

GENERAL LAND USE PATTERN IN THANJAVUR DISTRICT, TAMIL NADU: A GEOGRAPHICAL ANALYSIS

Kalyani. V, Assistant Professor, Department of Geography, Government College for Women (Autonomous), Kumbakonam – 612001.
Neelakantan. R, Professor, Department of Industries and Earth Science, Tamil University, Thanjavur - 613010.

E-Mail: kalyanisatheesh@gmail.com

Abstract

Thanjavur District is geographically located in the Cauvery delta area, and it is known as the "rice bowl" of Tamil Nadu State. Fruitful terrain was equally fertile ground for the creation of art, architecture, and culture. The study of the general land use pattern in Thanjavur District, Tamil Nadu, is an essential part of agricultural geography since it offers a solid foundation for the planning and development of the farming sector in the district. The agricultural industry is the most important source of revenue for the people of the Thanjavur District. Finally, this research discovers that the Thanjavur districts land use classifications have been determined taluk-by-taluk utilising the Geographic Information System (GIS). As a result, the current paper covers the overall land use pattern in Thanjavur District, Tamil Nadu: A Geographical Analysis.

Keywords: Land use/land cover, Geographic Information System (GIS), Thanjavur district.

Introduction

Agriculture is the science and art of producing plant life from the soil to benefit humans and other living things. It includes all the productive efforts he put into raising different products by increasing with other natural recourses to satisfy his needs and wants. Agriculture is the backbone of the Indian economy. In India, nearly 70 % of the total population and 90 % of the rural population is engaged in agriculture. Land use can be considered an important aspect of the land-man relationship, and it has been studied particularly relevant to agricultural geography (Yuvaraj et al., 2020; Gumma, 2015; Sujatha et al., 2011).

Numerous foreign and Indian geographers have interpreted the idea of land use differently. For, the land must be exploited to meet the legitimate wants and aspirations of the people as feasible (NRSA, 2006, 2007). Essentially self-explanatory, the phrase land use refers to the real and precise usage of an earth's surface in terms of natural main land use,

such as the land beneath the forest, grassland, farming, or other similar land uses, as opposed to other land uses. The term "land usage" refers to all industrialised and developing areas on their surface, for a specific point at a given time and space (Arulbalaji, 2019; Gumma et al., 2015; Freeman, 1968). Land use is any permanent or cyclic human intervention on the environment to satisfy human needs (Ganeshmoorthi, 2018; Prabu and Dar, 2018; Sangeetha and Baskaran, 2011). Land use appropriateness is a tract's potential to accommodate various land use patterns under specific cultural and socio-economic circumstances (Lenin Sundar et al., 2019; Vink, 1975). Symons (1978) states that land-use maps are crucial instruments for regional development and planning. (Krishnan, 2014).

Thanjavur district has been known for its agricultural activity from ancient times. The Granary of Tamil Nadu is in the deltaic area of the famed river Cauvery and is criss-crossed by a vast network of irrigation systems and irrigation systems. Tropical vegetation abounds in this coastal area. An important part of agricultural geography is the study of general land-use patterns in the Thanjavur District.

The Study Area

Located in southern India, Thanjavur is a significant centre of art and architecture. The city of Thanjavur is home to the majority of the magnificent living Chola temples, which are all designated as UNESCO World Heritage Sites. On the eastern coast of the Indian state of Tamil Nadu, Thanjavur district is situated. Its latitude ranges from $90^{\circ} 50'$ to $11^{\circ} 25'$ north, while its longitude ranges from $78^{\circ} 45'$ to $70^{\circ} 25'$ east. It has a total area of 3,411 square kilometres (Fig.1). The Coleroon River separates the district from the Perambalur and Thiruchirappalli districts to the north. It is bordered on the east by the Thiruvarur and Nagapattinam districts, on the south by the Palk Strait and Pudukkottai district, and on the west Pudukkottai and Thiruchirappalli districts. It is also bordered on the east by the Thiruvarur and Nagapattinam districts. Thanjavur district is divided into three revenue divisions with eight taluks with fourteen blocks and three municipalities.

