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The Changing Land Use Pattern of Alappuzha District in Kerala

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Abstract:

Agriculture is the most important primary activity of human beings. In India, a major share of the population depends on Agriculture for its livelihood. This paper attempts to have a brief study on the agricultural land use pattern, of the Alappuzha district in Kerala. The study reveals that in this district, the land use pattern has changed and the area of cultivable waste has increased in the period between 2000 and 2013. But, the Net Sown area has decreased and the area under the current fallow as well as the Fallow other than the current fallow also have decreased in the same period. It has also been identified that total cropped area has gone down. This shows that the farmers of this district are losing their interest in the existing cropping pattern and this study explains its causes and remedies.

Keywords: Land Use Pattern, Cultivable waste, Fallow other than current fallow, Current Fallow, Fallow land, Net area sown, Agricultural Land

1. Introduction

“Changing climate patterns, economic globalization, population growth, increasing use of natural resources and rapid urbanization are putting pressure on terrestrial ecosystems as never before and virtually all of them are under stress.” (Rockström et al. 2009).

The land on which the agriculture is done is under the stress because of the high demand for production. The limits of the demand have been exceeded. This demand for more production determines the land use pattern.

The land use is a human response on the physical attributes of the land. It depends on the human attitude. Land use is the modifications made by human beings on the land. This modification may change from time to time, causing change in the land use pattern. “Growing demands for food, feed, fuel, fiber and raw materials create local and distant pressures for land-use change” (Lambin and Meyfroidt, 2011). The over stress on the land has also affected its production. When the production diminishes, the farmers tend to leave it as waste land. The wastelands in the form of fallow land and cultivable waste are now becoming a major part of land use in at least some parts of the globe, affecting the agricultural production, food production and economic development.

2. Study Area

The Alappuzha district known as the ‘Rice Bowl of Kerala’ is a district dotted with back waters, lagoons and fresh water rivers crisscrossing the land. It has got the Arabian Sea on the west, Ernakulam district on the north and the north east, Kottayam and Pathanamthitta districts on the east and Kollam district in the south.

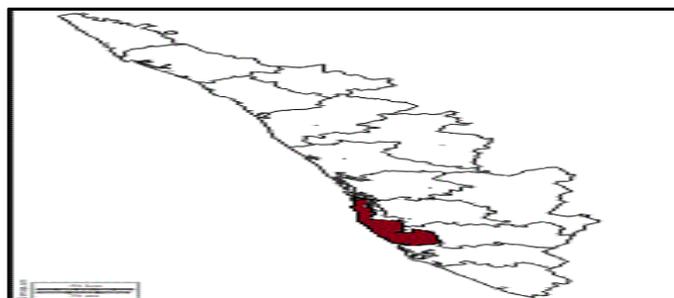


Figure 1: Alappuzha District: Location

Source: Compiled by the Author

This district is the smallest of all the districts in Kerala with an area of 141011 hectares (1414sq.Km). It lies between 9° 5' north Latitude, 76° 17' and 76° 44' east longitudes. This is the only district in Kerala having no high lands and forest. The district has a coastline of 82 kms. It has 6 Taluks, 12 Blocks and 73 Grama Panchayats. The major rivers passing through this district are Pamba, Manimala and Achankovil. The largest backwater in the state, ie The Vembanadu lies on the east of this district.

According to 2011 census, the total population of the district is 2127789, of which 10131 are male and 1114647 are female. The district shares 6.53% of the state's population. The rural population is 979643 and the density of population is 1501 per sq km. The literacy rate is 96.26%. The main workers population is 596387 and marginal workers population is 208084. Non -workers constitute a population of 1323318. Among the workers the rate of female participants is 33.28%.

The district is divided into four agro climatic regions, namely Onattukara, Coastal belt, Southern Midland and Kuttanad region. Physiographically, the district is divided into two broad regions ie Low land and Midland. The elevation of the Kuttanad region ranges between -1.5 to +6.0 mts above M.S.L.

The soils found in this district can be classified as (1) Coastal alluvium (Entisols), (2) Riverine Alluvium (Inceptisols) (3) Brown hypidimorphic soil (Alfisols) and (4) Lateritic soil (Oxisols). Coastal Alluvium: - These soils are seen along the western parts of the district, all along the coast and have been developed from recent marine and estuarine deposits. Riverine Alluvium: - These soils occur mostly in the central pediplains and in the eastern parts of the area along the banks of the Pamba River and its tributaries. Brown hypidimorphic soil: - These are mostly confined in the western low-lying areas of the district along the coast. Lateritic soil: - These are seen in the south-eastern part of the district. There are also two sub groups ie, Greyish Onattukara (troporthents) and Acidic Saline (Tropaquepts- Fluvaquepts).

