CHAPTER III

DATA BASE, METHODOLOGY AND DESCRIPTION OF THE STUDY AREA

This chapter provides a glimpse of the agro-climatic factors and other infrastructural facilities of the study area namely Thoothukudi district. Further, it discusses the data base and methodology adopted for the present study.

3.1 DATA BASE AND METHODOLOGY

In this section an attempt has been made to describe the methodology of the present study. It includes choice of the study area, period of study, sampling technique, procedure for collection of data, method of analysis, tools of analysis and the measurement of variables used in the present study.

3.1.1 Choice of the Study Area

Thoothukudi district is one of the most important districts of Tamil Nadu where there has been a significant progress in agricultural development since the year 1960. The main food crops in the district are paddy and banana. Paddy is mainly cultivated in almost all the taluks. Among the twelve blocks in Thoothukudi district, Thoothukudi, Tiruchendur Kovilpatti, Srivaikuntam and Sattankulam which shows the largest area under paddy cultivation were
selected for the study. As per statistical records of the more than 60 per cent of the farmers have in these blocks adopted the new farm technology in their paddy cultivation. This is the main reason for selecting these five blocks in this district for the present study.

3.1.2 Sampling Technique

The multi-stage random sampling technique has been adopted for the present study, with Thoothukudi District as universe. Thoothukudi District comprises twelve blocks. Out of twelve blocks five blocks which accounts for more than 60 per cent of area under paddy under new farm technology were selected. The revenue villages of these five blocks were assigned separately in an ascending order according to the area under cultivation of paddy in each village. Out of the total number of villages listed, the first five villages were selected from each of five blocks for the purpose of this study thus making the total number of selected villages 25. In all 25 villages, farmers were stratified into New farm technology and traditional farm in these villages. Equal weightage is given for all villages for selecting farmers of 500 sample respondents each 250 farmer new technology farmers, and traditional farmers. The list of sample villages and number of farmers chosen are given in Table 3.1.
# TABLE 3.1

## NAME OF THE VILLAGE AND NUMBER OF FARMERS SELECTED

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Block and Villages</th>
<th>Sample Farmers</th>
<th>New Technology Farm</th>
<th>Traditional Farm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td><strong>THOOTHUKUDI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Kootampuli</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Pottalkadu</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Kulaiyankaridal</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Servaikaranmadam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Athimarapatti</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td><strong>TIRUCHENDUR</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Ammanpuram</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Mollakari</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Nallur</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>MelaTiruchendur</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Veeramanickam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td><strong>KOILPATTI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Allampatti</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Thittankulam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Iluppayoorani</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pandavarmangalam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Mudukkumeetanpatti</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>IV.</td>
<td><strong>SRIVAIKUNTAM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Padapanabamangalam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Peroor</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Parakiramapandi</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Tholappanpanni</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Vellore</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>V.</td>
<td><strong>SATTANKULAM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Komaneri</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Pannampari</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Pidaneri</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Kombankulam</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Naduvakkurchi</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>250</td>
<td>250</td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>
3.1.3 Collection of Data

A reconnaissance survey of the study area was undertaken to develop comprehension of the process and activities involved in paddy cultivation under actual farming conditions. Based on the information gathered, a farm level detailed questionnaire was drafted, pre-tested and used in the field survey.

The Direct Personal Interview Method has been adopted to collect the data regarding the farm structure, size of holding, cropping pattern, costs and return and other aspects relating to the overall objectives of the study.

Secondary data relating to the location, climate, rainfall, soil type, land utilisation pattern, operational land holding, sources of irrigation, area, production, yield of major crops, marketing infrastructural facilities and the like were collected from the district and the taluk levels from the District Collectorate, Taluk Office, Block Office, Assistant Director of Statistics Office, Thoothukudi and Block Statistical Officers from Thoothukudi, Tiruchandur, Kovilpatti, Srivaikuntam and Sattankulam blocks.
3.1.4 Period of the Study

The primary data were collected in the main crop season of paddy from October 2011 to March 2012 of agricultural year 2011-2012.

3.1.5 Method of Analysis

Analysis of variance technique was used to test the homogeneity of two categories farms and villages. Table 3.2 shows the homogeneity test of two categories of new technology and traditional farms in terms of net return per acre.

