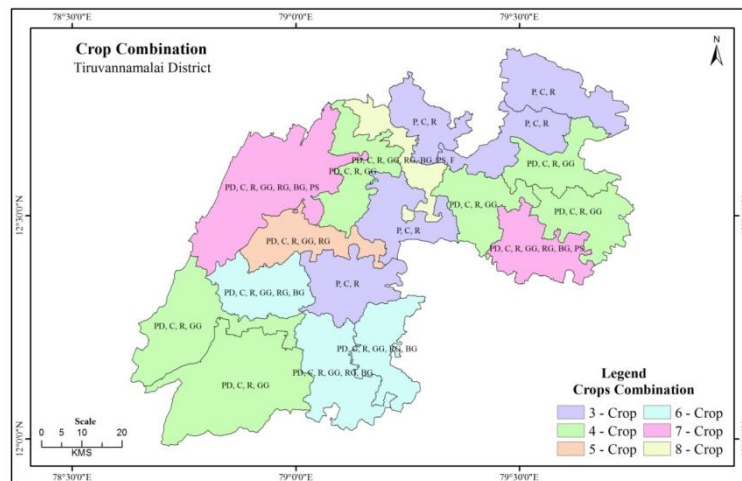


Figure No. 3 Crop Combination

**Note:** PD – Paddy, C – Cholan, R – Ragi, GG- Green gram, RG- Red gram, BG- Black gram PS- Pulses, F- Fibre

Crop combination available in the study area, there are three to eight crop combinations were present. The Paddy cultivation given the first rank crop in the 18 blocks of Tiruvannamalai district. Cholan cultivation is the Second rank crops are in 18 blocks and Ragi is the third ranking crop also having in the 18 blocks of the Tiruvannamalai district.

Chetpet, Kalasapakkam, Kilpennathur, Polur, Tiruvannamalai, West arni these blocks having a 4 crop cop region. Thandarampat block having 5 crop region. Thirinjapuram, Vandavasi, Vembakkaam block having 6 crop region and 1 block having 7 crop region. Then 8 crop region found only Chengam block of the Tiruvannamalai district. Figure No.3 shows that crop combinations of Tiruvannamalai District.

## 7. Conclusion

The cropping patterns of Tiruvannamalai district has brought out through simple statistical calculation of crop concentration and crop combination. The analysis reveals that there are eight crops are occupies in the distirct. Among the eight crops paddy, Cholan, Ragi, Green gram, Red gram, Block gram Pulses, fibre. The crop combination analysis also seen in at Paddy is the first ranking crop of all in 18 blocks, similarly paddy, Cholan is identified as second ranking crops. The Ragi is found as third ranking crop in the study area. The overall cropping pattern has influenced by the Phisycal, climate and local socio economic conditions. The cropping pattern also gives sight to better understanding of agricultural activities and choose of crops by farmers.

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