



Effects on Cultivation Area Due to Growth of Real Estate Industry – A Case Study

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Abstract : “Thanjavur is the rice bowl of India”, Now it is just a quote. On ancient times man used his earnings and efforts on cultivation to make his life prospers through which we had a sustainable development. The revealing real estate industry has emerged as a cash flowing industry. This case study will explain the reduction in cultivation area, unpleasant land use pattern and other indirect effects such as depletion of water table, land and water pollution because of the growth of real estate industry for which we have also recommended the solution for the above problems. This case study covers village panchayats such as Palliagraharam, Narasanayagipuram, Thiruvethikudi, Manankorai, Thandangorai, Mathur and Pasupathikoil in Thanjavur district covers to a total area of 4,170 Acres.

Keywords: real estate, cultivation area, land use pattern, water table, pollution.

Introduction

The villages that were taken for study was once fully cultivated at all the seasons. Now because of fluctuating rainfall, lack of labours and high labour cost, lack of knowledge about modern technologies and its negligence on agriculture and hence production get decreased. Because of increase in residential and commercial projects at those places without proper drainage and waste disposal facilities, the surrounding land and water is fouled[9-15]. Here the comparative study of land used for agriculture out of total area, workers status and population growth was made. Detailed study for 10km x 0.25km stretch was also made.

Cardenas (1996) [4] briefly discussed about the land conversions in Cavite, Philippines and its causes. Cost – benefit analysis method was adopted to provide reasons for conversions. Kelly (1998) [7] had examined the influence of political processes such as policy choices for developmental priorities, political power relations in facilitation of conversion of agricultural lands and connected these points with national level and local level policy making, policy implementation and regulation. Plantinga et al. (2002) [2] had studied the determinants of agricultural land values and future land development in USA. They had explained how future development rents accounts for agricultural land values. In this case study, causes and direct and indirect impacts of agricultural land conversions are briefly discussed.

Study Area:

Figure 1a shows the places where the study was made. Figure 1b describes about the total population of Thanjavur to that of total area of project villages.

The study area includes the following village panchayats namely Palliagraharam, Narasanayagipuram, Thiruvethikudi, Manankorai, Thandangorai, Mathur and Pasupathikoil which are in Thanjavur district, Tamil

Nadu, India. Palliagraharam is in 15km distance from Thanjavur railway station. Coordinates of Thanjavur: 10°46'56.99"N 79°7'52.51"E

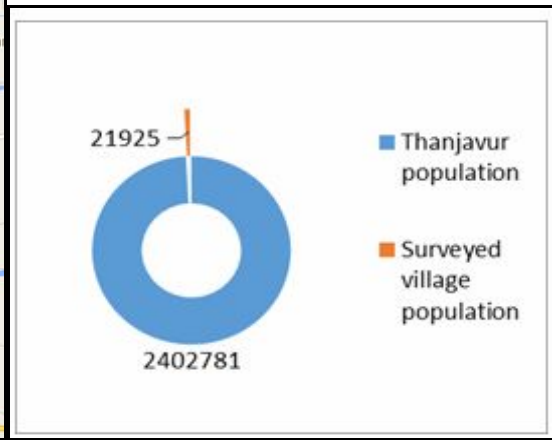
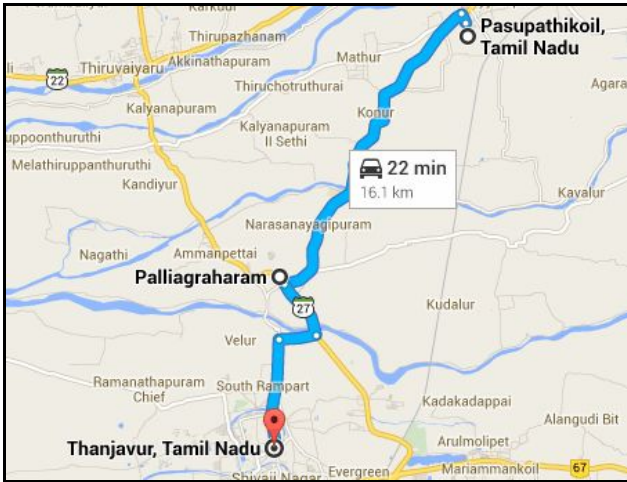


Figure 1a: Study Places [6]

Figure 1b: Total Study Area

Reasons for Land conversions:

Urbanisation:

Table1 depicts about the total population, number and percentage of literates in the study villages.

