CHAPTER I
INTRODUCTION

1.0 PREamble

The tea Industry in India has a 170\textsuperscript{1} years old history. The credit for creating India’s vast tea empire goes to the British, who discovered tea in India. The East India Company after losing its monopoly in China in 1832 has taken up cultivation of Tea in India (Assam) in 1834\textsuperscript{2}. The first commercial batch of Tea ever produced outside of China came from Assam in 1839\textsuperscript{3}.

Since then, tea continues to be the most popular drink in India. From official conferences to railway station, tea (chai) remains the favorite hot beverage among Indians (almost 85\% of the total households in the country consume about 81\% of the total tea produced\textsuperscript{4}). This sector is crucial to Indian economy. The Tea Industry is one of the oldest organized firm sectors with a large network of tea producers, retailers, distributors, auctioneers, exporters and employees. India is one of the world’s largest producer and consumer of tea\textsuperscript{5}, which accounts for 27\% of the world production and around 12–13\% of the world tea export. Tea export from India, estimated at Rs 17.31 billion during financial year 2006, accounting for 0.4\% of country’s

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{1} Chakraborty, Ranajit, and Acharya, Bivas, 'Export Potential of Indian Tea in the New Economic Environment,' \textit{Managing Economic Liberalisation in South Asia}, Directions for 21st Century, Macmillan India Ltd., 1998.
\end{itemize}
\end{footnotesize}
export in value terms, ranks as the fourth-largest agro export item from India\(^6\). The industry employs around 1.27 million people at the plantation work and that of 2 million indirectly of which 50 percent are women workers (second largest employer in the organized sector after Indian Railway). In, India, there are about 1700 processing units engaged in tea production; while around 1671 big (more than 100 hectares) planters with an output of 700-725 mkg\(^7\). Besides, as an agro-based industry, the development of plantation industry has contributed greatly towards rural development and urbanization of remote hilly areas by optimum use of land, opening up road and other communication network in those areas\(^8\).

### 1.1 INDIAN TEA: A PANAROMIC VIEW

Inspite of its importance, tea industry of India is going through a crisis phase since 1990’s\(^9\). The industry has witnessed many structural changes during recent years, which include – emergence of small tea growers in the place of large plantation and introduction of bought leaf factories (BLF). The present crisis has led to the closure of many tea estates (e.g., 20 estates in Kerala, 30 in West Bengal, about 70 in Assam have been closed down since the late 1990’s\(^{10}\)). It is estimated that more than 60,000 plantation workers have lost their jobs since 2002 and livelihood of another tens of thousands are threatened. Workers of the running estates are facing wage cut, tougher picking demand, job insecurity and the casualisation of work, appalling living and

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\(^6\) *Ibid.*


\(^9\) Choudhury, Dr. Rabindra Kr. *India’s Tea Industry and Assam*, [http://www.nenanews.com](http://www.nenanews.com), 2006

working condition etc. In early 2005 the tea industry witnessed major companies withdrawing from production and concentrating on the packaging/retailing sector (e.g. Tata Tea, Hindustan Lever Limited etc. in India). They intend to focus on brand building business and on exploring the market substantially, rather than on the plantation business, which is a low margin segment\textsuperscript{11}.

The tea industry in this country has some inherent weaknesses—due to poor yield arising out of poor condition of the gardens (more than 30 percent of the tea grown areas being above the economic threshold age limit), defective auction mechanism, old factory setup (which is affecting tea quality and price realization), poor garden management, frequent changes of garden management/managers, in-experienced owners (like traders who have no previous experience in tea cultivation and interest in plantation business) and the management’s excessive reliance on bank-debts with negligible fresh equity infusion\textsuperscript{12}. In some of the gardens, the neglect has been due to ownership disputes and diversion of funds from tea gardens to other activities and in many cases strained relationship between management and garden workers have added fuel to the fire\textsuperscript{13}.

In the market, the rising competition at domestic as well as international front has deepened the crisis of tea industry of India. The changing world order of last decade has left its own impact on the industry. The coming down of the Berlin wall and the disintegration of the former USSR have led to many changes in industry’s export


\textsuperscript{12} \textit{Economic Survey, Assam}, 201-12.