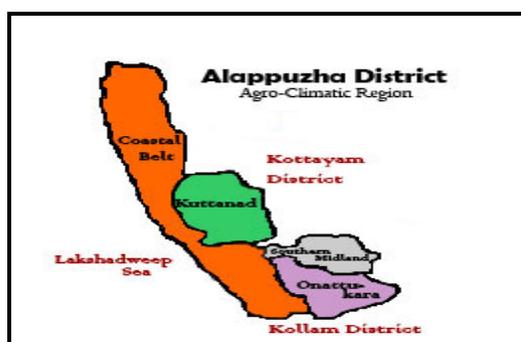


Figure 2: Alappuzha District: Agro Climatic Regions
Source: Compiled by the Author

3. Methodology

The present study depends on secondary data. These data are collected from the statistical data published by department of Economics and Statistics, Government of Kerala, published from 2000 to 2013 Census data of India- 2011. The data is analyzed using analytical tools and techniques.

3.1. Aim and Objective

The objectives and aims of the study are as follows:

- i. To know about the land use pattern of Alappuzha district which, is the granary of Kerala.
- ii. To know whether the land use pattern affects the cultivation.
- iii. To know the changing attitude of farmers.
- iv. To know the factors controlling the change of land use pattern.

3.2. Land Use Pattern of Alappuzha (Analysis)

The land use pattern and the cropping pattern of Alappuzha district are different from that of the other districts of Kerala. This district has a major share of land under food crops. Paddy and Coconut are the major crops cultivated here which constitute more than 90% of crops cultivated.

The share of Cultivable waste in land use pattern is decreasing in the whole country. But this district is an exception to it. Here the share of the cultivable waste is increasing. Study over the data of 13 years proves it.

Land Use	2000-01 (hectares)	2012-13 (hectares)	2000-01 (% to total area)	2012-13 (% to total area)
Cultivable waste	3356	15680	2	11
Fallow Lands	14238	4826	9	2
Net Area Sown	94328	85361	66	60
Total Cropped area	138595	104287		

Table1: Alappuzha District: Selected Land use Pattern
(Source: Compiled by author)

From Table1, it can be understood that the cultivable waste was 3356 hectares at the beginning of this century and it has reached 15680 hectares in 13 years. On the other hand, fallow lands have decreased from 14238 hectares to 4826 hectares and the Net sown area has also gone from 94328 hectares to 85361 hectares, in the same period. Percentage share of Cultivable waste has increased 9 times from 2% to 11%, while percentage share of Net Sown area and Fallow land have fallen from 66% to 60% and 9% to 2% respectively.

Land Use	Change in area in 13 yrs (Hectares)	Average Change (Hectares)
Cultivable waste	12324	948
Fallow Land	-9412	-724
Net Area Sown	-8967	-690

Table 2: Alappuzha District: Change in area of Land use in 13 Years
(Source: Compiled by author)

Table2 shows that there is an increase of 12324 hectares of land as cultivable waste with an average annual increase of 948 hectares. The Fallow land has had a decrease of 9412 hectares, with an average loss of 724 hectares annually. The Net area Sown has also suffered a loss of 8967 hectares in 13 years, with an average reduction of 690 hectares annually.

Cultivable waste land was cultivated earlier but now it has been abandoned for more than 5 years. Fallow lands are left uncultivated for a period of not more than 5 years. Net area sown represents the cultivated area during any part of the agricultural year.

The reduction of Net sown area shows that some such land is abandoned by farmers and they have consequently changed to Fallow lands. These Fallow lands can be changed back to Cultivable land. But there is no increase in the Net sown area. The Net sown area as well as Fallow land is decreasing in area. This shows that these lands are converted into Cultivable waste.

To prove this, it should be found out whether there is any relation in the mean difference of these uses. To prove that the differences occurring in the pattern of the uses are the same, F- Test is used. The annual growth (in hectares) of three land uses, have been taken for analysis in Table3 and Percentage annual growth rate to total area, in Table 4. The null hypothesis was that annual growth of these land uses is the same and there is no variance. The Annova table is shown as Table3 and Table 4.