Thanjavur had a final population of 2,405,890 people in the 2011 Census, with 11, 82,416 males and 12, 23,474 females. When comparing the population in 2011 to the population in 2001, there was an 8.42 % increase. Thanjavur District population of 7.91 % between the 1991 and 2001 censuses, according to the most recent census of India in 2001. People from all three major faiths, namely Hinduism, Islam, and Christianity, coexist peacefully in the same community. They observe their fairs and festivals with a deep feeling of reverence for one another. Thanjavur is well-connected to other regions of India and other cities and towns in Tamil Nadu, thanks to its excellent road and rail infrastructure. The closest airport is Tiruchirappalli International Airport, which is 56 kilometres away and can be reached by car. In terms of distance from Thanjavur, the closest seaport is Nagapattinam, 84 kilometres (52 miles) away.

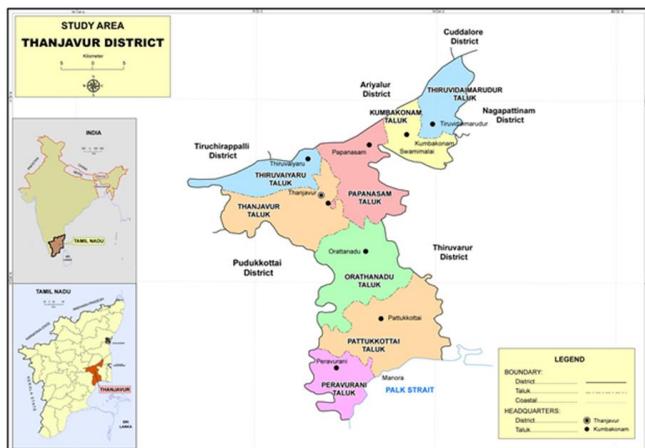


Figure 1.

Materials and Methods

Secondary sources of information were used in the current study. Government and non-government organisations provided the information. The statistical department of Thanjavur district provided the information on land use. It was the Census of India 2001 and 2011 that provided the information on population characteristics. According to the Survey of India topographical sheet at a scale of 1:250,000, a base map of the study area has been created. On-screen digitisation of topographical maps was accomplished through the use of ArcGIS and a scanner. Thematic maps with diagrams were created and presented in ArcGIS for the study's related thematic maps. It was necessary to use additional applications such as Microsoft Excel for tabular data and Microsoft Word for textual data processing, editing, and display.

Result and Discussion

Land Use Classification of Thanjavur District

The district general land use results from an interaction between man and environment in permanent adjustment between constraining properties and socio-economic attributes. In Thanjavur district, land use was classified into nine major categories: forest, barren and uncultivable uses, land put to non-pasture and other grassing land, land under miscellanea tree crops, and area are sown, current fallows, other fallow, and a net total cropped areas.

The total area of the district is 3,27,618 hectares which have been shown in Table 1. Of which the forest land was 1,255 hectare (0.38%), barren and uncultivable uses was 7,403 hectare (2.26%), land put to non-agricultural uses were 68,624 hectare (20.95%), cultivable waste was 7,291 hectare (2.23%), permanent pasture land was 1,894 hectare (0.58%), Land under tree crops and grosses not include in net-area sown land was 2,117 hec (0.65%), current fallows was 20,856 hec (6.37%), other fallows 9,675 hec (2.95%) and net-area sown land was 20,8502 hectare (63.64%) (Table 1).

Table 1. Land use classification of Thanjavur District, 2008-2012

Sl. No.	Land Use Classification	Area in Hectare	Area in %
1	Forest	1,255	0.38
2	Barren and uncultivable uses	7,403	2.26
3	Land put to non-agricultural uses	68,624	20.95
4	Cultivable waste	7,291	2.23
5	Permanent Pasture	1,894	0.58
6	Land under tree crops and grosses not include in net-area sown	2,117	0.65
7	Current Fallow	20,856	6.37
8	Other Fallow	9,675	2.95
9	Net area sown	20,8502	63.64
Total		3,27,618	100.0

Taluk Wise Land Use Pattern

Thanjavur district consists of eight taluks with 3,411 sq. km, namely Thanjavur, Thiruvaiyaru Orathanadu, Kumbakonam, Thiruvidaimarudur. Papanasam, Pattukkottai and Peravurani taluks. The present study has analysed the taluk-wise land use utilisation of Thanjavur district from 2008 to 2012 and has been shown in table 2 and Fig.2.

