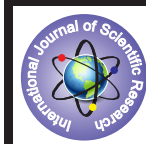


A Study on Changes of Landuse and Cropping Pattern in Tiruchirappalli District



Geography

KEYWORDS : Landuse changes – cropping pattern – climatic conditions - water quality

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ABSTRACT

In this paper, an attempt was made to assess the changes and mapping the landuse and cropping pattern in Tiruchirappalli District for the five years of statistical data (2008 & 2012). Almost all the landuse categories are well found in the taluks of Thuraiyur and Manapparai and least in Totiyam taluk. Musiri, Lalgudi and Manapparai taluks are well distributed the cropping pattern and Srirangam taluk is least. The changes were identified, in which the decrease of main landuse categories namely net-cultivable area (from 42.1 to 34.6 %) and other fallow land (from 14.3 to 10.8%). The increase of main landuse categories were identified namely forest (from 8.2 to 9.3%), land put to non-agricultural use (from 16.9 to 20.7%), and current fallow land (from 9.5 to 12.2%). Paddy, cotton and sugarcane were mainly cultivated in the study area. The changes of crops were identified, in which the decrease and increase namely cotton (from 6.7 to 5.7 %), paddy (from 36.3 to 46.2%) and sugarcane (from 5.5 to 5.0%). The changes of land use and cropping pattern may be affected by rainfall, climatic condition, and quality of water, physical factors and human activities.

INTRODUCTION

Agriculture is the most fundamental activity of mankind. It refers to the art of raising plant from soil and it is carried throughout the world. Agricultural resources are the key to Indian economic development and quality of life. The consumption of agriculture domestic product are high in India, nearly 75 per cent percent of the people in India depend upon agriculture products. Even in industrialized countries, agriculture is most important activity because it provides food crops like paddy and wheat etc., In this study area of the peoples have been involving in agricultural activities but in the last decade's peoples not actively involved in agriculture practices and also the geographical condition such as climate, rainfall and quality of soil to determine the system of agriculture pattern.

Landuse is to study the spatial distribution of major landuse categories namely forest, cultivable land, fallow land, uncultivable land, waste land etc. Cropping pattern is the proportion of area under various crops at a point of as it changes over space and time. Landuse and cropping pattern of spatial distribution over a time scale are requisite for making development plans (Cautam and Narayan, 1982& 1985; Dhinwa et.al., 1992; Ibrahim and Loulou, 1994). Its changes are associated with climate and human activities and natural environments. According to R. Baskaran and J.Punithavathi (2011) have been prepared maps for the changes of cropping pattern, crop concentration and agricultural efficiency in Papanasam Taluk, Thanjavur District, Tamil Nadu, India. Sujatha, P. et.al (2011) to attempted a study on landuse pattern and cropping pattern of Orthanadu Block, Thanjavur District, Tamil Nadu and Arif H. Shah, Hakim F. Ahmad, Zahoor A. Nengroo (2013) studied the land-use and cropping pattern dynamics in Budgam District, Kashmir. A limited number of research works have been studied landuse and cropping pattern for agriculture planning. On this basis of literature, in this study an attempt to understand the changes of landuse and cropping pattern in Tiruchirappalli District.

STUDY AREA

Tiruchirappalli district of the study area is located at the Central part of Tamil Nadu surrounded by Perambalur district in the north, Pudukottai district in the south, Karur and Dindigul districts in the west and Thanjavur district in the east. It lies between 10° 10' and 11° 20' of the Northern latitudes and 78° 10' and 79° 0' of Eastern latitudes. Its cover an area of 4403.79 sq.km and its forms parts the Survey of India (SOI) topographic sheets having the index of numbers, 58/E 16, 58/I 4,7,8,11,12,14,15,16 58/M 3,4,7,8 58/F 13, 14 58/J 1,2,5,6,7,9,10,13 and 58/N 1 on a scale of 1:50,000 (Fig. 1).

The amount of rainfall computed for the present study into four seasons viz., Winter (January and February months), Summer (March, April and May), Southwest (June, July August and September) and North East (October, November and December). Of the four seasons, rainfall is found to be maximum during the northeast season. Considerable amount of rainfall is received during the southwest monsoon. Rainfall during the other two seasons viz., winter and summer are very less. Temperature is generally very high during summer. It is comparatively lower during winter. In other months it is moderate.

The general slope of the district is towards east. It has a number of detached hills, among which Pachamalai Hill is an important one, which has a peak up to 1015m, located at Sengattupatti Rain Forest. Tiruchirappalli district is comprised of eight taluks. This includes 14 blocks, 408 Village Panchayats and 1590 Villages. This district consists of four municipalities. Tiruchirappalli is the only Municipal Corporation which is also the Head Quarters of the District.

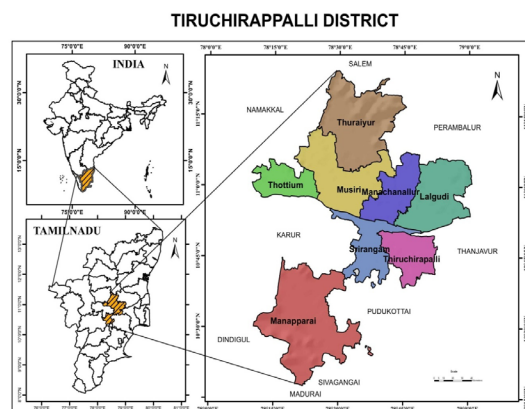


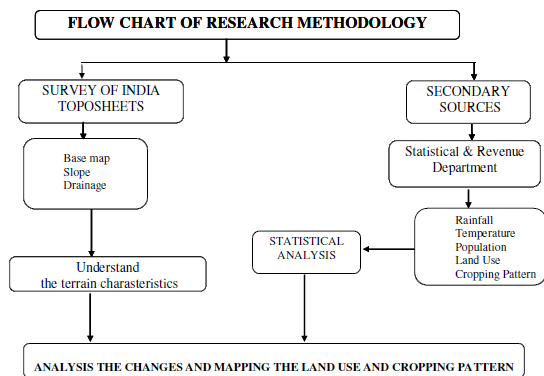
FIG NO .1 LOCATION MAP OF THE STUDY AREA

AIM AND OBJECTIVES.