\textsuperscript{13} \textit{Indian Credit Rating Agency Study}, 2007.
market\textsuperscript{14}. The first, second and the third world are moving towards free globalized economy, where free trade and free flow of investment funds are the order of the day. Consumers in the developed world are moving towards healthier products and quality assurance which put pressure on the export of tea from India\textsuperscript{15}.

Shift in the composition of demand for tea in the importing countries has had unfavourable effects on export earnings from tea in India. The international market price of tea has declined from US $ 2.09 to US $ 2.03 per kg in between 2005 and 2006, although countries like Sri Lanka, Kenya and Indonesia are growing fast in their export and higher price realization, during the same period. Export of tea from India to some of the major importing countries like Russia, UK, and USA are showing a sharp decline.

Although, per capita consumption of tea in India is amongst the lowest (64 grams), but in volume terms India is the largest consumer. Since 1970, India has become the largest absolute consumer of tea after UK. Larger domestic demand has given a new direction to the tea industry in the recent years.

1.2 MAJOR CAUSES OF THE CRISIS

Despite India’s historical success with the tea industry, in recent years, the industry has faced serious competition in the international and national market which has led to the present crisis. Many factors have been cited as causing the crisis in the Indian tea sector—since the late 1990’s\textsuperscript{16}. Analysts agree that the dramatic fall in prices is one of the most significant causes of the crisis. The worst affected are plantation


workers and small growers; many estates failed to withstand the downward slide of price and hence moved out of business leading to the closure of tea estates that employ thousands of workers and of factories (BLF) to which small growers might sell their products. Tea prices in India are being driven down by many factors that include\textsuperscript{17}: a) Decline in demand for Indian tea in the global market, b) Defects in auction system, c) Poor price realization, d) Defective market structure and e) Increase in cost of production

a) **Decline in Demand for Indian Tea in the Global Market**

The decade of 90’s has been quite depressing for the Tea Industry in India\textsuperscript{18}. The major cause of depression in the industry was the decline in the international demand of Indian tea. The traditional markets of Indian tea like USSR and UK have drastically reduced the import of tea from India. Changed global situations like disintegration of USSR, WTO agreement, globalization of markets across the nations, etc. have proved to be adverse to India. In the year 2004, India lost its eminent position of the largest producer of tea to China. Kenya has already taken over Sri Lanka in export pushing India to fourth position. There is a fierce competition abroad. Indian tea has lost its competitive advantage to other countries on account of high cost and poor quality. However, one new development, i.e., India becoming the largest consumer of tea next to UK, has provided a lifeline to the tea industry. While tea production of India grew by about 250 percent since 1947 (1947 production-255mkg and 2007 production-950mkg) but the rate of growth of export remained insignificant. It appears that, India grow tea mainly for Indians. However, the exports of all other leading tea exporting countries have grown rapidly over the same period. The fact remains that whatever the


\textsuperscript{18} Asopa, V. N. *Tea Industry of India: The Cup that Cheers has Tears*; Indian Institute of Management, Ahmedabad; 2007.
size of the domestic demand (par capita consumption was 200 grams in 1950, has increased to nearly 700 grams in 2007), there is still sizeable surplus amounting between 180 and 200 million kg that needs to be sold\textsuperscript{19}.

(b) Defects in Auction System

India’s tea market is facing yet another paradox which could be explained in terms of glaring gulf between the price charged by dealers and retailers\textsuperscript{20}. A 2005 report for the International Labour Organization (ILO) notes that the large tea companies are benefitting from fall in auction prices and rise in retail prices for tea\textsuperscript{21}. “This widening gap between consumer and auction prices……is cutting into the margins realized by the tea producers but is not being passed on to the consumer in the form of lowered tea prices\textsuperscript{22}.” Similarly a report by the Government of Assam published in 2004, found it “unfathomable that the retail price of tea has not come down with the fall of auction price\textsuperscript{23}. Certainly, the margins of intermediaries are far too high. Price paid to plantation and small tea growers has fallen since 1998; retail prices for tea have increased. Average price for medium quality tea sold in Indian market increased from Rs.85-90 per kg in 1999 to Rs.120-140 per kg in 2005 and it continues to rise.

