PROBLEMS AND PROSPECTS OF TEA PLANTATION INDUSTRY IN KERALA

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CERTIFICATE

This is to certify that the thesis entitled **"Problems and Prospects of Tea Plantation Industry in Kerala"** is a bona fide record of the research work carried out by Mrs. Merlin Joseph, under my supervision and guidance for the degree of **Doctor of Philosophy** of the Cochin University of Science and Technology, in the Department of Applied Economics. The thesis is worth submitting for the degree of Doctor of Philosophy in Economics.

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INTRODUCTION

Tea is the most popular of all non alcoholic beverages in the world. Two-third of the world population drink tea. Tea, *'Camellia sinensis,'* is believed to have originated from South East Asia. However, the centre of origin is not clearly known. It may be the Tibetan Plateau including Sze-Chuan, Yu-nan, Sain, North East India or China. Chinese people were the pioneers in using tea for medicinal purpose. By the end of the sixth century, the Chinese began to regard tea as a beverage. In India tea plant was discovered in North East Assam during the early eighteenth century. Tea has become one of the powerful commodities of commercial value during the colonial period.

Starting from a luxury which only the rich could afford, tea has now become the world's cheapest and most widely used drink other than water. It has truly become a beverage of international fellowship, a bond that brings people together. Economically speaking too, tea is an extremely valuable source of much needed foreign exchange.

Tea plantation industry is a combination of industry and agriculture (plantation is a large estate on which crops such as tea, coffee, rubber etc. are grown). Production of leaf is an agricultural activity while its processing is an industrial activity. Most of the large estates process raw leaf in their own factories. Tea industry is of considerable importance in the national economy

of India in terms of income generation, earning foreign exchange, employment generation, and contribution to the national exchequer.

1.1 An overview of tea statistics

There are 2662353 hectares under tea in the world producing 3013807 tonnes of tea with an yield rate of 1132 kg./hectare. Total world demand for tea is 2893170 tonnes and world's import of tea for consumption is 122600 tonnes (Tea Board, 2000). Sixty per cent of the total area under tea in the world is located in China and India. Asian countries like India, China, Sri Lanka, Turkey, Indonesia and Japan are the leading producers of tea in the world. Major exporters of tea in the world are Sri Lanka, China, Kenya, India and Indonesia. Commonwealth of Independent States (CIS.), United Kingdom (UK), Pakistan, United States of America (USA), Arab Republic Emirates (ARE) and Japan are the leading importers of tea.

India continues to be the largest producer of tea accounting for 28.09 per cent of the global output. India is also the largest consumer of tea. In terms of area, it occupies about 19.05 per cent of the world tea area. Although India holds a leading position in production and export, the current position of tea trade reveals that its share in the world production and export has been declining steadily over the past three decades. The Indian export is stagnated around 200 million kg. which is 15.6 per cent of the total world export and 24.43 per cent of total tea production in India.

Tea plantations occupy 30.84 per cent of the total area under plantations in India and production of tea account for 46.49 per cent of the total national plantation output. According to statistics provided by the Tea Board, India, total area under tea in the country during the year 2000 was 507196 hectares which produced 846483 tonnes with an average yield rate of 1669 kg./hectare. The current Indian tea export is 206816 tonnes and import is 15230 tonnes. Total consumption of tea in India is 653000 tonnes (Tea Board, 2000).

1.1.1 Geographical distribution of tea

India's tea plantations can be largely grouped into two regions, North India and South India, occupying 77.68 per cent and 22.32 per cent respectively of the total area under tea in India. Assam and West Bengal are the important tea growing states accounting for 67.87 per cent and 27.84 per cent respectively of area under cultivation in North India. The remaining 4.29 per cent is located in Tripura, Bihar, Uttar Pradesh, Himachal Pradesh, Manipur, Sikkim, Arunachal Pradesh, Nagaland, Orissa and Meghalaya.

South India occupies 22.32 per cent of tea area (113199 hectares) and account for 24.16 per cent of output (204552 tonnes). In South India, Tamil Nadu, Kerala and Karnataka are the major tea growing states contributing 65.66, 32.48 and 1.86 per cent respectively. Karnataka occupies 0.42 per cent (2106 hectares) and Tamil Nadu occupies 14.66 per cent (74331 hectares) tea area of India.