**TABLE 3.2**

**HOMOGENEITY TEST OF TWO CATEGORIES OF NEW TECHNOLOGY AND TRADITIONAL FARMS**

<table>
<thead>
<tr>
<th>Source</th>
<th>T.S.S</th>
<th>D.F.</th>
<th>M.S.S</th>
<th>Calculated F Value</th>
<th>Critical F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Sample</td>
<td>2348300</td>
<td>1</td>
<td>2348300</td>
<td>252.11*</td>
<td>4.38</td>
</tr>
<tr>
<td>Between Village</td>
<td>263474.88</td>
<td>24</td>
<td>10978.12</td>
<td>1.18^NS</td>
<td>2.23</td>
</tr>
<tr>
<td>Error</td>
<td>223553.04</td>
<td>24</td>
<td>9314.71</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total</td>
<td>2835327.92</td>
<td>49</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Note:  
T.S.S. = Total Sum of Squares  
D.F. = Degrees of Freedom  
M.S.S. = Mean Sum of Squares  
* Significant at 5% level  
NS - Not significant
It was found from the above Table 3.2 that there existed a significant difference between the new technology and traditional farms. It implies that there is a difference in net income per acre regarding new technology and traditional farms. So they were treated as separate units for further analysis. There is also no evidence of significant difference among the sample villages in the above categories.

3.1.6 Tools for Analysis

In order to analyse and compare the cost and return structure of new technology and traditional, cost A and cost C concepts used by farm Management Studies have been adopted for the present study.

In order to examine the nature and extent of inequality in net income of new technology and traditional farms in the study area, Frequency distribution and Histogram, Lorenz Curve, Gini Co-efficient, Logarithmic Variance ratio and Disparity ratio were used.

In order to identify and to compare the factors influencing yield of paddy for new technology and traditional farms, the following form of Multiple Linear Regression Model was used.
\[ Y = \alpha_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \beta_4 \log X_4 + \beta_5 \log X_5 + U \quad \ldots \ldots (3.1) \]

where

\[ Y = \text{Per acre yield in kgs} \]
\[ X_1 = \text{Human labour per acre (in Rs.)} \]
\[ X_2 = \text{Bullock labour per acre (in Rs.)} \]
\[ X_3 = \text{Fertilizer per acre (in Rs.)} \]
\[ X_4 = \text{Pesticides per acre (in Rs.)} \]
\[ X_5 = \text{Capital flow per acre (in Rs.)} \]
\[ U = \text{Disturbance term} \]

The structural difference between the two sample farmers, small and large, was tested by using Chow’s test. \(^1\)

\[ F = \frac{\sum e^2 - (\sum e_1^2 + \sum e_2^2) / k}{(\sum e_1^2 + \sum e_2^2) / n_1 + n_2 - 2k} \quad \ldots \ldots (3.2) \]

where,

\[ k \quad = \text{The number of parameters including the intercept term.} \]
\[ \sum e^2 \quad = \text{Unexplained or residual sum of squares of the sample corresponding to both small and large farmers.} \]
\[ \sum e_1^2 \quad = \text{Unexplained or residual sum of squares of the sample corresponding to small farmers.} \]
\[ \sum e_2^2 \quad = \text{Unexplained or residual sum of squares of the sample corresponding to large farmers.} \]

\( n_1 \) = Sample size of small farmers and  
\( n_2 \) = Sample size of large farmers.

The ‘F’ test was carried out and if the computed value of ‘F’ was less than the Table value of F at 5 per cent level of significance with \((k, n_1+n_2-2k)\) degrees of freedom, the null hypothesis that there was no structural difference between the two groups of farmers could be accepted. If there was a structural difference between the two groups, the test whether the difference occurs and at the intercept or at the slope level or at both had to be conducted by incorporating the dummy variables at the intercept and slope levels in the regression model.

The structural difference between the two groups of farmers was tested by using the regression model of the following form:

\[
\log Y = \alpha_0 + \alpha_1 D + \sum_{i=1}^{5} \beta_i \log X_i + \sum_{i=1}^{5} r_i D \log X_i + u \tag{3.3}
\]

In the model \( D \) was the dummy variable. The dummy variable \( D \) stood 0 for the small farmers and 1 for the large farmers.