Table 1: Total population, number and % of literates and illiterates in 2001 and 2011 in study area

Village Panchayats	Population in 2001	Population in 2011	No. of Literates in 2001	No. of Literates in 2011	% of literate people in 2001	% of literate people in 2011
Palliagraharam	640	1321	133	886	20.78	67.07
Narasanayagipuram	1511	1826	440	1444	29.11	79.08
Thiruvethikudi	1323	1382	382	1025	28.87	74.16
Manankorai	1285	1590	436	1228	33.93	77.23
Thandangorai	1018	1008	323	771	31.72	76.48
Mathur	4891	5773	1514	4058	30.95	70.29
Pasupathikoil	7431	9025	2581	6901	34.73	76.46

Source: Census report 2001 and 2011

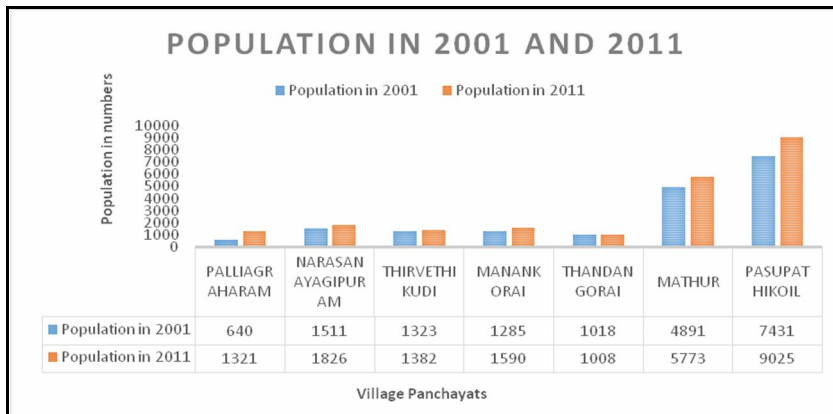


Figure 2: The population in the study villages according to the Census 2001 and 2011.

Food, water, shelter and clothing are essentials for human being. From the above data it can be understand that the population has nearly doubled. Correspondingly, the need for shelter and food has also increased. The case is that to accommodate these population it is necessary to increase the number of housing.

The population at PALLIAGRAHARAM was 640 in 2001, which was increased by 205% to 1312 within a span of 10 years. Therefore the number of house hold also increased. Agricultural lands only get converted for this purpose. The population in MATHUR and PASUPATHIKOIL are 5773 and 9025 respectively which are very high than other villages. Figure 2 shows the difference in population between 2001 and 2011 in the study area.

Increase in residential area:

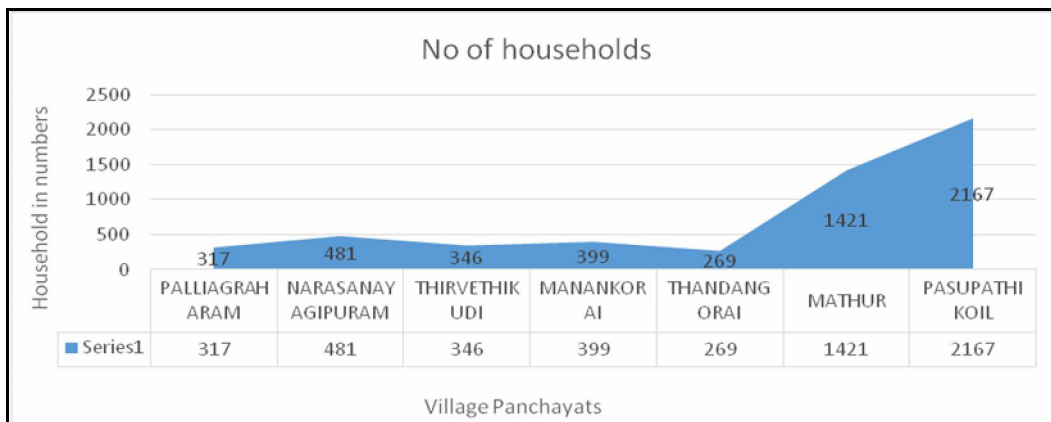


Figure 3: Number of households in the villages and their density
Source: Database from Deputy Director of Statistics, Thanjavur [3]

Figure 3 infers about the number of households in MATHUR and PASUPATHIKOIL villages are very high. PASUPATHIKOIL which is just 15km from Thanjavur and 26km from Kumbakonam taluk, is having high rate of urbanisation. Industries, educational institutions, commercial areas in these places also get increase with the rise of population. Thus the city is expanding. So, in next 10 years, the most of the villages will get converted in to cities.

Table 1 shows the increase in literacy rate. The average increase in percentage of literate in all the above mentioned villages is 44%. Though it is a healthy one for the society, lack of awareness and carelessness among the educated people about the importance of agriculture has made the condition worse. Educated people migrated to have white collar jobs.

Increase in number of commercial and industrial places:



Figure 4: Commercial and Industrial growth in the study area
Source: Database from District industries Centre, Thanjavur [5]

Agricultural lands which are converted in to plots are used not only for residential purposes, it is also being used for commercial and industrial purposes also. The figure 9 shows the increase in commercial places from 17 to 43 with in the span of 7 years. Though it seems to be small, while considering for large scale it also accounts. Since it is the newly developing area, there is no proper waste disposal facilities also. It will also affect the surrounding environment.

Lack of workers:

Table 2 shows the details such as total population of the study area and agriculture, main and other working population. Average % of Agriculture workers is **9.82**. The villages like Manankorai, Thandangorai, Mathur, and Pasupathikoil which are in the verge of urbanisation are having very low percentage of agricultural workers when compared with other main workers. The literacy rate in those places are also very high. So most of the people prefer technical works and white collar jobs. Since the industries, construction companies etc. are ready to pay high salary, most of the people are preferring those jobs.

Apart from that many people are interested in doing work under Indian Government’s 100 days guarantee scheme called MGNREGA act or The National Rural Employment Guarantee act 2005. Work load in this scheme is very low. Nowadays people become very lazy and want to earn money without doing work. So they don’t want to do heavy works in agricultural fields.

Table 2: Total population and workers distribution

Panchayat Villages	Population	Working population	Agriculture workers	Main workers	No work	% of agri-workers
Palliagraharam	1321	605	166	367	716	27.43802
Narasanyagipuram	1826	879	145	682	947	16.49602
Thirvethikudi	1382	661	129	474	721	19.51589
Manankorai	1590	634	12	603	956	1.892744
Thandangorai	1008	428	2	424	580	0.46729
Mathur	5773	2826	6	2789	2947	0.212314
Pasupathikoil	9025	3235	185	2950	5790	5.718702

Source: 2011 statistics data [3]

High production cost:

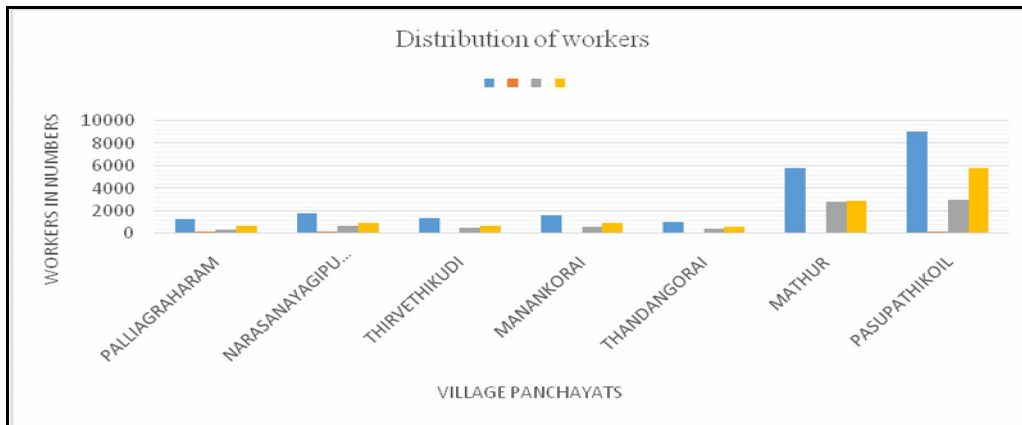


Figure 5: Total population and distribution of workers in the study area [3]

Even if the farmers managed to get workers, they have to pay high labour charge equivalent to other workers who are working in industries etc. So the production cost is going high. Most of the farmers are having very less size of fields. So they can't lend machineries from private firm and do agriculture which will be uneconomical. The various types of crops that are produced in those villages are rice, plantain, mango, jack fruit, palm tree, dhal, green gram, tamarind, turmeric and other pulses and millets. So there is no coordination between the farmers. Figure 5 shows the different types of total population and workers population in the study area.

Water level:

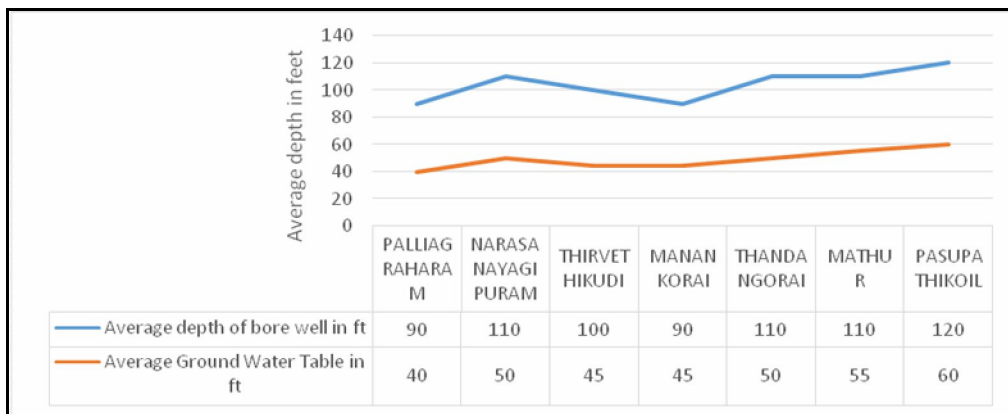


Figure 6: Water level at study locations from Palliagarharam to Pasupathikoil*. *Based on data collected from the local people.

Figure 6 shows the range at which ground water table is present and details of average depth of bore holes made in the study villages. From the figure 6 it can be understood that there is no water problem at all in those places. Government is also supporting farmers by providing free 3 phase current for the motor. Rarely the support is provided by the rainfall. Reduction in agriculture activity is not because of water related problem in those places.

Land used for agricultural purpose:

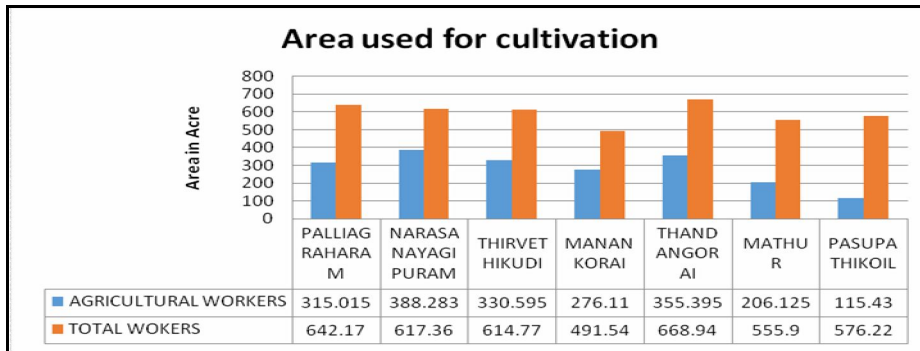


Figure 7: Agriculture land area to the total area of study villages [3]