The aim of the present study is to assess the landuse and cropping pattern of Tiruchirappalli District. To achieve the above aim, the following are considered as objectives.

1. To analyze the changes and mapping the landuse and cropping pattern in years 2008 and 2012.
2. To find out the major dominating crops and landuse pattern in the study area.

METHODOLOGY



The present study is based on secondary sources of information regarding area under different crops and landuse for the year 2008 and 2012 were collected from statistical department of Tiruchirappalli District (Flow chart). Statistical methods were used to analysed the changes of landuse and cropping pattern of the study area. The change of spatial maps are created by using the GIS software.

ASSESSMENT OF LANDUSE PATTERN (2008 AND 2012)

The assessment of landuse and cropping pattern is a prerequisite for planning and management of the development of Indian economy. The landuse patterns of the study area were collected from the statistical department of Tiruchirappalli in the year 2008 and 2012. The given table 1 & 2 and spatial map (Fig 2 & 3) describe the landuse categories in the following section.

FOREST

As per the statistical report of 2008, the forest area is 362.46sq.km out of 4403.79sq.km the total geographical area which is about 8.2 per cent. Forest areas are highly concentrated in Thuraiyur taluk which is about 233.09sq.km (28.8 per cent). The remains taluks of the study area, forest area is found to be more in Manapparai and Manachanallur taluks, which occupies 83.12sq.km (8.4 per cent) and 15.55sq.km (4.2 per cent) respectively. Table no. 1 Fig no. 2.

During 2012 the forest area was 407.70sq.km out of 4403.79 sq.km total geographical area which is about 9.3 per cent. Forest resources are found intensively in Thuraiyur taluk, which is about 9.3 per cent. Both in the year 2008 and 2012 Manapparai and Manachanallur taluks were in second and third place in forest occupying 87.12sq.km (8.8 per cent) and 16.84sq.km (4.5 per cent) respectively. Srirangam and Tiruchirappalli taluk have very lesser area of forest found in the study area in both the years. Two types of forest are predominantly identified in the study area namely tropical dry deciduous forest and tropical thorn forest. Table no. 2 & Fig no. 3.

BARREN AND UNCULTIVABLE LAND

Barren and uncultivable land is 157.32sq.km out of 4403.79 sq.km total geographical area which is about 3.6 per cent. In the year 2008 the Barren and uncultivable land are extremely concentrated in Thuraiyur taluk which is about 74.82 sq.km (9.3 per cent). The area extents of uncultivable land are reasonably found in Tiruchirappalli and Lalgudi taluks. Which occupies 11.34sq.km (3.3 per cent) and 15.47sq.km (2.6 per cent) respectively. Lesser extent of uncultivable land is found in Thottiyam taluk, which is 1.93sq.km (0.7 per cent).

As per the 2012 the barren and uncultivable land area is 213.86sq.km out of 4403.79sq.km total geographical area which is about 4.9 per cent. The area extents of Uncultivable land are

concentrated in Thuraiyur taluk of the study area, which is occupying 92.64sq.km (11.5 per cent). Remaining taluks of the study area Lalgudi and Musiri are in the second and third place in barren and uncultivable landuse pattern which is 26.58sq.km (4.5 per cent) and 28.12sq.km (4.2 per cent) respectively. Uncultivable lands are very lesser in Manapparai taluk, which is 21.24sq.km (2.1 per cent).

LAND PUT TO NON- AGRICULTURAL USE

Land put to non – agricultural use is 743.09sq.km out of 4403.79 sq.km total geographical area which is about 16.9 per cent. In the year 2008 the non- agricultural land was extremely concentrated in Tiruchirappalli taluk which is about 130.59sq.km (38.4 per cent). The area extents of non-agricultural land are moderately found in Srirangam and Thottiyam taluks which occupies 88.41sq.km (24.7 per cent) and 66.27sq.km (23.8 per cent). Lesser area extent of non-agricultural land is found in Thuraiyur taluk, which is 47.62sq.km (5.9 per cent).

During 2012 the non-agricultural land area is 911.80sq.km out of 4403.79 sq.km total geographical area which is about 20.7 per cent. The area extents of non-agricultural land are concentrated in Tiruchirappalli taluk of the study area, which is occupying 143.32sq.km (42.2 per cent). Remaining the taluks of the study area Srirangam and Lalgudi are in second and third place in land put to non-agriculture use which is 102.42 sq.km (28.6 per cent) and 164.42 sq.km (27.6 per cent) has been seen. Non-agriculture use lands are very lesser in Thottiyam taluk, which is 17.56sq.km (6.3 per cent).

CULTIVABLE WASTE

Cultivable waste land is 127.60sq.km out of 4403.79sq.km total geographical area which is about 2.9 per cent. In the year 2008 the cultivable waste land was extremely concentrated in Tiruchirappalli taluk which is about 18.50sq.km (5.4 per cent). The area extents of cultivable waste land are moderately found in Musiri and Srirangam taluks which is occupying 32.95sq.km.(5.0 per cent) and 15.71sq.km.(4.4 per cent) respectively. Lesser area extent of cultivable waste land is found in Thottiyam taluk, which is 2.95sq.km (1.1 per cent). Table no. 1 & Fig no. 2.

During 2012 the cultivable waste land area is 119.35sq.km out of 4403.79sq.km total geographical area which is about 2.7 per cent. The area extents of cultivable waste land are concentrated in Srirangam taluk of the study area, which is occupying 19.57sq.km (5.5 per cent). Remaining taluks of the study area, Tiruchirappalli and Lalgudi are in second and third place in cultivable waste land which is 18.50sq.km (5.4 per cent) and 19.45sq.km (3.3 per cent) were in use. Cultivable waste lands are very lesser in Thottiyam taluk, which is 4.23sq.km (1.5 per cent).