In India, nearly 55 percent of total tea produce is sold through auction houses, with the rest sold through private sales. Even after the abolition of compulsory auction in 2001, the auction houses are very important constituent of tea marketing structure.

\textsuperscript{19} Ibid.

\textsuperscript{20} Choudhury, Dr Rabindra Kumar, Indian Tea Industry and Assam. \texttt{http://www.nenanews.com}, 2006.


\textsuperscript{23} As quoted in Asopa, V. N. \textit{Tea Industry of India: The Cup that Cheers has Tears}; Op.Cit.
The important feature of tea auction sale is that the producers/growers do not take part in the selling process directly. The brokers in the market (few in number who are registered brokers in specific auction center) sell tea on behalf of producers. Brokers generally do not accept bid from unknown buyers.

Many industries also believe that the large buyers have co-operated on the auction floor to keep tea price low. An independent report commissioned by the Indian Government in 2002 also suggested a merging of interest between broker and buyers, as well as co-operation between buyers at auction houses, both of which prevented tea growers from fetching a fair price at auction.

The large buying companies use their market power (as they have their own network of sales and marketing all over the country and export tea after blending) to push down price and take the advantage of depressed market to pay low prices; they are clearly benefiting from the current situation. Hindustan Lever Limited, Tata Tea, Williamson Magor, etc. are such powerful buyers having enormous influence on the market and price of tea in India in general and Assam tea in particular. These big tea companies which are in monopolistic competition in consuming countries always try to stabilize prices²⁴.

The longer transaction time and higher transaction cost (like warehousing charges, transportation cost, brokerage charges etc.) are some other problems with the auction system. It takes about 35 days for the entire transaction processes to complete.

(c) Poor Price Realizations

The price of tea has been on long term decline while production costs have been rising, putting pressure on tea growers and working condition of labourers. The decline in prices has been primarily due to growth in production in the face of sluggish

demand. Low prices for tea are generally passed on to the plantation workers in the form of low wages and withdrawal of basic facilities like food, health, education, etc. given that it is easier to cut cost by reducing labour cost (as the labour has weak bargaining power) than raising the price of tea (difficult in the competitive market economy) and in most of the cases producers have to remain competitive by lowering wages. Major causes of poor price realization are due to following reason:

- Competition between producing countries for a share of the world market was one of the major causes of falling price of Indian tea. World production of tea is fairly diversified and not concentrated in a particular area. Presently 36 countries of the world produce tea and many of them are big producers. They prevent the establishment of a monopolistic leader in the world tea market to ultimately allow fair and free competition in the market.

- Demand for tea is rising very slowly (1.5-2 per cent), therefore the only way to increase market share of export by a country is at the expense of the competitors.

- Because of the dominance of auction system as a day–to–day intermediary between producers and buyers, the actual producers have been unable to maintain direct contact with the ultimate customer of tea and thereby creating a long term relationship.

- Tea is a perishable product. Its quality and flavour deteriorates very quickly. Therefore it is frequently necessary to cut prices to clear stocks.

- Tea producers have to stay in market despite cut in prices of their produce as they have invested a huge sum of money; many of them are depending on it as they lack alternatives.
• It is forecasted that tea production will increase over next few years, despite a slower growth in demand, a trend that can only undermine price of tea in the long run. The present decline in prices was on the back of a 0.6 percent annual increase in production during 1984–2005 is estimated at 2.8 percent. In 2005 alone, surplus of export available over import requirement stands at about 24000 tones, a surplus of 2 percent.

• There is a major shift in the consumption and thereby composition of demand for tea in the developed (importing) countries which has had unfavourable effects on aggregate export earnings from tea. The increasing use of tea bags and soluble instant tea effectively reduces the quantity of tea needed per cup and also raise the demand for plain cheaper tea. The tea bags accounts for 10 percent of the volume of world consumption–and it is still increasing. Factors which help to motivate consumption of instant tea include its ease of use as a cold drink and introduction of vending machines. These changes in the consumption patterns of tea have also significantly contributed to the decline in tea prices.