Figure 7 shows that almost half of the area is under cultivation. But before 10 years almost 90% were farm lands. Though the reduction may appears to be low now, it will not stop with that. After 10 years, at which India will suffer because of increase in, reduction in agricultural land will make the situation worst. Then instead of exporting grains we need to import that, which will ultimately affect our country’s economy.

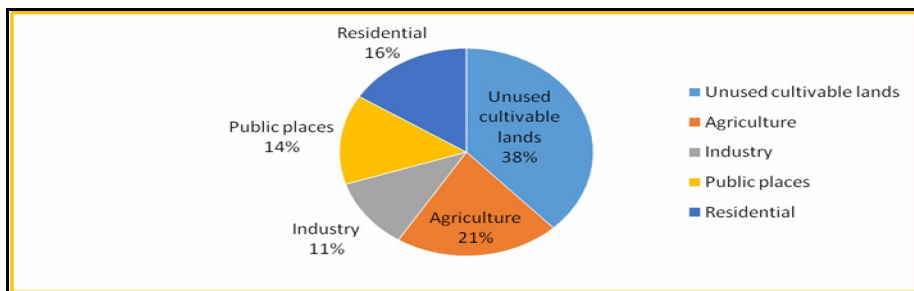


Figure 8: Land use pattern in the study villages
*Based on direct observation

Figure 8 shows the % of use of lands for various purposes. Only 21% of lands are under cultivation. Over 38% are left uncultivated. This is significantly reduces the net production. As many people in this world are dying because of hungry, here it is not given importance. These unused lands may sold for other activities such as for industries, commercial purposes or residential purposes will definitely disturb land and make the fertile land useless and further it will cause different types of pollution.

Rainfall:

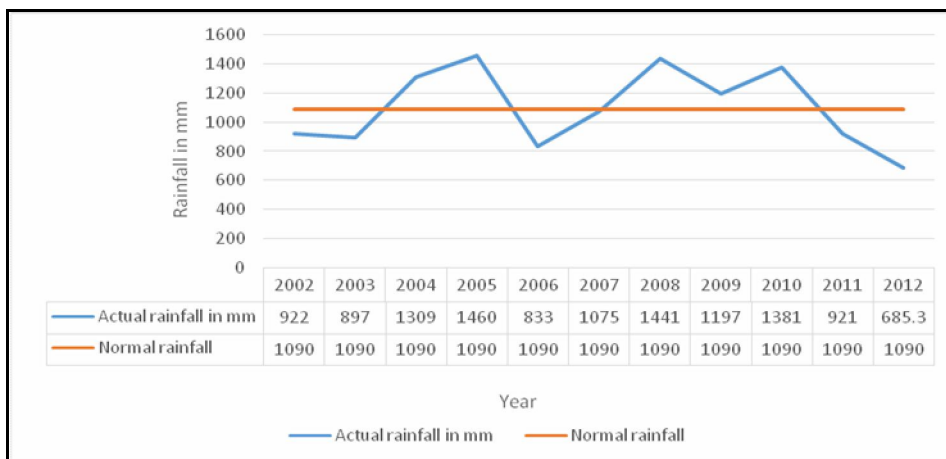


Figure 9: Actual rainfall in the Thanjavur district from 2002 to 2012
Source: Database from TWAD [8]

Figure 9 clearly shows the decrease in the annual rainfall in the last few years. In most of the years, actual rainfall is very much less than the expected average rainfall from the monsoons. It also shows the fluctuation in the actual rainfall every year. Farmers who are owning bore wells can do irrigation even in the absence of rainfall. Tamilnadu government is also providing free 3 phase current to the farmers. But the farmers who are depending on rainfall for irrigation purposes, cannot predict the rainfall and do agriculture. Most of the time it leads to loss of income and their hard work.