PERMANENT PASTURES

Permanent pastures land is 52.36sq.km out of 4403.79sq.km total geographical area which is about 1.2 per cent. In the year 2008 the permanent pastures land are extremely concentrated in Manachanallur taluk which is about 11.82sq.km (3.2 per cent). The area extents of cultivable waste land are moderately found in Thuraiyur and Lalgudi taluks which is occupy 22.85 sq.km (2.8 per cent) and 12.63sq.km (2.1 per cent) respectively. Lesser extent of cultivable waste land is found in Tiruchirappalli and Srirangam taluks, which occupies 0.5sq.km (0.1 per cent) and 0.19sq.km (0.1 per cent).

During 2012 the permanent pasture land area is 139.60sq.km out of 4403.79sq.km total geographical area which is about 3.2 per cent. The area extents of permanent pasture land are highly concentrated in Lalgudi taluk of the study area, which is occu-

pying 263.57sq.km (10.7 per cent). Remaining the taluks of the study area Manachanallur and Thuraiyur are in second and third place in permanent pasture land which is 23.54sq.km (6.3 per cent) and 34.92sq.km (4.3 per cent) was found. Permanent pasture lands are very lesser in Srirangam taluk, which is 0.47sq.km (0.1 per cent).

AREA UNDER NOT INCLUDED IN CULTIVABLE LAND

Area under not included in cultivable land is 61.21sq.km out of 4403.79 sq.km total geographical area which is about 1.4 per cent. In the year 2008 the area under not include in cultivable land was extremely concentrated in Thuraiyur taluk which is about 30.07 sq.km (3.7 per cent). The area extent of area under not include in cultivable land are moderately found in Tiruchirappalli and Lalgudi taluks which occupies 11.74 sq.km (3.5 per cent) and 6.20 sq.km (1.0 per cent) respectively. Lesser area extent of area under not include in cultivable land are found in Manapparai, Musiri and Thottiyam taluks, which is 3.85 sq.km (0.4 per cent), 2.48 sq.km (0.4 per cent) and 1.06 sq.km (0.4 per cent).

In 2012 the area under not included in cultivable land area was 77.71 sq.km out of 4403.79 sq.km total geographical area which is about 1.8 per cent. The area extent of area under not include in cultivable land are highly concentrated in Thuraiyur taluks of the study area, which occupies 43.55 sq.km (5.4 per cent). Remaining the taluks of the study area Thottiyam and Lalgudi are in second and third place in area under not include in cultivable land which is 12.44 sq.km (1.5 per cent) and 7.26 sq.km (1.2 per cent) respectively. Area under not include in cultivable land are very lesser in Tiruchirappalli taluk, which is 1.05 sq.km (0.3 per cent).

CURRENT FALLOW LAND

Current fallow land is 419.29sq.km out of 4403.79sq.km total geographical areas which is about 9.5 per cent. In the year 2008 the current fallow land was extremely concentrated in Manapparai taluk which is about 187.73sq.km (19.0 per cent). The area extents of current fallow land are moderately found in Thottiyam and Manachanallur taluks which is occupying 44.30 sq.km.15.9 per cent) and 46.39 sq.km (12.5 per cent) respectively. Lesser area extent of current fallow land is found in Lalgudi taluk, which is 4.30sq.km (0.7 per cent).

During 2012 the current fallow land area is 536.24sq.km out of 4403.79sq.km total geographical area which is about 12.2 per cent. The area extents of current fallow land are highly concentrated in Thottiyam taluk of the study area, which is occupying 65.92sq.km (23.7 per cent). Remaining taluks of the study area Manapparai and Manachanallur are in second and third place in current fallow land which is 191.95 sq.km (19.4 per cent) and 63.84 sq.km (17.2 per cent) respectively. Current fallow lands are very lesser in Tiruchirappalli taluk, which is 9.89sq.km (2.9 per cent).

OTHER FALLOW LAND

Other fallow land is 628.53sq.km out of 4403.79 sq.km total geographical area which is about 14.3 per cent. In the year 2008 the other fallow land are extremely concentrated in Srirangam taluk which is about 72.74sq.km (20.9 per cent). The area extents of other fallow land are moderately found in Musiri and Tiruchirappalli taluks which is occupy 135.17 sq.km.(20.4 per cent) and 59.97sq.km (17.6 per cent) respectively.Lesser area extent of other fallow land is found in Thottiyam taluk, which is 9.72 sq.km 3.5 per cent).

During 2012 the other fallow land area is 475.78sq.km out of 4403.79 sq.km total geographical area. This is about10.8 per cent. The area extents of other fallow land are highly concentrated

in Tiruchirappalli taluk of the study area, which is occupying 69.57sq.km (20.5 per cent). Remaining taluks of the study area Manapparai and Srirangam are in second and third place in other fallow land which is 156.23sq.km (15.8 per cent) and 52.47sq.km (14.7 per cent) respectively. Current fallow lands are very lesser in Thottiyam taluk, which is 9.72sq.km (3.5 per cent).

NET CULTIVABLE AREA

Net cultivable area is 1851.93sq.km out of 4403.79 sq.km total geographical area. This is about 42.1 per cent. In the year 2008 the net cultivable land are extremely concentrated in Lalgudi taluk which is about 330.65sq.km (55.6 per cent). The area extents of net cultivable area are moderately found in Thottiyam and Manachanallur taluks which is occupying 150.22 sq.km (25.4 per cent) and 165.03 sq.km (44.4 per cent) respectively. Lesser area extent of net cultivable is found in Tiruchirappalli taluk, which is 96.60sq.km (28.1 per cent).