In Kerala tea growing districts are Idukki, Wayanad, Kottayam, Kollam, Thiruvananthapuram, Trissur, Malappuram and Palakkad. Though tea is grown in all these districts there is considerable spatial concentration in two districts, Idukki and Wayanad. They account for about 87.24 per cent of the total tea area of Kerala. Idukki has 72.40 per cent and Wayanad has 14.84 per cent of tea growing area in the State (Tea Board, 2000).

Tea is one of the traditional plantation crops in Kerala and the State is the fourth largest producer of the crop in the country, with a relative share of 8.19 per cent. Kerala alone accounts 2.30 per cent of the world production. Kerala's tea production is 33.91 per cent of the South Indian production. The tea area of Kerala is 7.25 per cent of area under tea in India and 1.38 per cent of the area under tea in the world and it is 32.48 per cent of the area under tea in South India. According to Association of Planters of Kerala (APK), tea export of Kerala is approximately 40 per cent of South Indian tea export. Kerala exports 44436 tonnes of tea (21.49 per cent of total tea exports from India) and it is about 3.35 per cent of world tea export. Area under tea accounts for 5.78 per cent of the total area under plantations in Kerala and the production of tea accounts for 9.13 per cent of the total plantation output in Kerala.

According to the Tea Board, India, total area under tea in Kerala was 36762 hectares in 2000 and it produced 69355 tonnes of tea. Productivity of tea in Kerala (1887 kg./hectare) is higher than that of South India (1807

At the State and central level the tea plantation sector contributes to the exchequer by various types of taxes and duties. At the state level there are agricultural income tax, land tax, plantation tax, state sales tax/purchase tax, building tax, machinery licence fee and professional tax. At the central level there exists central income tax, cess under commodity acts, excise duty, central sales tax and factory licence fee.

1.2.1 Employment generation

Tea Plantation industry provides employment to many people especially poor and weaker sections of the population. Average daily number of labour in Indian Tea Plantations is 1032267 (Tea Board, 1997-'98). Of this 490187 are male, 492899 are female and 49181 are adolescents.

The average daily number of employees in tea plantations in Kerala during 1997 was 74776. Besides this, approximately 125000 temporary employees are working in tea plantations in Kerala. This is approximately 6.35 per cent of the total employment in Kerala (including all sectors) (Tea Board, 1997- '98, Government of Kerala, 2000). The total number of employees in tea plantations in Kerala constitutes about 7.24 per cent of the total number of tea plantation employees in India. In Kerala the percentage of male workers in tea plantations is 45.96 per cent (34365) and female is 52.95 per cent (39592) and adolescents constitutes 1.09 per cent (819).

1.3 Statement of the problem

Tea plantation industry is an important industry in Kerala. It plays crucial roles in income generation, foreign exchange earning and employment generation both directly and indirectly. However, the overall performance of this industry is found to have been unimpressive.

Since the market for tea is of an international one, trade liberalisation is expected to have a substantial impact on this industry. Trade liberalisation and free import of tea, import of inferior quality of tea and re-export of it mixing with the traditional product have caused problems both in the domestic and international markets. As a result of opening up of the market for tea, there exists competition among producers at the international level. Competitiveness has become the key to success. Those units who are having the cost of production above the average international price will find difficult to continue to operate. In the case of Kerala most of the units are in this category.

The disintegration of the former USSR(United Soviet Socialist Republic) which accounted for more than half of the total exports of India caused serious problems in Indian tea exports and it has very much affected Kerala tea because USSR used to be the major market for Kerala tea. Tea companies are facing severe problems such as high cost of production and low price realisation.

The employees are facing the major problem of insufficient wage rate compared to the living expenditure and they are found to be dissatisfied with poor working conditions. In sum the tea plantation industry is facing a crisis. In this context the present study attempts to examine the problems and prospects of tea plantation industry and proposes to undertake a detailed analysis of its growth performance in terms of trends in output, area and yield.

1.4 Hypothesis

The study hypothesises that tea plantation industry in Kerala is stagnating since the late seventies.

1.5 Theoretical framework

Theoretically, cash crops are favoured for their potential contribution to growth, employment and external balance. The expansion of cash cropping is recommended to exploit comparative advantage and provide the basis for industrial development through inter-sectoral linkages. The contribution of cash crops to the output growth can be summarised in three propositions:

(i) Cash cropping allows improved factor utilisation in both the short and long terms. In the short term, it provides both profit and a means of increasing income through the exploitation of comparative advantage. In the long term, these benefits can be reinforced by indirect effects, including specialisation, economies of scale, and greater managerial efficiency associated with higher levels of exchange.