In order to compute demand and supply elasticities and to study absorption of labour and returns to scale, the normalised profit function was
jointly estimated along with the four variable inputs demand functions with random disturbances of the following form.\(^2\)

\[
\log \Pi = \alpha_0 + \beta_1^* \log W + \beta_2^* \log F + \beta_3^* \log P + \beta_4^* \log B + \alpha_1 \\
\log A + \alpha_2 \log C + U \ldots \ldots \ldots \ldots \ldots \ldots (3.4)
\]

\[
- \frac{W X_1}{\Pi^*} = \beta_1^* + U_1
\]

\[
- \frac{F X_2}{\Pi^*} = \beta_2^* + U_2 \ldots \ldots \ldots (3.5)
\]

\[
- \frac{P X_3}{\Pi^*} = \beta_3^* + U_3.
\]

\[
- \frac{B X_4}{\Pi^*} = \beta_4^* + U_4.
\]

\(\Pi = \) Real profit in Rupees (that is the total revenue minus total variable cost normalised by the price of output).

\(W = \) Real Wages for Labour

\(F = \) Real Fertilizer Price

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\[ P = \text{Real Pesticides Price} \]
\[ B = \text{Real Bullock Pair day price} \]
\[ A = \text{Total Area Cultivated} \]
\[ C = \text{Capital Flow} \]
\[ \quad \quad \text{(calculated as the sum of depreciation, maintenance and} \]
\[ \quad \quad \text{opportunity cost of capital stock)} \]
\[ X_1 = \text{Total Labour Mandays Utilised} \]
\[ X_2 = \text{Total Quantity of Fertilisers used} \]
\[ X_3 = \text{Total Quantity of Pesticides used} \]
\[ X_4 = \text{Total Bullock Pair days and} \]
\[ U = \text{Random disturbance} \]

The above models were estimated jointly by Zellner’s seemingly unrelated regression method.

3.1.7 Measurement of Variables

Farm Land

To include the share of land in the stock flow the existing rental value of the owned land in the study area was considered. For leased in land, the actual rent paid was taken into account.
Farm Human Labour

Human labour was measured in mandays units of eight hours of work for each mandays. All the permanent, family and hired labour were considered alike and valued at existing wage rate.

Bullock Labour

The prevailing wage rates charged for both owned and hired bullock power in the study area were considered.

Irrigation

Consumption of electricity oil was calculated at purchase price.

Seeds

Actual purchase cost of seed was considered. In the case of produced seed it was valued at market price.

Manures, Fertilizers and Plant Protection Chemicals

Those were valued at purchase cost. In the case of owned manure, market value per cart load was taken into account.
Depreciation

Depreciation was calculated by straight line method. As given by the Directorate of Economics and Statistics, the following depreciation rates were followed.\(^3\)

(a)  
1. Terraced Building ........................................ 2 per cent  
   2. Irrigation Structure (Wells) .......................... 2 per cent  
   3. Others ..................................................... 5 per cent

(b) Tools
   1. Minor ....................................................... 50 per cent  
   2. Major ....................................................... 25 per cent

(c) Implements
   1. Minor ....................................................... 20 per cent  
   2. Major ....................................................... 10 per cent

(d) Machinery ......................................................... 10 per cent

(e) Live Stock ......................................................... 10 per cent

(Productive Line period has been taken as 10 years)

**Interest on Fixed Capital and Working Capital**

Interest on fixed capital was worked out at 11 per cent per annum*. Interest on working capital was worked out at 12 per cent per annum for six months.4

**Land Revenue, Cess and other Taxes**

The actual payments were considered.

**Capital Flow**

Capital flow is calculated as the sum of depreciation, maintenance cost, and opportunity cost of capital stock.

**Capital Input**

Capital Input is measured in terms of service flows in rupees of paddy production. It included capital stock flows plus working capital which refers to the sum total of the costs of seeds, fertilizer, pesticides, manuers and other items.

**Total Revenue per Farm**

It included sum of all main and by products valued at the market price at the time of harvest.

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4The Interest Rate for Long Term Loan charged by Land Development Bank.

* The Interest Rates for Short Term Loan charged by Co-operative Banks.
Yield

It was measured in terms of physical quantity of paddy produced in kilos as well as in its monetary value prevailing at harvest time.

Wage Rate

Total labour cost divided by total Mandays worked and further divided by the prevailing price per kilo of paddy gave normal wage rate.

Bullock Labour Price

Total expenditure on bullock pairs divided by bullock pair days employed and further divided by the prevailing price per kilo of paddy gave normalised bullock pair day price.

Output (per acre)

Total output divided by the total farm size operated gave output per acre.