During 2012 the net cultivable area was 1521.75sq.km out of 4403.79sq.km total geographical area which is about 34.6 per cent. The area extents of net cultivable area are highly concentrated in Thottiyam taluk of the study area, which is occupying 150.22sq.km (54.0 per cent). Remaining taluks of the study area Srirangam and Manapparai are in second and third place in net cultivable area which is 138.24sq.km (38.6 per cent) and 356.24sq.km (37.8

Table No. 1. Taluk-Wise Landuse Pattern of Tiruchirappalli District - 2008										
Sl. No	Landuse Pattern									Total Area (in Sq.km.)
		Trichy	Srirangam	Manapparai	Musiri	Thottiyam	Thuraiyur	M. Nallur	Lalgudi	
1	Forest	2.34 (0.7)	0.45 (0.1)	83.12 (8.4)	16.60 (2.5)	0.77 (0.3)	233.09 (28.8)	15.55 (4.2)	10.54 (1.8)	362.46 (8.2)
2	Barron and Uncultivable land	11.34 (3.3)	6.73 (1.9)	14.24 (1.4)	24.68 (3.7)	1.93 (0.7)	74.82 (9.3)	8.11 (2.2)	15.47 (2.6)	157.32 (3.6)
3	Land put to non-agricultural use	130.59 (38.4)	88.41 (24.7)	144.00 (14.5)	101.68 (15.3)	66.27 (23.8)	47.62 (5.9)	55.50 (14.9)	109.02 (18.3)	743.09 (16.9)
4	Cultivable waste	18.50 (5.4)	15.71 (4.4)	15.59 (1.6)	32.95 (5.0)	2.95 (1.1)	13.48 (1.7)	13.77 (3.7)	14.65 (2.5)	127.60 (2.9)
5	Permanent pastures	0.50 (0.1)	0.19 (0.1)	2.10 (0.2)	1.47 (0.2)	0.80 (0.3)	22.85 (2.8)	11.82 (3.2)	12.63 (2.1)	52.36 (1.2)
6	Area under not include in cultivable	11.74 (3.5)	2.30 (0.6)	3.85 (0.4)	2.48 (0.4)	1.06 (0.4)	30.07 (3.7)	3.51 (0.9)	6.20 (1.0)	61.21 (1.4)
7	Current fallow land	9.26 (2.7)	23.76 (6.6)	187.73 (19.0)	74.22 (11.2)	44.30 (15.9)	29.33 (3.6)	46.39 (12.5)	4.30 (0.7)	419.29 (9.5)
8	Other fallow land	59.97 (17.6)	74.72 (20.9)	165.72 (16.7)	135.17 (20.4)	9.72 (3.5)	39.90 (4.9)	51.81 (13.9)	91.52 (15.4)	628.53 (14.3)
9	Net cultivable area	95.60 (28.1)	145.88 (40.7)	373.85 (37.8)	273.44 (41.3)	150.22 (54.0)	317.26 (39.2)	165.03 (44.4)	330.65 (55.6)	1851.93 (42.1)
Total Geographical Area		339.84 (7.7%)	358.15 (8.1%)	990.20 (22.5%)	662.69 (15%)	278.02 (6.3%)	808.42 (18.4%)	371.49 (8.4%)	594.98 (13.5%)	4403.79 (100%)

Sources: Statistical Department – Tiruchirappalli

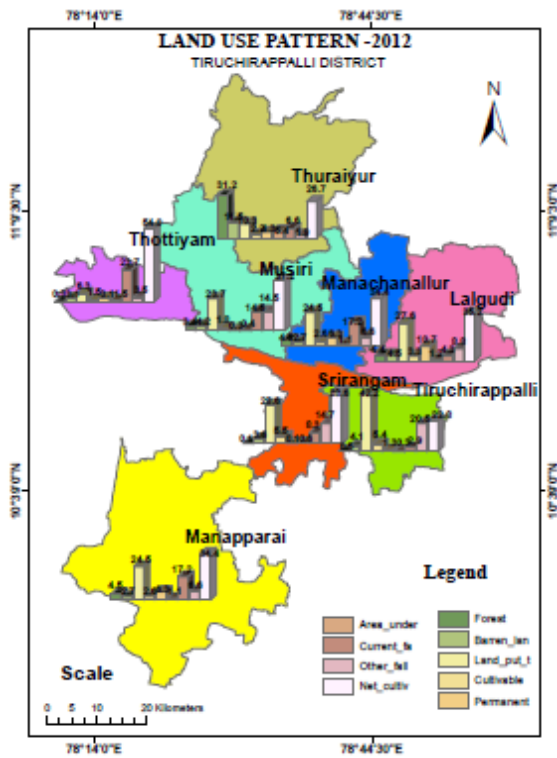
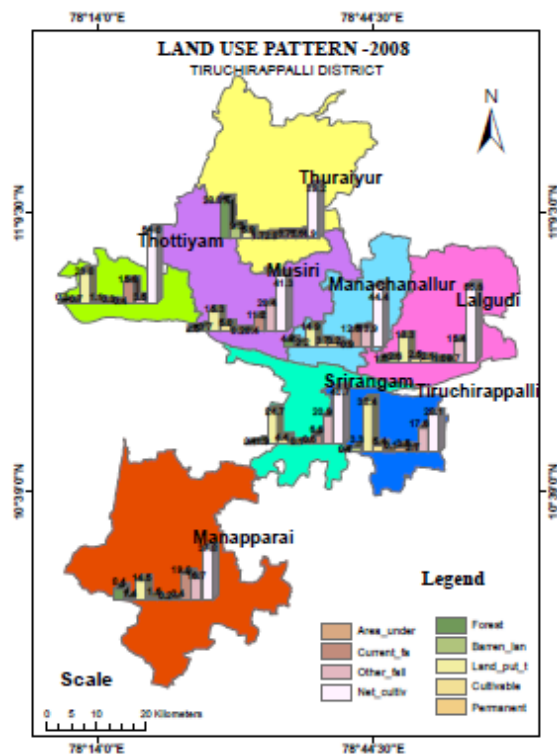