(d) Defective Market Structure

The tea value chain comprises all the stages from green leaf production from the bushes to finished product and sale to the customers. Value is added to the tea leaves at each stages of the supply chain, each with associated cost. This includes the cost of plucking and sorting, factory packing, internal transportation, ware housing, sales changes (auction or direct sale), freight, insurance, interest, blending, packaging and retailers’ sales cost etc. In general most of the agricultural produces, value addition is done at the downstream in the higher processing and retail stages of supply chain–this is also true with tea. While tea is ready to drink item, the downstream stages such as
blending, packing and ultimate marketing are the most profitable one. This part of the value chain is controlled by a handful multinational tea packers and brokers (SOMO 2007). Concentration is extremely high in the downstream of tea supply chain where 90 percent of western tea trade is controlled by 7 (seven) MNC’s, 85 percent of world production is sold by these MNC’s.

As a result, these MNCs can considerably influence world retail price. These are the indications that big companies have been influential in keeping world market price low, which affect the sustainability of tea industry.

(c) Increase in Cost of Production

While market prices for tea have been falling, the cost of production has been on the rise in India, putting downward pressure on profitability and income.

One factor which is closely related to the cost of production is, of course, productivity in terms of volume per hectar which is affected by change in climate, soil fertility, age of the tea bush, high over-head cost, poor agricultural practices etc. The stagnation in productivity in many big estates is compounded by high land labour ratio. Productivity declined in India from 1996 to 2005 in the large garden.

Labour cost accounts for around half of the unit cost of production and approximately 55 to 75 percent of that labour cost is on plucking. High fuel cost, dilapidated infrastructure including transportation and unstable law and order situation in and around garden area etc. result in high cost of production. Field and factory workers’ productivity is also considered low in India. The impact of social cost (health, food, housing, water etc.) in the large estates in percentage terms works out to about 5-8 percent of the total costs. It implies an additional Rs.4.12 per kilo for manufactured tea in NE Region of India and Rs. 3.44 per kilo in South India. Therefore it is assumed that around 80 percent of the cost of production goes towards fixed expenses like fuel,
power and labour. Inflationary pressures are now pushing up these fixed costs further. Labour unrest is another major problem faced by planter/estates. Looking into the profitability of the industry at the current price, does not provide the way to meet these costs. Rising costs and low productivity can have negative consequences on social and environmental aspects of production (sustainability problem), if these costs cannot be passed on to the ultimate buyer.

1.3 PROBLEM DESIGN

From the above discussion it can be clearly understood that tea being one of the important cash crops at the national level, inspite of higher export potential, the continuous increase in stiff competition has resulted in a continuous decline in the export of tea. Besides, the domestic demand for tea is steadily rising. At the growers’ level, a majority of the holdings are small with less than 10 hectares. This has resulted in the uneconomic cost on the one hand and poor agricultural practices. Also, as discussed above, the uneconomic size of landholdings results in poor quality of tea produce and eventually a poor bargaining power for market price in the market. This in turn, affects their consecutive plantation activity.

Thus the above discussion clearly vindicates that a successful tea plantation activity depends on their socio economic status, the level of income generated from farming and in turn the level of expenditure, the bargaining power which depends on the value chain etc. In the present project it is attempted to examine these issues in the context of tea growers of The Nilgiris district.

The reason behind selecting the district of The Nilgiris is as far as its contribution to the tea economy of South India, it may be stated that the area under tea plantation in The Nilgiris constitutes 32% of total area under tea in South India. In
respect of production also The Nilgiris contributes 32% of total South Indian production of tea. The Nilgiris' percentage of total production and area would be 7% of all India figures for the above two parameters. The small growers of The Nilgiris contribute 14% of the total South Indian tea production while their percentage of contribution to all India tea production is around 3%. It may be mentioned in this context that a little over 6,000 small tea gardens in The Nilgiris are registered with the Tea Board covering an area of over 7,000 hectares against an All India figure of 12,000 with an area of nearly 13,000 hectares.