(ii) The exploitation of comparative advantage in the short-run maximises the investible surplus, which meets a necessary condition for maximum long-run growth. In the international context, cash crops may also attract foreign factors of production to speed the growth process.

(iii) Cash cropping contributes to growth through linkage effects, both production and consumption (Maxwell and Fernando, 1989).

Considering these theoretical aspects, the topic for study is very relevant in the present era of globalisation. Trade liberalisation and the resultant import of inferior quality of tea and the re-export of it mixing with the traditional products have virtually maligned the market for Indian tea. The instability in price with slump has placed the companies in uncertainties; and they began to adjust with the price changes. The adjustments seem to have been reflected in setting a strategy for short-term maximisation of profit rather than expecting the long term returns. At the producer level, the short-run is that time period during which the productive capacity of a producer is fixed. This means that short-run supply variations are restricted only to the variations in the use of variable factors in combination with the fixed productive capacity.

In the case of cultivation of tea, the short-run adjustments are limiting the quantity of harvesting, continuing with old plants, not extending area under cultivation, absence of technological innovations etc. Similarly in the case of manufacturing factories they continue with the vintage technology

producing only standard products of black tea, absence of product diversification, conventional plucking etc.

The propositions (i) and (ii) are expected to operate in an improving phase and when downswing began the units will not be reinvesting the already accumulated surplus. In this context the present study attempts to examine the growth performance of the tea plantation industry in Kerala and to observe the factors affecting the performance of it. The proposition (i) pre-empts improved factor utilisation, including labour absorption. Thus the study also has to look into the aspects relating to labour in the tea plantation industry.

1.6 Objectives of the study

The overall objective of the study is to examine the problems and prospects of the tea plantation industry in Kerala. The specific objectives are the following:

1. To trace the historical evolution of tea plantation industry in India with special reference to Kerala and to study the performance of tea plantation industry in Kerala.
2. To examine the trends in growth of tea Industry in Kerala vis - a - vis other neighbouring producing states in India in terms of area, production and productivity.
3. To study the problems of tea plantation industry in Kerala.

1.7 Methodology and Data base

1.7.1 Data base

The study is based on both primary and secondary data. The sources of secondary data are publications and reports of Tea Board, India, United Planters Association of Southern India (UPASI), Association of Planters of Kerala (APK), State planning Board, Kerala, different Tea Companies and various other unpublished works like Ph.D. Theses, M.phil. dissertations and other Research Reports, Books, Journal articles, etc. 'Tea Statistics' and 'Tea Digest' issued by Tea Board, India is the main source of secondary data.

Primary data are collected for understanding the problems of Tea Plantation Industry. In Kerala tea plantations are mainly concentrated in Idukki and Wayanad districts and they account for 87.24 per cent of area under tea in Kerala. Idukki accounts 72.40 per cent and Wayanad accounts 14.84 per cent of the total tea area of Kerala. Therefore Primary data were collected from these districts. There are 89 large tea companies, 163 large estates and 3956 small growers in Kerala (Tea Board, 1998). Acording to Tea Board, India tea companies having estate area above 10.12 hectares are considered as large ones. Here the study, based on primary survey, concentrates only on large tea companies, since large companies possess about 93 per cent of the total tea area of Kerala. The average daily number of employees in tea plantations in Kerala during 1997 was 74776. Primary data were collected from sample units of the universe (89 large tea companies). The total tea planted area of the sample units (21114.46 hectares) constitutes 61.86 per cent of the total tea planted area of

the universe (34130.91 hectares). Table 1.1 gives details on selection of sample.

Table 1.1 Selection of sample

	Area (in hectares)
Total Universe	34130.91
Sample Units	21114.46
Percentage to Universe	61.86

Sample companies were selected based on the area contribution. Since the major five companies posses 60.38 per cent of the total tea area of the large companies, all these companies were selected for the study. Mananthavady Tribal Plantation Co-operative limited is being undertaken by Government of Kerala through co-operative society managed by Board of Directors with the purpose of more tribal participation. So this company was also selected for the study. Besides this to understand the problems and prospects of small companies (but having tea area above 10.12 hectares), three small companies are also selected for the study.

To study the problems faced by the companies, data were collected from the selected companies' estate managers and owners [owners in the case of companies having single estate (Owner manager type)]. Information on the problems employees face were also been collected from 900 employees of the selected units or companies. Total number of permanent employees in selected sample estates is 4382. The surveyed 900 permanent employees constitute

20.54 per cent of the total sample estates' permanent employees. A detailed primary survey was conducted using schedules. Data were collected both from employees (worker side) and from employers (company side). Different schedules were used for collecting data from employees and employers. Data were collected through interview method.