S.V	S.S	d.f	M.S	F0
Between Classes	25721066	2	12860532.8	3.23
Within Classes	135303456	33	3979513.41	

Table 3: ANNOVA table (Annual Growth –Hectares)
(Source: Compiled by author) $F5\% (v1, v2) (3, 33) = 3.27$ $F0 < F5\%$

From the above test, the null hypothesis is accepted. In the case of the growth rate on the basis of hectares, there is no variance in the case of Cultivable waste, Fallow lands and Net sown area.

S.V	S.S	d.f	M.S	F0
Between Classes	12.71	2	6.4	3.05
Within Classes	67.82	33	2.1	

Table 4: ANNOVA table (Annual Growth –Percentage to Total Area)
(Source: Compiled by author) $F5\% (v1, v2) (3, 33) = 3.27$ $F0 < F5\%$

Table4 also shows that the three land uses had the same growth rate on the basis of percentage to total area. The ANNOVA tables show that H_0 had been accepted because $F_0 < F5\%$. The rate of reduction of the Net Sown area and Fallow lands are at the same rate to the growth of Cultivable Waste. The reduction in Net sown area and Fallow lands are the results of the farmers' abandoning cultivation at a great rate and the lands getting converted into cultivable waste.

3.3. Reasons for Change

The changes occurring in Land use pattern are due to the farmers' loss of interest in agriculture. This attitude of the farmers is based on different factors.

The farming of the district is becoming unprofitable due to certain reasons. The reasons are (1) Land Holdings: - Fragmentation of land and Tenancy are two problems on land holdings. 95% of the farmers of Alappuzha district, own land less than 0.3ha. (2)Labor problems: - The labor cost of the state is high, compared to the other states in the country. Not only is the labor cost but also the supply of labor is less compared to the demand. (3) Marginal occupation:-A major population of the farmers has other occupations, so that they consider farming as a marginal occupation. (4) Migrations: - Migrations from rural to urban areas as well as international migrations of farmers from the district have affected the farming activity of the district. (5) Labor Unions: -Labor unions are laying unnecessary pressure on the farmers by blocking the mechanization and the mobility of labor force. Farmers have to pay traditional laborers even if their services are not hired (6) Soil Fertility: - The soil in the region is acidic, which varies from one unit area to another. In Onnattukara region, the soil is infertile. (7)Maintenance Cost: - Not only soil fertility, but also the construction of other infrastructures like "bunds" causes increase in the cost of production. (8) Lack of Scientific Agricultural Calendar: - Cropping period

of this district varies from one region to another. But there is no scientific calendar showing the cropping period. (9) Water Quality: - Degraded water quality due to the uncontrolled disposal of sewage as well as hospital wastes into the rivers is another disadvantage. Eutrophication and high concentration of coliform in river water, affects the health of farmers. Increasing population of water hyacinths also affects the quality of water (10) Health: - Farmers are affected by water-borne diseases as well as rodent population due to continuous fallowing. (11) Crop Diseases: - Diseases like root wilt disease and attacks of pests affect crops (12) Unscientific construction of roads: - This causes flooding as well as blocking of water to wetlands. (13) Floods: - Recently floods in the region have increased due to illegal sand mining, encroachments of river channels etc. (14) Inaccurate Meteorological Predictions: - This causes crop failure due to unpredicted flooding. (15) Traditional seeds: - Certain seeds like "Pokkali seeds" which were used earlier were best suited for coastal saline soils. They were able to withstand the saline environment in the coastal region. The changing of these seeds for new HYV seeds has affected the production to a great extent. (16) Price and Market Problems: - The Government fails to provide markets as well as assured prices for crops. The prices are distributed to farmers even after one or two years after the collection of crops. These problems change the attitude and interest of farmers and thus affect the farming and force farmers to leave the land as fallow lands or cultivable waste.

The only remedy is the strong intervention of the Government in these matters and the introduction of new policies like cooperative agriculture, giving incentives for farmers, providing markets and assured prices and paying them at the right time, providing subsidies, introducing scientific and free health and soil analyzing units, giving training for farmers, introducing scientific agricultural calendars etc.

4. Conclusion

Farmers are the backbone of the country. Agricultural productions are the basic factors for the existence of human beings. But the land use pattern of Alappuzha district has changed in the recent years. It does not favour agriculture. The share of cultivable waste is increasing. It has increased nine times in 13 years. This shows the lack of interest of farmers in agricultural activities. This is because of the problems stated above which make this activity unprofitable. If this continues, there will be more accumulation of waste lands. This will greatly affect the food production and economy of the state. The only remedy is the strong intervention of the State government in the matter.

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