The tea industry in The Nilgiris district forms a major portion of the Tamil Nadu industry in terms of area 83.95 per cent and production 78.97 per cent. And the area from the small tea sector constitutes 70.48 per cent in 2004 and that of production 66.02 per cent by 2010 in the District tea industry. Also, the number of small tea growers in the district is estimated at 6300 by the INDCOSERVE.

In terms of favourable factors, The Nilgiris tea Industry is endowed with suitable agro-climatic conditions, large existence of tea bushes in the economic age group of "below 50 years", better application of fertilisers, wider use of pesticides, weedicides, etc., more or less satisfactory conditions in the factories, better transport facilities, comparatively better yield rates, good labour welfare measures etc.

Given these situations, the present research makes a modest attempt to study the issues identified above.

1.4 OBJECTIVES OF THE STUDY

More specifically, the objectives framed on the basis of the above mentioned issues, can be given as below:
1) To examine the trends in growth of tea in the Nilgiris vis-a-vis other neighbouring producing states in India in terms of area, production and productivity,

2) To study and compare the contribution of area and yield on output of tea,

3) To study the socio economic status of the sample tea growers of the Nilgiris district,

4) To estimate the cost and the return from tea plantation of sample small and large growers of the Nilgiris,

5) To describe the existing models of small tea growers in tea value chain in the Nilgiris and

6) To draw policy implications.

1.5 METHODOLOGY AND DATA BASE

1.5.1 DATA BASE

To study the objectives framed, the study relied both on primary and secondary data.

1.5.1.1 SECONDARY DATA

The sources of secondary data include the publications and reports of Tea Board, India, the reports of the United- Planters’ Association of Southern India (UPASI), State Planning Board, Tamilnadu, different Tea Companies and various other unpublished reports of various other non governmental organizations, unpublished research reports, doctoral thesis of various institutions, Books, Journal articles, etc. 'Tea Statistics' and 'Tea Digest' issued by Tea Board, India is the main source of secondary data.

1.5.1.2 PRIMARY DATA

The first step in the collection of primary data is to identify the sample tea growers from The Nilgiris district.

As per the Agricultural Census of Tamilnadu, 2005-06, in the district of The Nilgiris there are six taluks. From these six taluks, three taluks namely, Coonoor,
Ootacamund and Gudalur were selected randomly which constitute around two third of the holdings of the total holdings in the district. Though these taluks were selected randomly, an examination of tea holdings in them indicated that the gardens are concentrated heavily only in these three taluks and hence the selection of these taluks would help the researcher to carry out a reliable analysis.

From the data given in Agricultural census of Tamilnadu, it was found that in the three selected taluks there are 43138 small holdings. Given the total holdings of 69865 in the entire district, the number of holdings of 43138 works out to around 62 per cent of the total. Hence, the study covers almost two third of the grower population. From this, by adopting a non proportionate sampling technique, 200 samples from each of the taluks, (0.86 per cent total number of holdings) were selected at random. This gave a sample size of 600. (Table 1.1)

Besides a name list of tea growers (who have the size of holdings less than 10 hectares and growers who have holding size of above 10 hectares) obtained from the unpublished records of the revenue department of the district. From this name list, the pre-determined number of samples has been taken at random. However, the researcher is aware that the source list from the agricultural census includes both the registered and unregistered tea gardens.

<table>
<thead>
<tr>
<th>Taluk</th>
<th>Small Holdings Below 10 Hectares</th>
<th>Large Holdings Above 10 Hectares</th>
<th>Total No. of holdings</th>
<th>Small Holdings</th>
<th>Large Holdings</th>
<th>No. of holdings selected as Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Coonoor</td>
<td>13739</td>
<td>147</td>
<td>13886</td>
<td>175</td>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>2. Udagamandalam</td>
<td>20502</td>
<td>285</td>
<td>20787</td>
<td>175</td>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>3. Gudalur</td>
<td>7603</td>
<td>862</td>
<td>8465</td>
<td>175</td>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>Total</td>
<td>41844</td>
<td>1294</td>
<td>43138</td>
<td>525</td>
<td>75</td>
<td>600</td>
</tr>
</tbody>
</table>

A pre tested questionnaire was prepared to collect the information pertaining to social background of the tea growers, the farm practices, and the information on the cost involved in the process of tea cultivation etc.