Results and discussion:

Favourable conditions for the rise of real estate industry:

- Reduction of profit in agriculture because of increase in labour charge, private machineries, and bad deal for produced products makes the farmers to sell their lands for lump sum amount to real estate people.
- **Public response:**

Reasons For Conversions	Number Of Responses	Rank
Unable to get labour	60	1 st
Property located adjacent to development zone	43	2 nd
Property ceases to be economically viable / sound for agricultural activities but will have a higher property economic value	35	3 rd
PERSONAL USE (EDUCATION, MARRIAGE, HEALTH etc.)	19	4 th
Less rain-fall(loss)/ failure of rainfall	11	5 th
Owner/farmer unable to maintain work	5	6 th

Some applicants gave more than one reason for conversion

Figure 10: Reasons for conversion

Direct Impact:

- Agricultural production will get decreased. Thereby rise of prices of food products will occur. It will affect middle class and low income people adversely.
- Situation will become worse as importing of food grains from other states or from other countries will happen. This will reduce foreign exchange and hence our countries wealth will decrease ultimately.
- Fertile lands will be transformed to unfruitful lands.
- If the agriculture lands once get converted, then it will become resident place or industry. Therefore there is also chance for losing jobs for agricultural labours.

Indirect Impacts:

Depletion of water table:

- It was observed that the water level went below 50ft while comparing to the level 25ft which was before 5 years.
- During agriculture activities, the water used for that would be replenished. So agriculture didn't affect the water table much.
- Because of increase in population in that area the usage of water also get increased. The rain water is also not used for replenishing ground water table.

- Ground water table depletion would lead to the intrusion of saline water. This will further contaminate the aquifer and will affect the plant growth [1] in the surrounding irrigation area.
- Still real estate industry is growing in those area, there will be tremendous growth in population, industrialisation and urbanisation within next 5 years.

Water and land pollution

- The water used for domestic and industrial purposes is not treated or recycled.
- In most of the areas near Palliagraharam, there is no proper drainage facility. Very few people are having septic tank facility.
- Most of the people dump the drainage waste openly on the back side of their house or by small channels let the drainage in to the nearest rivers Vennaru and Vettaru.
- Solid wastes are directly dumped in the open public places. Panchayats also not taking care of those innocence.

Recommendations and conclusions:

- A minimum target should be fixed on agriculture land area and production for every village such that a minimum agriculture production is ensured with a minimum agriculture cover. This method can be encouraged by giving more subsidy as a credit to the farmers who have reached the target.
- By *Government- Public coordination/cooperation* government can take the agriculture land for lease and do farming and can share the profit with farmers or Government can buy the land from the farmers who are willing to sell the fertile land and under “The National Rural Employment Act” government itself can do farming.
- Farmers having very small of land , by having cooperation between each others can jointly sow the same type of crops and *share the machineries* which can be lend from the private firms .
- To ensure good profit for the farmers, government *can build silos* and allow farmers to store their products for all crops according to their wish with minimum charges.
- Government can *buy the agricultural products directly* from them to prevent joint planned reduction of prices by vendors.
- *Creation of awareness* among the young educated people about the importance of agriculture and its impact on next generations’ future by introducing AGRICULTURE as a main subject in schools and colleges.
- *Camps and knowledge drive* on importance of agriculture by NSS/government/NGOs should be organised.
- Through *Public – private partnership*, corporates can join hands along with farmers by introducing and supplementing modern technologies and assisting the required expansions.
- Where intensive farming is not possible because of lack of labours, *extensive farming* can be done. Wheat, barley and other *dry crops* such as ground nuts, oats, potatoes, sorghums, millets etc. can be used for extensive farming.

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