Fertilizer Price

Total expenditure on inorganic fertilizers divided by its total quantity purchased and further divided by the prevailing price per kilo of paddy gave normal fertilizer price.

Pesticides Price

Total expenditure on pesticides divided by its total quantity purchased and further divided by the prevailing price per kilo of paddy gave normal pesticides price.
Profit

Total revenue minus total variable cost, divided by the prevailing price per kilo of paddy gave normal profit.

3.2 CONCEPTS USED

New Technology farm

The farmers who have adopted New Technology in all stages of cultivation activities till harvesting of paddy are considered as New Technology farm(er)s for the present study.

Traditional farm

The farmers who have not adopted any new agricultural technology fully in their various stages of cultivation of paddy are treated as traditional farmers.

Small and Large Farmers

As per management studies in India, the farmers who are cultivating less than 5 acres are categorized as small farmers, and those who are cultivating 5 and above acres are categorized as large farmers for the present study.
3.3 DESCRIPTION OF THE STUDY AREA

This section provides a glimpse of the physical features, agro-climatic conditions, demographic features and infrastructural setup of the Thoothukudi district.

3.3.1 Thoothukudi District - Historical and Cultural Background

Thoothukudi was ruled over by the Pandya kings before the British rule. During the freedom struggle, it was the birthplace of many brave patriots. The darkness of British slavery was dispelled by the selfless sacrifice of these devoted patriots. Veerapandia Kattapomman with his undaunted fighting spirit, Bharathiar with his fiery, and inspiring poems of patriotism and V.O. Chidambaranar who floated the Swedish ship against the British were among the many brave countrymen who valiantly fought the foreign rule. They made the soil of Thoothukudi proud and rich in cultural heritage.

District at a Glance:

Thoothukudi ‘the pearl city of India’ is the newly formed district formed by bifurcating the original Tirunelveli district into Tirunelveli district (western portion) and Thoothukudi district (eastern portion).
"The Government of Tamil Nadu in their G.O. Ms.No.535/ Revenue Department dated 23.04.1986 ordered the formation of a new district viz.. Thoothukudi district. Thoothukudi district was inaugurated on 19.10.1986 by the chief minister of Tamil Nadu and started functioning, as the 20\textsuperscript{th} district, with effect from 20.10.1986, with the headquarters at Tuticori. But in 1997, it was changed as the district of Thoothukudi, with Thoothukudi as its centre.

The District covers an extent of 4,621 sq.km in the South-Eastern portion of Tamilnadu and it is rectangular in shape. It is bounded by Virudhunagar and Ramanathapuram district in the North, Kanyakumari district in the South, Gulf of mannar in the east and Tirunelveli district in the west. The district lies between $8^\circ-05'$ and $9^\circ-80^\circ$ of the northern latitude and $77^\circ-05'$ and $78^\circ-25'$ of eastern longitude.

**Physical features**

There are no high mountains in the district. Red Mounds or small hills are found in Tiruchendhur, Srivaikundam, Sattankulam and Vijayaramarapuram. The stretch of land that tilts to the east in Srivaikundam is made fertile by the Thamiraparani river. This river flows through Punnaikayal and joins the Bay of Bengal, Malattar, Mambiaru, Vaippar and Manimuthaar.
Mineral Resources

Gypsum, Illammanide, Monazide, Hyduim, Limestones, Corals from the Islands and Phosphate are some of its natural resources.

Agriculture

The main food crop in the district is paddy. Out of the total area of 4,50,954 hectares, 2,11,811 hectares have been brought under the cultivation of different crops, which work out to 47 per cent of the total area of the district. The important food crops in the district are paddy, Cholam, Cumbu, ragi, Varagu, Samai and commercial crops like cotton, Chillies, Sugarcane, groundnut and banana.

Irrigation

The different sources of irrigation are channels, lanks and wells which cover 45,159 hectares in the district. Out of the total area irrigated, well irrigation covers 17,709 hectares, tank irrigation 22,538 hectares and channel irrigation 4,876 hectares for the year 1991-92.

Fisheries:

This district is an important coastal district having a vast coastal line of 160km and territorial water covering thousands of hectares. Fishing, next to agriculture, is an important occupation of the district. Tuticorin is a major
fishing centre. It is also considered to be the only pearl fishing centre in the whole of India. Besides, it is also noted for chunk fishing. Nearly 35000 MT of marine fish are produced per annum.

**Forestry:**

The area under forestry is 12724 hectares which occupies 2.77 per cent of the geographical area.