Thanjavur Taluk: In Thanjavur taluk, total major land use and land cover categories of barren and uncultivable uses land was (0.33%), land put to non-agricultural uses were (24.39%), cultivable waste was (2.89%), permanent pasture land was (0.21%), land under tree crops and grosses not include in the net- area sown land was (1.73%), current fallows was (7.92%), other fallows (2.05%) and net- area sown land was (60.49%).

Thiruvaiyaru Taluk: In this taluk, total major land use and land cover categories of barren and uncultivable uses land was (7.87%), land put to non-agricultural uses were (16.43%), cultivable waste was (1.47%), permanent pasture land was (1.53%), land under tree crops and grosses not include in the net- area sown land was (0.34%), current fallows was (1.27%), other fallows (1.47%) and net- area sown land was (69.63%).

Orathanadu Taluk: In this taluk, total major land use and land cover categories of barren and uncultivable uses land was (0.29%), land put to non-agricultural uses were (17.29%), cultivable waste was (3.92%), permanent pasture land was (0.70%), land under tree crops and grosses not in-

clude in the net- area sown land was (0.29%), current fallows was (9.00%), other fallows (5.52%) and net- area sown land was (63.01%).

Kumbakonam Taluk: In this taluk, total major land use and land cover categories land put to non-agricultural uses were (23.40%), cultivable waste was (0.78%), permanent pasture land was (0.06%), land under tree crops and grosses not include in a net- area sown land was (1.36%), current fallows was (6.21%), other fallows (0.18%) and net- area sown land was (68.02%).

Thiruvidaimaruthur Taluk: In this taluk, total major land use and land cover categories of land put to non-agricultural uses were (15.21%), cultivable waste was (1.81%), permanent pasture land was (0.08%), land under tree crops and grosses do not include in the net- area sown land was (1.22%), current fallows were (1.96%), other fallows (1.71%) and net- area sown land was (77.01%).

Papanasam Taluk: In this taluk, total major land use and land cover categories of barren and uncultivable uses land was (0.01%), land put to non-agricultural uses were (25.71%), cultivable waste was (1.68%), permanent pasture land was (0.25%), land under tree crops and grosses not include in a net- area sown land was (0.35%), current fallows was (6.17%), other fallows (5.87%) and net- area sown land was (59.96%).

Pattukkottai Taluk: In this taluk, total major land use and land cover categories of a forest of land were (1.76%), bar