The 900 respondents, included field workers (including pluckers), field supervisors/officers, factory workers, factory supervisors/officers and others which include balasevika, creche (day care) aya, tapal man., dispensery nurse, watch man, welfare officer and estate office workers. Each category's percentage share are as follows: field workers –64 per cent (33 per cent male and 67 per cent female), field supervisors/officers –6 per cent (only male), factory workers – 14 per cent (only male), factory supervisors/officers – 2 per cent (only male), others –14 per cent (69 per cent male and 31 per cent female). Thus out of the total respondents 53 per cent are male and 47 per cent female.

Survey data were supplemented through informal discussions with the officials of the selected Tea Companies, Tea Board, India (Ernakulam Branch) and Association of planters of Kerala,Ernakulam/ Thiruvananthapuram.

1.7.2 Tools of analysis

The analysis of the contribution of tea industry to the state's economy and trends in growth are based on the available secondary data. The trends in growth have been analysed by estimating growth rates of area, production and productivity, employing an exponential model. Estimates are made for Kerala, karnataka and Tamil Nadu, South India, North India and for

India, for the period 1950 to 2000. Since there was a trend break in the year 1977, estimates for two periods - for 1950 to 1977 (period I) and for 1977 to 2000 (period II) were made employing kinked exponential model, which gives growth rates for the two periods.

Statistical methodology of estimation of growth Rates

Growth rate of a variable is defined as the rate of change per unit of time. Growth rate can be measured statistically by estimating a functional form of growth overtime. In the present study, an exponential trend is employed which gives a uniform rate of growth. The exponential trend is given by,

$$\ln Y = a + bt$$

Where, Y = the variable under consideration.

t = time point.

a = constant to be estimated

b = growth rate to be estimated.

In order to study the structural shift (trend break) separate growth rates are to be estimated for the two time periods. The period – wise growth rates can be estimated by employing,

$$\ln Y_t = a_1 + b_1 (D_1 t + D_2 k) + b_2 (D_2 t - D_2 k) + U_t$$

Where, b_1 and b_2 are the growth rates for the two periods with a kink at time point k.

D_1 = 1 for the first period

= 0 other wise

D_2 = 1 for the second period

= 0 other wise

To study the factors contributing to such trends, a decomposition analysis has been made by computing area effect and yield effect. The area effect and yield effect on productivity were analysed for the different states using the growth decomposition estimates.

Statistical methodology for decomposition of growth rate into area effect and yield effect.

Output growth of tea can be partitioned into the contributions of changes in area under tea and changes in output of tea. The Production function for this estimation is given by,

$$Q_t = A_t Y_t$$

Where

Q = output

A = Area

Y = Yield

t = time point

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

$$b_Q = b_A + b_y$$

Where

$$\ln Q_t = a_Q + b_Q t$$

$$\ln A_t = a_A + b_A t$$

$$\ln Y_t = a_Y + b_Y t$$

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

$$AE = \left[\frac{b_A}{b_Q} \right] \times 100$$

Where, AE = area effect

Similarly, yield effect (YE)

$$YE = \left[\frac{b_Y}{b_Q} \right] \times 100$$

where, YE = Yield effect.

Socio – Economic conditions of employees in the sample area were analysed using t - test and χ^2 - test

1.8 Limitations of the study

The following are the major limitations of the study.

1. The literature available on the topic is limited.
2. Because of shyness or fear the tea plantation workers especially women are reluctant to provide information about their working and living conditions and their problems.
3. Now-a-days most of the tea companies face severe problems. So, many company owners and managers (employers) are reluctant to give actual information. Some company owners did not even give permission for data

collection in their company estates. Therefore, the selection of sample for primary survey was a tedious task.

4. Tea plantations are very vast and situated in remote rural areas. It also made the primary survey very tedious and time consuming.

1.9 Period of the study

The analysis based on secondary data covers the period 1950 to 2000. The statistics relating to various aspects of the plantation sector are available from 1950 onwards. The authentic data for the same published by Tea Board, India is presently available till the year 2000. The primary survey was conducted during the year 2000 to 2001.

1.10 Organisation of the study

The study is organised under six chapters, including the introductory chapter. A detailed survey of literature is given in chapter two. In the third chapter an overview of the historical evolution of tea plantation industry is given. Importance of tea plantation in Kerala economy (part I) and analysis of its growth performance (part II) are made in chapter four. The profile and problems of tea plantation industry are examined in chapter five. This chapter is divided into two parts. Part I deals with the profile and problems of tea companies and Part II examines the profile and problems of tea plantation employees. The summary of findings and recommendations are given in the sixth chapter.