Table No. 2. Taluk-Wise Landuse Pattern of Tiruchirappalli District - 2012

Sl. No	Land-use Pattern	Trichy	Srren gam	Manap-parai	Musiri	Thot-tiyam	Thur aiyur	M. Nal-lur	Lalgudi	Total Area (in Sq.km)
1	Forest	1.80 (0.5)	0.38 (0.1)	87.12 (8.8)	22.30 (3.4)	0.80 (0.3)	252.37 (31.2)	16.84 (4.5)	26.09 (4.4)	407.70 (9.3)
2	Barron and Uncultivable land	13.87 (4.1)	12.73 (3.6)	21.24 (2.1)	28.12 (4.2)	8.56 (3.1)	92.64 (11.5)	10.12 (2.7)	26.58 (4.5)	213.86 (4.9)
3	Land put to non-agricultural use	143.32 (42.2)	102.42 (28.6)	152.77 (15.4)	157.36 (23.7)	17.56 (6.3)	82.88 (10.3)	91.07 (24.5)	164.42 (27.6)	911.80 (20.7)
4	Cultivable waste	18.50 (5.4)	19.57 (5.5)	18.65 (1.9)	11.67 (1.8)	4.23 (1.5)	17.64 (2.2)	9.64 (2.6)	19.45 (3.3)	119.35 (2.7)
5	Permanent pastures	4.32 (1.3)	0.47 (0.1)	1.94 (0.2)	2.27 (0.3)	8.57 (3.1)	34.92 (4.3)	23.54 (6.3)	63.57 (10.7)	139.60 (3.2)
6	Area under not include in cultivable	1.05 (0.3)	2.30 (0.6)	4.06 (0.4)	2.87 (0.4)	12.44 (1.5)	43.55 (5.4)	4.18 (1.1)	7.26 (1.2)	77.71 (1.8)
7	Current fallow land	9.89 (2.9)	29.57 (8.3)	191.95 (19.4)	95.80 (14.5)	65.92 (23.7)	53.48 (6.6)	63.84 (17.2)	25.79 (4.3)	536.24 (12.2)
8	Other fallow land	69.57 (20.5)	52.47 (14.7)	156.23 (15.8)	95.78 (14.5)	9.72 (3.5)	15.26 (1.9)	24.41 (6.6)	52.34 (8.8)	475.78 (10.8)
9	Net cultivable area	77.52 (22.8)	138.24 (38.6)	356.24 (37.8)	246.52 (37.2)	150.22 (54.0)	215.68 (26.7)	127.85 (34.4)	209.48 (35.2)	1521.75 (34.6)
	Total Geographical Area	339.84 (7.7%)	358.15 (8.1%)	990.20 (22.5%)	662.69 (15%)	278.02 (6.3%)	808.42 (18.4%)	371.49 (8.4%)	594.98 (13.5%)	4403.79 (100%)

Sources: Statistical Department – Tiruchirappalli

per cent) was found. Net cultivable area is very lesser in Tiruchirappalli taluk, which is 77.52 sq.km (22.8 per cent).

ASSESSMENT OF CROPPING PATTERN (2008 & 2012)

The cropping pattern of the study area are described in the following section for the year 2008 & 2012.

PADDY

As per the statistical report of 2008, the paddy cultivated crop area is 917.77sq.km out of 2531.24 sq.km total net cultivable area which is about 36.3 per cent. Paddy crop are highly concentrated in Tiruchirappalli taluk which is about 187.80sq.km (20.5 per cent). The remaining taluks of the study area the extent of paddy crop area is found to be more in Lalgudi and Srirangam taluks which occupy 128.90sq.km (14.0 per cent) and 116.24sq.km (12.7 per cent) respectively. Lesser area extent of paddy crop is found in Thottiyam and Manapparai taluks, which is 62.64sq.km (6.8 per cent) and 9587 sq.km (10.4 per cent). Table No.3 & Fig. No.4

In the year 2012 the paddy cultivated crop area is 988.74sq.km out of 2287.53 sq.km total net cultivable area which is about 43.2 per cent. Paddy crops are found intensively in Tiruchirappalli taluk, which is about 194.11sq.km (19.6 per cent). The remaining taluks of the study area Srirangam and Thuraiyur are in second and third place in paddy crop cultivated area which is 127.48sq.km (12.9 per cent) and 116.35sq.km (11.8 per cent) respectively. Paddy cultivated crop area are very lesser in Thottiyam taluk, which is 71.64 sq.km (7.2 per cent). Rainfed agriculture for paddy cultivation is carried out during the period (September – February) whereas irrigated agriculture for paddy cultivation is carried out during the period (June – October).

MILLETS

It is cultivated in 397.40sq.km out of 2531.24sq.km of total net cultivable area of the study which is about 15.7 per cent as per the statistical report of 2008. Paddy crop are highly concentrated in Tiruchirappalli taluk which is about 187.80sq.km (20.5 per cent). The remaining taluks of the study area the area extent of millet crop is found to be more in Lalgudi and Thuraiyur taluks which occupy 94.20sq.km (23.7 per cent) and 8180sq.km

(20.6 per cent) respectively. Lesser area extent of millet crops are found in Manachanallur and Tiruchirappalli taluks, which is 3.42sq.km (0.9 per cent) and 4.50sq.km (1.1 per cent).

In the year 2012 statistical report of the cropping pattern, the millets cultivated crop area was 283.63sq.km out of 2287.53 sq.km total cultivable areas which is about 12.4sq.km. Millet crops are found intensively in Musiri taluk, which is about 87.54sq.km (30.9 per cent). The remaining taluks of the study area the area extent of millet crop are found to be more in Manapparai and Thuraiyur which is 73.72sq.km (26.0 per cent) and 73.78sq.km (26.0 per cent) respectively. Millet cultivated crop area are very lesser in Tiruchirappalli and Manachanallur taluk, which is 4.27sq.km (1.5 per cent) and 3.93 sq.km (1.4 per cent). Rainfed agriculture for millets cultivation is carried out during the period (August– February) whereas irrigated agriculture for millets cultivation is carried out during the period (January – March).

PULSES

Pulses also one of the major crops cultivated in the study area. It includes black gram and green gram crops. It is cultivated in 335.99sq.km out of 2531.24 sq.km of total net cultivable area of the study which is about 13.3 per cent as per the statistical report of 2008. Pulses crop are highly concentrated in Musiri taluk which is about 87.70sq.km (26.1 per cent). The remaining taluks of the study area the area extent of Pulses crop are found to be more in Manapparai and Lalgudi taluks which occupy 57.26sq.km (17.0 per cent) and 52.50sq.km (15.6 per cent) respectively. Lesser area extent of pulses crops are found in Srirangam and Thottiyam taluks, which is 12.79sq.km (3.8 per cent) and 32.48sq.km (9.7 per cent).