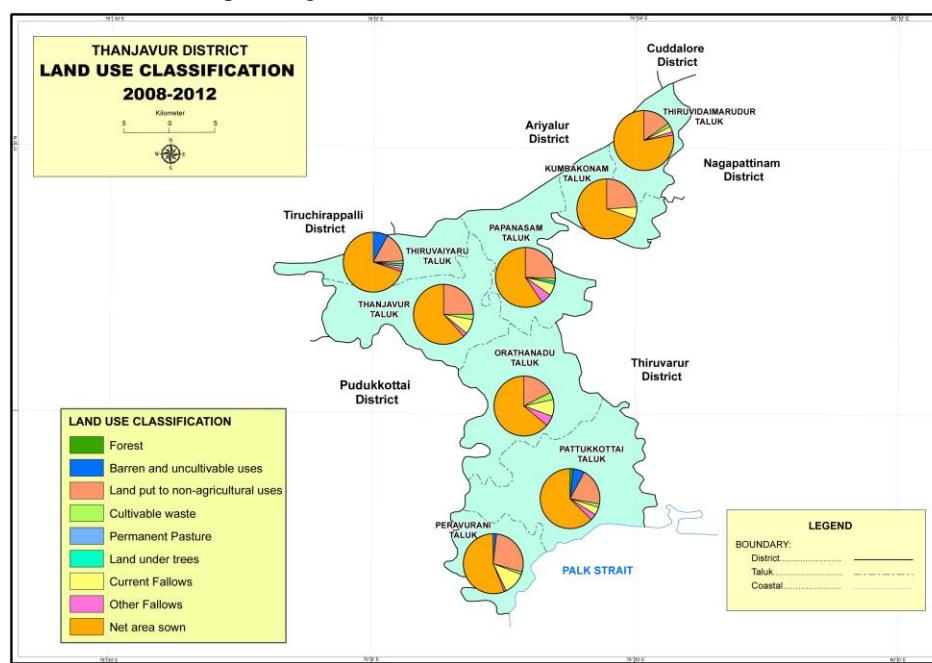


Figure 2.

Table 2. Taluk wise land use classification of Thanjavur District, 2008 - 2012.

Sl. No.	Taluk Name	Forest	Uncultivable waste	Land put to non Agri. uses	Cultivable waste	Permanent Pasture	Land under trees not included under net area sown	Current Fallows	Other Fallows	Net Area Sown	Total
1	Thanjavur	0.00	0.33	24.39	2.89	0.21	1.73	7.92	2.05	60.49	100.00
2	Thiruvaiyaru	0.00	7.87	16.43	1.47	1.53	0.34	1.27	1.47	69.63	100.00
3	Orathanadu	0.00	0.29	17.29	3.92	0.70	0.29	9.00	5.52	63.01	100.00
4	Kumbakonam	0.00	0.00	23.40	0.78	0.06	1.36	6.21	0.18	68.02	100.00
5	Thiruvidaimarudhur	0.00	0.00	15.21	1.81	0.08	1.22	2.96	1.71	77.01	100.00
6	Papanasam	0.00	0.01	25.71	1.68	0.25	0.35	6.17	5.87	59.96	100.00
7	Pattukkotai	1.76	6.04	19.79	1.80	0.84	0.00	4.30	3.37	62.10	100.00
8	Peravurani	0.00	1.80	27.40	1.43	0.82	0.00	11.81	1.14	55.61	100.00

ren and uncultivable uses land were (6.04%), land put to non-agricultural uses were (19.79%), cultivable waste was (1.80%), permanent pasture land was (0.84%), current fallows was (4.30%), other fallows (3.37%) and net- area sown land was (62.10%).

Peravurani Taluk: In this taluk, total major land use and land cover categories of barren and uncultivable uses land was (1.80%), land put to non-agricultural uses were (27.40%), cultivable waste was (1.43%), permanent pasture land was (0.82%), current fallows was (11.81%), other fallows (1.14%) and net- area sown land was (55.61%).

Conclusion

Agriculturally, Thanjavur maintains a prominent place in Tamil Nadu's administrative map. The district has been referred to as the rice bowl of Tamil Nadu state. The district's land use pattern revealed that the amount of land covered by woods was very low since there was no way to increase the number of trees in the region. Staff in the forest department may focus on expanding agricultural forestry and social forestry to increase the region's forest resources. Although the amount of land that was declared unusable for agriculture between 2008 and 2012 remained steady, the amount of land devoted to other purposes rose. This might signify that land that could be used for farming is instead being used for industrial or commercial purposes. The present fallow is far smaller than it was a few years ago. There has been a rise in the area seeded, and the area sown more than once (63.64 percent) since the monsoon has performed well, which is a promising indicator of increasing activity in agricultural and related industries. Because of cultivable waste, existing fal-

lows, and other fallows together accounted for more than 10% of the entire geographical area. This district should give serious thought to wasteland development.

Acknowledgments

The authors are thankful to IJRSG Journal for the support to develop this document.