Apart from the pre tested questionnaire prepared to understand the profile of the tea growers, for the purpose of understanding the existing system of value chain among the small growers, a host of interviews across a cross section of stakeholders - officials of the Tea Board, The United Planters' Association of Southern India, UPASI – Krishi Vigyan Kendra. The Tamil Nadu Small Tea Growers Industrial Cooperative Tea Factories' Federation Limited (INDCOSERVE), Coonoor Tea Trade Association (CTTA) were conducted. Information had been collected in the form of case studies from 3 INDCO factories, its officials and STG members. Interviews of 21 STGs who were members of these INDCO factories were conducted. Also one official in each factory was interviewed. Secondary data available on the INDCOSERVE Website, annual reports and other periodic reports as well as information from the Tea Board documents has been used for the analysis of INDCO Factories. Regarding the information required from the Primary Producer Societies, from the already selected 450 members, 56 Small Tea Growers who are the members of PPSs were selected and have been interviewed.
### TABLE: 1.2
**DETAILS OF FIELD VISITS**

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of STGs interviewed</th>
<th>Other meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDCO Factories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indco factory and its members</td>
<td>7</td>
<td>Tea maker</td>
</tr>
<tr>
<td>(Manjurtea)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indco factory and its members</td>
<td>8</td>
<td>Special Officer on Duty</td>
</tr>
<tr>
<td>(Kattabettu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indco factory (Salisbury)</td>
<td>6</td>
<td>Tea maker</td>
</tr>
<tr>
<td><strong>PPSs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lakshmi Narayana STG Karakorai</td>
<td>8</td>
<td>1 FGD</td>
</tr>
<tr>
<td>Society</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Bharatmata STG Society,</td>
<td>7</td>
<td>1 FGD</td>
</tr>
<tr>
<td>Bilikumbi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Vinayaka STG Society,</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Honadulai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Vivekananda STG Society,</td>
<td>5</td>
<td>1 FGD</td>
</tr>
<tr>
<td>Honadulai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kundha Small Tea Grower's Society</td>
<td>7</td>
<td>1 GGD</td>
</tr>
<tr>
<td>Sri Hirodaya society, Sulur</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Ovalley Periyar Nagar STG Society</td>
<td>5</td>
<td>1 FGD</td>
</tr>
<tr>
<td>Dharmagiri Chelivayal Society</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Aruttuparai Small Tea Growers</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Tantea factory (tiger hills estate)</td>
<td></td>
<td>Supervisor and workers</td>
</tr>
<tr>
<td>Head office - Tantea</td>
<td></td>
<td>various officials</td>
</tr>
<tr>
<td>Head office - indcoserve</td>
<td></td>
<td>Managing director</td>
</tr>
<tr>
<td>Tea Board</td>
<td></td>
<td>Executive Director and Development Officer</td>
</tr>
<tr>
<td>UPASI-KVK</td>
<td></td>
<td>various officials</td>
</tr>
<tr>
<td>Auction Centre</td>
<td></td>
<td>Secretary, CTTA</td>
</tr>
</tbody>
</table>

*Source: Tea Board*
The small tea growers were belonging to nine different societies in The Nilgiris who were selected from each of the three key regions of The Nilgiris districts namely, Ooty, Gudalur and Coonoor.

### 1.5.2 TOOLS AND TECHNIQUES USED

As indicated already, the present study relies on both the primary and the secondary data. The collected inter-temporal secondary data are analyzed using the statistical tools. More specifically, apart from the use simple tools like the arithmetic mean, to examine the trends in the growth of the tea related variables the techniques like, the linear growth rate (LGR), Compound growth rate (CGR) were calculated. To examine the dispersion in the variables, the Instability Index (II) is also calculated.