In the year 2012 statistical report of the cropping pattern, the pulses cultivated crop area is 289.45sq.km out of 2287.53sq.km total net cultivable areas which is about 12.7 per cent. The both the year 2006 and 2012 pulses crops are found intensively in Musiri taluk, which is about 75.34 sq.km (26.6 per cent). The remains taluks of the study area the area extent of pulses crop were found to be more in Manapparai and Thuraiyur which is 47.92sq.km (16.6 per cent) and 39.27sq.km (13.6 per cent) respectively. Pulses cultivated crop area are very lesser in Tiruchirappalli and Manachanallur taluk, which is 19.57 sq.km (6.8 per cent) and 21.05 sq.km (7.3 per cent) Both the rainfed and irrigated agriculture for Pulses cultivation is carried out during the period of January – March.

COTTON

It is cultivated in 169.81sq.km out of 2531.24 sq.km of total net cultivable area of the study which is about 6.7 per cent as per the statistical report of 2008. Cotton crop are highly concentrated in Manapparai taluk which is about 97.56sq.km (57.5 per cent). The remains taluks of the study area the areal extent of cotton crop are found to be more in Thuraiyur and Musiri taluks which occupying 42.27sq.km. (24.9 per cent) and 12.93sq.km (7.6 per cent) were in use. Lesser area extent of cotton crops are found in Manachanallur and Srirangam taluks, which is 2.64sq.km (1.6 per cent) and 3.81sq.km (2.2 per cent).

According to 2012 statistical report of the cropping pattern, the cotton cultivated crops area is 131.30sq.km out of 2287.53sq.km total net cultivable areas which is about 5.7 per cent. Cotton crops are found intensively in Manapparai taluk, which is about 65.48 sq.km (49.9 per cent). In the remaining taluks of the study area the area extent of cotton crop are found to be more in Thuraiyur and Musiri which is 40.27 sq.km (30.7 per cent) and 10.21 sq.km (7.8 per cent) respectively. Cotton cultivated crop area are very lesser in Tiruchirappalli and Manachanallur taluk, which is 3.26sq.km (2.5 per cent) and 2.37sq.km (1.8 per cent). Rainfed agriculture for cotton cultivation is carried out during the period (September – February) while irrigated agriculture

for cotton cultivation is carried out during the period (February – August). Table No.4 & Fig. No.5

OIL SEEDS

Oilseeds are also one of the major crops cultivated in the study area. It includes groundnut, gingely and sunflower crops. It is cultivated in 283.98sq.km out of 2531.24 sq.km of total net cultivable area of the study which is about 11.2 per cent as per the statistical report of 2008. Oilseeds crop are highly concentrated in Musiri taluk which is about 76.00sq.km (26.8 per cent). In the remaining taluks of the study area the area extent of oilseeds crop are found to be more in Lalgudi and Thuraiyur taluks which occupies 68.76 sq.km (24.2 per cent) and 62.70 sq.km (22.1 per cent) respectively. Lesser area extent of oilseeds crops are found in Srirangam and Manachanallur taluks, which is 4.97sq.km (1.8 per cent) and 5.37sq.km (1.9 per cent).

From 2012 statistical report of the cropping pattern, the oilseeds cultivated crop area is 200.53sq.km out of 2287.53sq.km total net cultivable areas which is about 8.8 per cent. Oilseeds crops are found intensively in Musiri taluk, which is about 53.71sq.km (26.8 per cent). In the remaining taluks of the study area the area extent of oilseeds crop are found to be more in Thuraiyur and Lalgudi which is 46.21 sq.km (23.0 per cent) and 42.63 sq.km (21.3 per cent) respectively. Oilseeds cultivated crop area is very lesser in Srirangam and Manachanallur taluk, which is 3.26 sq.km (1.6 per cent) and 3.81sq.km (1.9 per cent). Rainfed agriculture for oilseeds cultivation is carried out during the period (June – November) whereas irrigated agriculture for oilseeds cultivation is carried out during the period (June – December).

SUGARCANE

It is cultivated in 139.84sq.km out of 2531.24 sq.km of total net cultivable area of the study which is about 5.5 per cent as per the statistical report of 2008. Sugarcane crop are highly concentrated in Lalgudi taluk which is about 54.40sq.km (38.9 per cent). The remaining taluks of the study area the area extent of sugarcane crop are found to be more in Thuraiyur and Thottiyam taluks which occupy 31.40sq.km (22.5 per cent) and 25.42sq.km (18.2 per cent) respectively. Lesser area extent of sugarcane crops are found in Srirangam and Manachanallur taluks, which is 3.78sq.km (2.7 per cent) and 4.21sq.km (3.0 per cent).

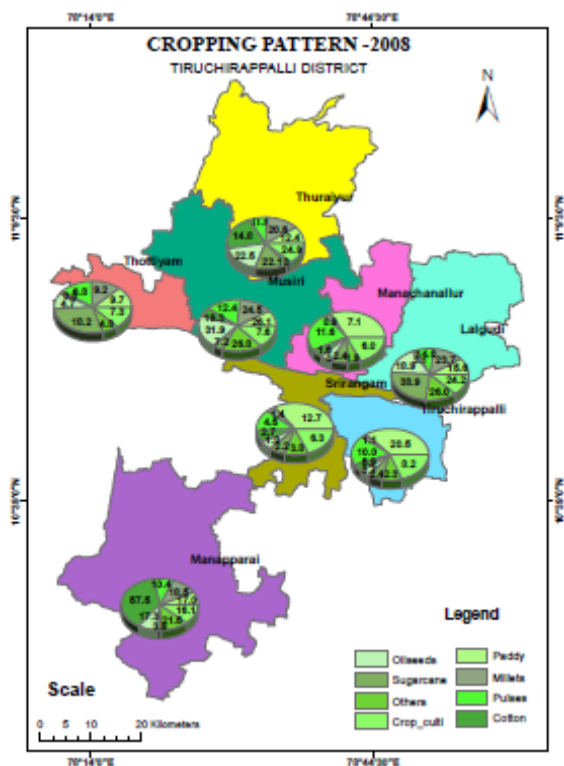
In the year 2012 statistical report of the cropping pattern, the sugarcane cultivated crop area is 113.59sq.km out of 2287.53 sq.km total net cultivable areas which is about 5.0 per cent. Sugarcane crops are found intensively in Lalgudi taluk, which is about 43.12sq.km (38.0 per cent). The remains taluks of the study area the area extent of sugarcane crop are found to be more in Thuraiyur and Thottiyam which 27.49sq.km (24.2 per cent) and 18.79sq.km (16.5 per cent) respectively. Sugarcane cultivated crop area are very lesser in Tiruchirappalli and Manachanallur taluk, which is 185 sq.km (1.6 per cent) and 3.79 sq.km (3.3 per cent). Sugarcane is cultivated only in the irrigated season of the study area. It is carried out during the period of January – December.