**Population:**

The population of the district as per 2011 Census was 17,50,176, of which 8,65,021 were males and 8,85,155 females. The population density in the district is 369 per sq.kms against the state average of 555 per sq.kms. The percentage of urban population is 50.10 and that of rural population is 49.90 of the total population. The literacy percentage of male is 91.14 and female is 81.33. Total literacy percentage of this district is 86.16.

**TABLE 3.3**

<table>
<thead>
<tr>
<th>Area</th>
<th>Females</th>
<th>Males</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>18,13,87,871</td>
<td>19,57,17,889</td>
<td>37,71,05,760</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>1,74,58,530</td>
<td>1,74,58,910</td>
<td>3,49,17,440</td>
</tr>
<tr>
<td>Thoothukudi District</td>
<td>4,42,142</td>
<td>4,34,660</td>
<td>8,76,802</td>
</tr>
</tbody>
</table>

Source: National Informatic Centre, Thoothukudi
From this Table 3.3, it is clear that the total urban population of India is 37,71,05,760 with female population as 18,13,87,871. In Tamil Nadu female population is 1,74,58,530. Out of the total population of Tamilnadu, Thoothukudi district’s urban population is 8,76,802 and female population 4,42,142. From the Table we can say that female urban population in Thoothukudi district outnumbers the male population.

The given Table shows the literacy level in urban areas.

**TABLE 3.4**

<table>
<thead>
<tr>
<th>Area</th>
<th>Person</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil Nadu</td>
<td><strong>Total</strong></td>
<td>5,18,37,507</td>
<td>2,80,40,491</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>2,45,02,195</td>
<td>1,36,65,839</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>2,73,35,312</td>
<td>1,43,74,652</td>
</tr>
<tr>
<td>Thoothukudi</td>
<td><strong>Total</strong></td>
<td>13,49,697</td>
<td>7,03,106</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
<td>6,42,686</td>
<td>3,39,739</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>7,07,011</td>
<td>3,63,367</td>
</tr>
</tbody>
</table>

Source: National Informatic Centre, Thoothukudi

From this Table 3.4, it is obviously clear that urban female literacy is 47.41 per cent of the total population of the urban literates in Tamil Nadu. At the same time the total urban literates in Thoothukudi district are 2.59 per cent
of the total population in Tamilnadu. Of this, the female literacy is 2.65 per cent. From this Table, it is also very clear that female literacy level in Thoothukudi is more than male literacy.

The following table shows the urban working population

**TABLE 3.5**

**URBAN WORKERS TO TOTAL POPULATION - 2011 CENSUS**

<table>
<thead>
<tr>
<th>Area</th>
<th>Females</th>
<th>Males</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>13.28</td>
<td>54.96</td>
<td>68.24</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>19.45</td>
<td>59.42</td>
<td>78.87</td>
</tr>
<tr>
<td>Thoothukudi District</td>
<td>5.08</td>
<td>13.78</td>
<td>18.86</td>
</tr>
</tbody>
</table>

Source: National Informatic Centre, Thoothukudi

From Table, it is clear that the proportion of total urban workers to total population in India is 68.24 per cent. Of this 13.28 per cent are females. Out of 78.87 per cent of the workers in Tamil Nadu, 19.45 per cent are females. In Thoothukudi district out of the 18.86 per cent urban workers, 5.08 per cent are female urban workers.

From this Table it is clear that the percentage of female urban workers in Thoothukudi district is very low. This is because of the lack of employment opportunities for women.
Women Workforce in Thoothukudi District:

The given Table shows the classification of female workers in Thoothukudi district. According to 2011 Census, workers were classified into main workers, marginal workers and non-workers. Out of the total main workers of 6,89,400 female main workers are 1,95,110 and male main workers are 4,94,290. Out of 96,738 marginal workers, female workers are 58,912 and male workers are 37,826. Out of 8,96,833 non-workers, females are 5,48,112 and males are 3,48,721.