**a) Simple Arithmetic Mean**

More specifically, to understand the average values of area under tea, the production and yield for the entire study period, the simple arithmetic mean has been used.

**b) Linear and Compound Growth Rates**

To understand the trends in the growth of the area, output and yield of tea at the global level, in India and in various parts of southern region including the study area namely, The Nilgiris district, the linear growth rate and compound growth rate are being calculated.

The formula for **Linear Growth Rate** (LGR) can be given as below:

\[
LGR = \frac{b}{Y} \times 100
\]

where,

\[
b = \text{the slope coefficient of the linear regression function of the form:}
\]

\[
Y_t = a + b_t
\]

The formula for **Compound Growth Rate** (CGR) can be given as below

\[
CGR = \left(1 + \frac{\text{Growth Rate}}{100}\right)^{\frac{365}{\text{Period in days}}} - 1
\]
CGR = AL (log b-1) * 100

where,

b = the slope coefficient of the exponential regression function of the form:

\[ Y_t = ab^t \]

To understand the volatility in the growth of area output and yield of tea, the sophisticated tool of instability index has been used.

The formula for Instability Index can be given as:

\[ \text{Instability (I)} = \frac{\sqrt{\frac{\{e_i^2\}}{(n-k)}}}{X} \times 100 \]

Where,

\[ e_i \] = the error of the econometric regression equation of the form: \[ Y_t = a + b_t + e_i \]

For this purpose, the output growth is partitioned into the contributions of changes in area (hectare) and changes in output per unit area, or yield (Boyce, 1987). For this purpose the production function may be represented as:

\[ Q_t = AY_t \]

Where,

Q = Output of Tea
A = Area under tea
Y = Yield of tea
T = time period

Given the above multiplicative identity, the exponential growth rate of the components on the right hand side sum up to the growth rate on the left hand side term, output

\[ b_Q = b_A + b \]

where,

\[ \ln Q_t = a_Q + b_Q t \]
\[ \ln A = a_t + b_A t \]
In \( Y_t = a_t + b_Y t \)

Now the area effect and yield effect on output growth can be estimated by,

\[
AE = \frac{b_A}{b_0} \times 100
\]

Where, \( AE = \) area effect

Similarly, yield effect (YE)

\[
YE = \frac{b_Y}{b_0} \times 100
\]

where,

\( YE = \) Yield Effect

The decomposition analysis has also been done for the entire period (1991 to 2010) and for the two time periods (Period I = 1991 to 2000; and Period II = 2000 to 2010).

c) Impact of Socio Economic and Demographic Factors on the Preference for Tea Plantation : A Logit Model Approach

Given the influence of socio-economic and demographic factors, in the present paragraphs it is attempted to examine the significance of the impact of these factors on the sample respondents’ preference to continue with the plantation of tea crop. Since a majority of the various attributes are, these variables, wherever required are dichotomized and hence to estimate the impact of these factors determining the preference, a logit model has been run. The identified variables and the values assumed by these variables can be given as below:

**TABLE: 1.3**

**IMPACT OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS : A LOGIT MODEL APPROACH**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Variable</th>
<th>Symbols Assumed</th>
<th>Nature of the Variable</th>
<th>Values Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preference for Plantation</td>
<td>PP</td>
<td>Qualitative (dependent Variable)</td>
<td>No=0 Yes = 1</td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td>A</td>
<td>Quantitative (Independent Variable)</td>
<td>In years</td>
<td></td>
</tr>
<tr>
<td>3. Sex</td>
<td>S</td>
<td>Qualitative (dependent Variable)</td>
<td>Male =0 Female = 1</td>
<td></td>
</tr>
<tr>
<td>4. Level of Education</td>
<td>LE</td>
<td>Quantitative (Independent Variable)</td>
<td>In years</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1.3 : Contd..*
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Variable</th>
<th>Symbols Assumed</th>
<th>Nature of the Variable</th>
<th>Values Assigned</th>
</tr>
</thead>
</table>
| 4.     | Allied Occupation                       | AO              | Qualitative (Independent Variable)      | No – 0  
|        |                                          |                 |                                         | Yes – 1                          |
| 5.     | Number of members in the family          | NM              | Quantitative (Independent Variable)     | In number                        |
| 6.     | No. of Members Involved in Tea Plantation| NMT             | Quantitative (Independent Variable)     | In number                        |
| 7.     | Experience in Tea Cultivation            | ETP             | Quantitative (Independent Variable)     | In years                         |
| 8.     | Income                                  | I               | Quantitative (Independent Variable)     | In Rupees                        |
| 9.     | Adoption of Mechanization                | AM              | Qualitative (Independent Variable)      | No – 0  
|        |                                          |                 |                                         | Yes – 1                          |
| 10.    | Opinion on the Intervals of Plucking Tea Leaves | I              | Qualitative (Independent Variable)     | Sufficient = 0                    
|        |                                          |                 |                                         | Insufficient = 1                  |
| 11.    | Opinion on the concessions offered by government | C              | Qualitative (Independent Variable)     | Satisfied = 0                    
|        |                                          |                 |                                         | Not satisfied = 1                 |
| 12.    | Area of cultivation                      | AC              | Quantitative (Independent Variable)     | In acres                         |
| 13.    | Opinion on the cost of tea leaf production | COP             | Qualitative (Independent Variable)     | High = 0  
|        |                                          |                 |                                         | Low = 1                          |

\( \alpha_0, \beta_1, \ldots, \beta_{13} \) are regression coefficients

The form of the model can be given as:

\[
PP = \alpha_0 + \beta_1 A + \beta_2 S + \beta_3 LE + \beta_4 AO + \beta_5 NM + \beta_6 NMT + \beta_7 ETP + \beta_8 I + \beta_9 AM + \beta_{10} I + \beta_{11} C + \beta_{12} AC + \beta_{13} COP
\]

1.6 **SCOPE OF THE STUDY**

This study on the economics of tea plantation is a maiden attempt as far as the study area is concerned. Though there are many studies that have been carried out at the global level and at the Indian context on this issue, in the present situation of stiff competition faced, estimating the impact of social, economic and demographic factors on productivity and eventually their impact on the future prospects of tea plantation particularly on small growers is a maiden attempt. Added with this, the process of value chain in the context of small growers is again a maiden attempt. Thus, through
identifying the problem at the district level, the study contributes to the existing literature on the problems and prospects of tea plantation. Thereby, the study becomes exploratory in nature. The study, by examining the present situation and making a critical appraisal it becomes analytical in nature.

1.7 UTILITY OF THE STUDY

By analyzing the problems of social background of the tea growers, the study would come out with certain conclusions which are germane to the present day situation. These suggestions would help the planners and the policy makers to draw policies for implementation which would help in the improvement of the production and productivity system not only for the study area but also for the state as a whole.

1.8 LIMITATIONS OF THE STUDY

However, the study hedges with certain limitations.

1) The study relied exclusively on the primary data and the limitations associated with such sampling techniques forms the limitations of the study.

2) The respondents had to recall certain information from their memory which could have caused the ‘recall bias’.

3) The conclusion arrived in the context of plantation practices of the growers are based on the given socio economic environment and the policy of the government. Any change in the socio economic status and the policy of the government may lead the suggestions given to be void.

1.9 CHAPTERISATION SCHEME

Chapter I provides the introduction to the study, problem focus, methodology, scope, utility and limitations of the study.

A sketch on the available review on tea plantation has been made in Chapter II. A brief description of the history of tea plantation, the profile of the study area namely The Nilgiris district is made in Chapter III.
In Chapter IV, a macro level analysis of the trends in the production and productivity of tea is being made. A decomposition analysis of area effect and yield effect on tea output is also discussed in this chapter.

The profile of the tea plantation owners and the practices of the sample grower respondents, the economics of tea gardening measured in terms of cost and returns, and the value chain for the small tea growers are discussed in Chapter V.

Chapter VI provides the summary, major findings of the study, conclusions and the suggestions.