OTHERS

Other crops, includes chilly, cashew, onion, oil palm, turmeric and banana. They are cultivated in 286.45sq.km out of 2531.24 sq.km of total net cultivable area of the study which is about 11.3 per cent as per the statistical report of 2008. Other crops are highly concentrated in Musiri taluk which is about 91.40sq.km (31.9 per cent). The remaining taluks of the study area the area extent of other crop are found to be more in Lalgudi and Manapparai Taluks which occupy 74.50sq.km (26.07 per cent) and 61.54sq.km (21.5 per cent) respectively. Lesser area

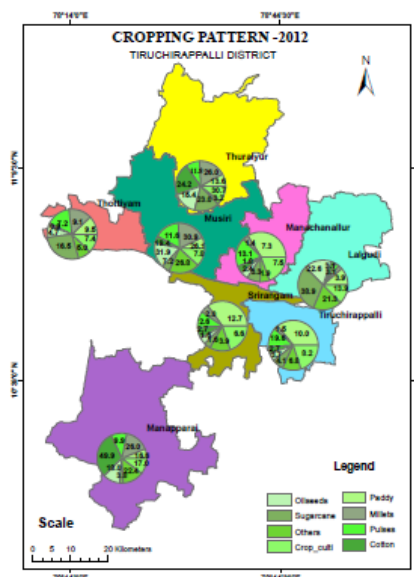
Sl. No	Cropping Pattern	Table No. 3 Taluk-Wise Cropping Pattern of Tiruchirappalli District – 2008								
		Trichy	Sreirengam	Manapparai	Musiri	Thottiyam	Thuraiyur	Manachanallur	Lalgudi	Total Area (in Sq.km.)
1	Paddy	187.80 (20.5)	116.24 (12.7)	95.87 (10.4)	114.10 (12.4)	62.64 (6.8)	105.40 (11.5)	106.82 (11.6)	128.90 (14.0)	917.77 (36.3)
2	Millets	4.50 (1.1)	5.62 (1.4)	73.64 (18.5)	97.50 (24.5)	36.72 (9.2)	81.80 (20.6)	3.42 (0.9)	94.20 (23.7)	397.40 (15.7)
3	Pulses	27.70 (8.2)	12.79 (3.8)	57.26 (17.0)	87.70 (26.1)	32.48 (9.7)	41.80 (12.4)	23.76 (7.1)	52.50 (15.6)	335.99 (13.3)
4	Cotton	3.96 (2.3)	3.81 (2.2)	97.56 (57.5)	12.93 (7.6)	1.37 (0.8)	42.27 (24.9)	2.64 (1.6)	5.27 (3.1)	169.81 (6.7)
5	Oil seeds	6.80 (2.4)	4.97 (1.8)	45.84 (16.1)	76.00 (26.8)	13.54 (4.8)	62.70 (22.1)	5.37 (1.9)	68.76 (24.2)	283.98 (11.2)
6	Sugarcane	5.11 (3.7)	3.78 (2.7)	5.42 (3.9)	10.10 (7.2)	25.42 (18.2)	31.40 (22.5)	4.21 (3.0)	54.40 (38.9)	139.84 (5.5)
7	Others	16.90 (5.9)	12.97 (4.5)	61.54 (21.5)	91.40 (31.9)	13.57 (4.7)	8.67 (3.0)	6.90 (2.4)	74.50 (26.0)	286.45 (11.3)
Crop cultivated area		252.77 (10.0)	160.18 (6.3)	437.13 (17.3)	489.73 (19.3)	185.74 (7.3)	374.04 (14.8)	153.12 (6.0)	478.53 (18.9)	2531.24 (100)
Total Geographical Area		339.84	358.15	990.20	662.69	278.02	808.42	371.49	594.98	4403.79

Sources: Statistical Department – Tiruchirappalli



3	Pulses	19.57 (6.8)	11.32 (3.9)	47.92 (16.6)	75.34 (26.6)	27.46 (9.5)	39.27 (13.6)	21.05 (7.3)	47.52 (16.4)	289.45 (12.7)
4	Cot-ton	3.26 (2.5)	3.47 (2.6)	65.48 (49.9)	10.21 (7.8)	1.15 (0.9)	40.27 (30.7)	2.37 (1.8)	5.09 (3.9)	131.30 (5.7)
5	Oil seeds	5.48 (2.7)	3.26 (1.6)	36.12 (18.0)	53.71 (26.8)	9.31 (4.6)	46.21 (23.0)	3.81 (1.9)	42.63 (21.3)	200.53 (8.8)
6	Sugar-cane	4.62 (4.1)	1.85 (1.6)	4.37 (3.8)	9.56 (8.4)	18.79 (16.5)	27.49 (24.2)	3.79 (3.3)	43.12 (38.0)	113.59 (5.0)
7	Oth-ers	18.57 (6.6)	13.64 (4.9)	62.67 (22.4)	91.97 (32.8)	14.12 (5.0)	9.07 (3.2)	6.78 (2.4)	63.47 (22.6)	280.29 (12.3)
Crop cultivated area		249.88 (10.9)	166.75 (7.3)	387.96 (17.0)	442.80 (19.4)	168.34 (7.4)	352.44 (15.4)	171.09 (7.5)	348.27 (15.2)	2287.53 (100)
Total Geographical Area		339.84	358.15	990.20	662.69	278.02	808.42	371.49	594.98	4403.79