**TABLE 3.6**

**DETAILS OF WORKERS IN THOOTHUKUDI DISTRICT - 2011**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Workers details</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Main workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4,94,290</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1,95,110</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6,89,400</td>
</tr>
<tr>
<td>2.</td>
<td>Marginal workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>37,826</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>58,912</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>96,738</td>
</tr>
<tr>
<td>3.</td>
<td>Non workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3,48,721</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5,48,112</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>8,96,833</td>
</tr>
</tbody>
</table>

Source: Government of India, Census Year 2011.
TABLE 3.7

NUMBER OF EMPLOYEES BY SOCIAL GROUP SEX IN THOOTHUKUDI DISTRICT

<table>
<thead>
<tr>
<th>SL. No</th>
<th>Social group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Other communities</td>
<td>2621</td>
<td>1450</td>
<td>4071</td>
<td>12.06</td>
</tr>
<tr>
<td>2.</td>
<td>B.C</td>
<td>11257</td>
<td>9934</td>
<td>21191</td>
<td>62.78</td>
</tr>
<tr>
<td>3.</td>
<td>M.B.C</td>
<td>1932</td>
<td>1452</td>
<td>3384</td>
<td>10.02</td>
</tr>
<tr>
<td>4.</td>
<td>S.C</td>
<td>2692</td>
<td>2123</td>
<td>4815</td>
<td>14.27</td>
</tr>
<tr>
<td>5.</td>
<td>S.T</td>
<td>192</td>
<td>102</td>
<td>294</td>
<td>0.87</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>18694</td>
<td>15061</td>
<td>33755</td>
<td>100.00</td>
</tr>
</tbody>
</table>


The number of employees by social group and sex in Thoothukudi district is shown in the above Table. From this Table, we can say that BC group of people are more in Thoothukudi district and also female employees under BC social group are greater than the other social groups.

Industries

The district constitutes 70 per cent of the total salt production of the State and meets 30 per cent requirement of our country. There are two industrial estates one at Kovilpatti with 11 units and the other at Thoothukudi with 20 units. The former is managed by SIDCO and the latter by SIPCOT. Small scale industries such as match industries, food-based and metal based
industries are generally constituted in Kovilpatti and Thoothukudi taluks. There are 2200 and above small scale industries registered in the district and about 12 major industries. These are engaged in the production of cotton and stable yarn, caustic soda, PVC resin, fertilizers, soda ash, carbon dioxide gas in liquid form, etc. The important major industries are SPIC, TAC, Dharangadhara Chemical Works, Loyal Textiles Ltd., Madura Coats Ltd., Sterlite Copper Industries, Kilburn Chemicals, Ramesh Flowers, Nila Sea Foods, Deva and Co. and Transworld Granite Industries.

The public sector undertakings are the Thoothukudi Thermal Power Station Unit, Heavy Water Plant (HWP) and Port Trust. The District Industries Centre and the Tamil Nadu Industrial Investment Corporation are catering to the needs of the small and large scale industries.

The Government is also encouraging unemployed youth and others to start industries by providing financial assistance and technical guidance.

**Topography**

The river Tambirabarani flows through this district. The area under the river basin within the district is 78,698.8 hectares. According to topography, the district can be divided into three regions. The northern part consists of black soil, mostly dependent on seasonal rainfall for agriculture; the central
part is irrigated by water flow from the Western Ghats; and the southern part is red loam area. The normal rainfall is 662 mm., which is less than the state normal of 1009.1 mm.

**Administration**

It has two divisions, eight subdivisions and 468 villages. At the local bodies level, Thoothukudi has two municipalities, 12 Panchayat unions, 20 town panchayats 408 village panchayats and 10,121 small villages and eight taluks, one Parliament Constituency and seven assembly constituencies. It has three revenue divisions and eight revenue sub-divisions.

**Educational Institutions**

Thoothukudi has one Maritime Academy, two B.Ed Colleges, 10 Arts Colleges, one Medical College, six Polytechnic Colleges, one Agricultural College, one Fisheries College, eight I.T.I Schools, 97 Higher Secondary Schools, 73 High Schools, 284 Middle Schools, 1076 Primary Schools and many education oriented courses.

**Health Department**

Thoothukudi has 19 Government hospitals, one Medical College hospital and 249 health welfare departments.
Public Welfare Department

For the benefit of the public, there are 164 banks. To maintain law and order there are 44 police stations. Of this, there are two women police stations remaining under the direct control of superintendent of police and 62 Theatres for entertainment.

Transport and Communication

The district has a road length of 2310km, comprising of 1232 km of metallic roads, 665 kms. of non-metallic roads and 413 km of kutcha roads.

The district is served by 413 post offices covering 3270 persons per post office. There are 61 telegraphic offices in the district which serve an average population of 22,140 per office. Similarly, there is one radio set for every 31 persons in the district.