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Chapter II

SURVEY OF LITERATURE

This section attempts to review important studies on tea plantation industry. There are a number of studies and they are found to be focussing on different aspects of the industry. For reviewing these studies they are tentatively categorised as studies at International level, National level and South Indian and Kerala level. Within the national level they are further catagorised as studies which focussed on quantitative aspects, marketing and exports, co-operatives, socio-economic aspects and employment and those with emphasis on technological aspects.

2.1 Technical and scientific aspects of tea

The technical aspect of processing tea has been reviewed by Strauss (1994). There are different ways to process the green leaves of tea, and the quality of tea depends upon the method of processing. One of the problems of consumption of tea is related to the caffeine[1] content in tea. Usually, between 200 milligrams to 300 milligrams of caffeine per day, is not harmful. Use of large amounts of caffeine may bring jittery, irritation and anxiety. Another

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[1] See Appendix I - Part II for details of caffeine

important aspect of caffeine is that it passes from mother to child through breast milk.

Black tea contains 30 milligrams to 60 milligrams of caffeine per cup. Caffeine content in tea leaves is removed by 'decaffeinisation process.'[2] The author suggests that decaffeinisation using Carbon dioxide (CO_2) is the best method because it does not break down the tea leaf.

The positive aspects of consuming tea has been highlighted by Ferriman (1997). He argues that tea contains flavanoids,[3] which are antioxidants and good for human body. Flavanoid in-take reduces the risk of heart disease, stroke and cancer, specifically skin cancer and rectal cancer.

Tea supplies with a quarter of daily requirement of riboflavin (vitamin B_2) and contains zinc, folic acid, potassium and manganese. Tea helps to lower blood pressure and cholesterol and improves memory. It is good for the functioning of kidney. Tea is a good stimulant and it has anti-carcinogenic properties.

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[2] See Appendix I - Part II for details of decaffeinisation process.

[3] Flavanoids are a group of some 750 naturally occuring plant constituents which are derivatives of the aromatic compound such as flavan. They are responsible for the light golden yellow colour of good quality tea, when kept in hot water (Harborne, 1973; Miller 1973; Daniel, 1991).

Jain (1995) also points out the positive aspects of tea drinking. He argues that tea drinking helps to prevent cancer based on the observations made in the Annual conference of the American Association for Cancer Research (AACR).

2.2 World tea economy

Reddy (1991) analyses the trends of tea in the global market. He found that global production has been on the increase at a compound rate of 3.7 per cent per annum, while the domestic consumption of the producing countries has been increasing by 4.9 per cent per annum. The share of tea producing countries in consumption was 65 per cent in 1988. Thus the global demand for tea exceeds its global supply. India is not an exception to this trend. In India, the export of tea has been increasing on annual rate of growth of 4.3 per cent per annum.

Sarkar (1972) portrays an overall picture of the world tea economy focusing on the size distribution of plantations, consumption pattern of tea, demand and supply of tea, supply response, trade agreements, and on some policy suggestions. He observed that in China tea plantations are very large in size compared to the plantations in Japan and Taiwan. His analysis on per capita consumption shows that there has not been considerable increase according to size increase. Tea plantation industry is an export oriented industry and it is interesting to note that the producing countries are consuming only a small share of their production and whatever they consume is of inferior

in quality which do not have any export value. The supply demand analysis shows that the supply of tea is inelastic to the changes in prices. The estimated price elasticity and income elasticity are found to be very low; and the lagged responsiveness of supply of tea to price changes leads to instability and cyclical fluctuations in supply, demand and price. The historical analysis of international regulations on tea came to the conclusion that such agreements are not able to stabilize the tea marketing. Sarkar suggests some long term measures for rationalisation of the tea industry by means of improving the output and curtailing the cost. Technological improvement and optimum utilisation of factors of production are necessary. It has been found that the labour cost is very high and substitution of labour with machinery is one way of reducing cost. In order to harness the economies of scale he suggests for amalgamation of uneconomic small units with larger ones. Furthermore, duties and taxes on machineries for tea industry have to be rationalised and social overheads have to be developed for the development of tea plantation industry.