Sources: Statistical Department – Tiruchirappalli



Sl. No	Cropping Pattern	Table No. 4 Taluk-Wise Cropping Pattern of Tiruchirappalli District – 2012								
		Trichy	Sreirangam	Manapparai	Musiri	Thottiyam	Thuraiyur	Manachanallur	Lalgudi	Total Area (in Sq.km.)
1	Paddy	194.11 (19.6)	127.48 (12.9)	97.68 (9.9)	114.47 (11.6)	71.64 (7.2)	116.35 (11.8)	129.36 (13.1)	137.65 (13.9)	988.74 (43.2)
2	Millets	4.27 (1.5)	5.73 (2.0)	73.72 (26.0)	87.54 (30.9)	25.87 (9.1)	73.78 (26.0)	3.93 (1.4)	8.79 (3.1)	283.63 (12.4)

extent of other crops is found in Manachanallur and Thuraiyur taluks, which is 6.90 sq.km (2.4 per cent) and 8.67sq.km (3.0 per cent).

In the year 2012 statistical report of the cropping pattern, the other cultivated crop area is 280.29sq.km out of 2287.53sq.km total net cultivable areas which is about 12.3 per cent. Other crops are found intensively in Musiri taluk, which is about 91.97sq.km (32.8 per cent). The remaining taluks of the study area the area extent of other crop are found to be more in Manapparai and Lalgudi which is 62.67sq.km (22.4 per cent) and 63.47sq.km (22.6 per cent) respectively. Other cultivated crop area is very lesser in Thuraiyur and Manachanallur taluk, which is 9.07sq.km (3.2 per cent) and 6.78 sq.km (2.4 per cent). Rainfed agriculture for other crop cultivation is carried out during the period (August – February) while irrigated agriculture for other crops cultivation are carried out during the period (January – December).

CHANGES IN LANDUSE AND CROPPING PATTERN

The changes of landuse pattern are analyzed from the 2008 and 2012 data of the study area. The taluk-wise landuse and cropping pattern of the study area are mainly changes from the year 2008 to 2012. Especially, the total area of the forest land is increased from 8.2 per cent to 9.3 per cent. Uncultivable land increased from 3.6 per cent to 4.9 per cent, land put to non-agricultural use increased from 16.9 per cent to 20.7 per cent, cultivable waste land decrease from the year 2008 to 2012 from 2.9 per cent to 2.7 per cent, permanent pasture land increased from 1.2 per cent to 3.2 per cent, area under not in cultivable land increased 1.4 per cent to 1.8 per cent, current fallow land increased from 9.5 per cent to 12.2 per cent, other fallow land is increased from 10.3 per cent to 14.8 per cent and net cultivable area decrease from 42.1 per cent to 34.6 per cent. In 2008 compared to 2012 the overall utilization of landuse categories Manapparai and Thuraiyur taluk are in first place. Thottiyam is least.

The changes of cropping pattern are as follow. Paddy crops is increased from the year 2008 to 2012 which from 36.3 per cent to 43.2 per cent, millets crops decreased from 15.7 per cent to 12.4 per cent, Pulses decreased from 13.3 per cent to 12.7 per cent, cotton decreased from 6.7 per cent to 5.7 per cent, oilseed decreased from 11.2 per cent to 8.8 per cent, sugarcane decreased from 5.5 per cent to 5.0 per cent and other crops is increase from 11.3 per cent to 12.3 per cent. The overall cropping pattern of the study area Musiri, Lalgudi and Manapparai taluks cultivated almost all the crops. Srirangam is least.

CONCLUSION

From the assessment of landuse categories, almost all are found in Thuraiyur and Manapparai taluks of the study area. Thottiyam taluk is least in distribution of landuse categories. In this study area in landuse, land put to non-agricultural use was the lowest at 743.09sq.km (16.9 per cent) in 2008, it has been identified in Tiruchirappalli taluk. In 2012 there was an increase in the highest value from (16.9 per cent to 20.7 per cent) land put to non-agriculture use it has been found in Srirangam and Lalgudi. The lowest was 52.36sq.km (1.2 per cent) of permanent pasture landuse it has been identified in Manachanallur and Thuraiyur taluks. In 2012 the highest value permanent pasture land increased to 3.2 per cent it has been found in Lalgudi taluk.

The overall cropping pattern of the study area, Musiri, Lalgudi and Manapparai taluks have crops well distributed and cultivated. Srirangam is the least. Paddy having the highest cultivation 917.77sq.km (36.3 per cent) in 2008, it has been identified in Tiruchirappalli, Lalgudi and Srirangam taluks, increased to 988.74sq.km (43.2 per cent) in 2012 Tiruchirappalli, Srirangam, Lalgudi and thuraiyur taluks. In 2008 sugarcane cultivation was 5.5 per cent, the lowest value decreased to 5.0 per cent in 2012 it has been found in Thuraiyur, lalgudi and Thottiyam taluks.

The cropping changes are analyzed into statistical methods. Mainly the changes are identified in the field of paddy where there is a lot of variation in Manachanallur, Lalgudi and Thottiyam, because of failure of monsoon, and people moving from rural to urban, and migration are also some of the reasons. The failure of monsoon is important in another one category. In 2008 compared to 2012 the paddy fields are highly decreased, because of the built-up lands have increased day by day, due to over population and infrastructure were developed in this area. The taluk wise changes details are identified.

Finally the researcher identified into many changes in agricultural field. The spatial distribution of landuse and cropping pattern may be affected by rainfall, climatic condition, and quality of water, physical factors and human activities. We must try to avoid the development urbanized areas near by agricultural cropping fields.

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