References

- [1] A. P. A. Vink "Land use in Advancing Agricultural, Springer" Verlag Berlin (1975), Heidelberg, New York.
- [2] L. J. Symans "Agricultural Geography". Bell and Hyman Limited, London (1978).
- [3] M. Ganeshmoorthi, "Assessment of Land Use/Land Cover Changes in Coimbatore North Taluk, Tamil Nadu, India using GIS and Remote Sensing". Asian Review of Social Sciences. (2018). <https://doi.org/10.51983/arss-2018.7.2.1436>
- [4] M. K. Gumma, K. Kajisa, I. A. Mohammed, A. M. Whitbread, A. Nelson, A. Rala, and K. Palanisami "Temporal change in land use by irrigation source in Tamil Nadu and management implications". Environmental Monitoring and Assessment (2015). <https://doi.org/10.1007/s10661-014-4155-1>
- [5] M. Lenin Sundar, C. Arun Prasath, H. Elstin Rosario & K. Tamilselvan "Urban sprawl mapping and land use change detection analysis". International Journal on Advanced Science, Engineering and Information Technology (2019). <https://doi.org/10.18517/ijaseit.9.1.8080>

- [6] N, R. Krishnan "Remote Sensing and GIS for Assessing the Impact of Changes on Land Use/Land Cover in Dindigul District, Tamil Nadu, India". Journal of Geophysics & Remote Sensing (2014). <https://doi.org/10.4172/2169-0049.1000114>
- [7] NRSA, "Manual of National Wastelands Monitoring Using Multitemporal Satellite Data", Department of Space, Hyderabad (2007).
- [8] NRSC, Land Use Land Cover Atlas of India (Based on Multi-temporal Satellite Data of 2005-02006), Department of Space, ISRO, GOI, Hyderabad (2006).
- [9] P, J. Sujatha. S.Punithavathi, Tamilenthil and R. Baskaran Land Use Pattern and Cropping Pattern of Orthanadu block, Thanjavur District, Tamil Nadu Using GIS. Journal of Experimental Sciences 2011, 2(5): 19-23, ISSN: 2218-1768, www.scholarjournals.org, pp 19-23.
- [10] P. Arulbalaji, "Analysis of land use/land cover changes using geospatial techniques in Salem district, Tamil Nadu, South India". SN Applied Sciences. <https://doi.org/10.1007/s42452-019-0485-5> (2019)
- [11] P. Prabu & M.A. Dar, "Land-use/cover change in Coimbatore urban area (Tamil Nadu, India) - a remote sensing and GIS-based study". Environmental Monitoring and Assessment (2018). <https://doi.org/10.1007/s10661-018-6807-z>
- [12] R.M. Yuvaraj, Assessment of land use/land cover and its dynamic using geospatial techniques in pudukkottai district of tamil nadu, india". Environment and Ecology Research (2020). <https://doi.org/10.13189/eer.2020.080401>
- [13] T. Sangeetha. and R. Baskaran Land use classification of Thanjavur Taluk 2000-2007, Thanjavur District to apply the geographical information system, Scholars research library, Archives of Applied Science Research (2011), vol. 3 (5):114-121, ISSN 0975-508X (<http://scholarsresearchlibrary.com/archive.html>).
- [14] T.W. Freeman "Geography and Planning, Hutchinson University Library", London p.74. (1968),
- [15] UNESCO International Classification and Mapping of Vegetation. Paris 7. Ford-Robertson, F.C. (ed). 1973. Terminology of Forest Science, Technology Practice and Products. Society of American Foresters, Washington, DC.

Biographies

Mrs. V.KALYANI received the M.Sc., degree in Geography from the Bharathidasan University, Tamilnadu. Currently, she is an Assistant Professor, Department of Geography at Government College for Women (A), Kumbakonam. Her teaching and research areas include Geomorphology, Urban Geography, and Remote Sensing. MRS. V. Kalyani (Assistant Professor) may be reached at kalyanisatheesh@gmail.com

Dr. R. NEELAKANTAN Currently, He is a Professor & Head, Department of Industries and Earth Science at Tamil University. His (her) teaching and research areas include Remote Sensing and GIS for Natural Disaster Management, Environmental Geomorphology, Water Resources and Hyper Spectral Remote sensing and Moon Studies. Dr. R. Neelakantan (Professor) may be reached at neels2004@gmail.com