Haridas (1998) provides a vivid picture about Kenyan tea plantation. In Kenya, tea is one of the major sources of income and tea industry is dominated by large commercial organisations. The Kenya Tea Development Authority has 57,700 hectares of tea growing area. Both total production and yield level in Kenya has been increasing. The number of small growers are also increasing. There is a Tea Board for providing the industry and a Tea Research Foundation for conducting research activities.

The growth of tea plantation in the erstwhile United Soviet Socialist Republic (USSR) was examined by Lisinenko (1988). In USSR cultivation of tea was started in 1833. With the end of the First World War tea industry in USSR developed very fast and by 1973 the total tea manufactured in the country reached 75,000 tonnes. The production reached the highest peak in 1985 with 152,000 tonnes. But since 1985 production declined steeply due to political change which is popularly known as 'peristroika'. Then they began to import tea from other countries; and collapse of the USSR resulted in decline in purchasing power of the people and the import also declined. By 1995 the Commonwealth of Independent States (CIS) market stabilised.

The Russian market is a complicated one with multi-strata structure with Moscow and Sankt - Petersburg as upper layer. Underdeveloped transport infrastructure, poor banking system, highway robbery, etc. are problems relating to tea marketing in Russia, and this has resulted in flight of foreign firms from Russia.

2.3 Indian tea industry

Manoharan (1974) analyses the problems of Indian tea industry based on production, consumption, export and share market. After carefully observing the evolution of tea industry, he observed that there had been considerable increase in exports of Indian tea during 1950's and India stood first in International tea export. During 1960's India lost position as the largest exporter in the world to Sri Lanka. In his share market analysis, it has been

found that low rate of profit, due to declining price and increasing cost of production, adversely affected the industry and the share value of tea companies had dumped considerably. In order to promote the tea industry in India, he suggested some changes in policy for increasing production, reducing costs and rationalisation of tax structure. Productivity can be increased by replantation together with introduction of modern technology in cultivation. Effective marketing strategy has to be introduced for stabilising the market. Exports may be promoted without curtailing domestic consumption. Manoharan points out that the small planters may work together forming co-operatives so that they would be able to enjoy the returns from the economies of scale.

Goradia (1979) made a strength, weakness, opportunities and threat (SWOT) analysis of Indian tea industry. According to him the strengths of tea lies in its caffeine content which makes it a stimulating drink; it is economical; and it is a self reliant agro industry; and India is the largest consumer of tea. The weaknesses are dependence on vagaries of weather, high cost of production, fluctuations in quality, labour intensivenes and long gestation period. Opportunities are the home market which provides an excellent base for product sophistication such as instant, cold and fruit mixed teas. Another opportunity is that tea and coffee are interchangeable. The threats are prolonged slumps in prices and undue rise in cost of production.

The study also deals with different aspects of tea such as tea tasting, auction, tea research and marketing. Goradia gives a detailed picture about plantation technology for growth. According to him plantation technology is a synthesis of industry and agriculture. Economies of scale are existing in tea industry and this factor hinders the small farmers from having research on production, manufacturing and marketing, and from training of workers.

2.4 Supply-demand analysis on tea

In shaping agricultural policies supply response studies play an important role. Most of the perennial crops like tea earns well in export market and with this reason supply-demand imbalances in international market will be negatively affecting the producing countries. Chiranjeevi (1994) has made a study on supply-demand analysis of Indian tea industry. Specific objectives of the study are: to examine the decision behaviour of Indian tea producers at the micro level; to compare and contrast the responses of different tea producing regions of India; to find the impact of age factors on area and yield decisions; and to study the risk of managing behaviour of the planters.

He observed that in India there exists an imbalance in supply of and demand for tea. As per his estimate, the domestic demand is growing at an average rate of 4.3 percentage per annum while the output is growing only at 2.5 percentage per annum.

The correlation of age and yield showed that by the eleventh year the yield per bush starts increasing and by around 20 to 30 years it reaches the peak

and after that it starts declining. The yield responses to the age and price factors at three levels of aggregation, viz., state, regional and national level reveal that the 11 to 20 years age groups have a general positive impact on yield per hectare. The 21 to 30 years age groups appear to have a positive impact and 31 to 40 years age groups have negative impacts. Chiranjeevi observed that both in North India and in South India, new plantings are more price sensitive compared to re-plantings and replacement plantings.

Misra (1986) conducted an econometric study of Indian tea industry at the national as well as at the regional level. He analysed the trends in growth by employing a decomposition model. The study looked into the trends in area, production and productivity. The output growth was decomposed into area effect, yield effect and that of the combined effect. It was found that during 1956 to 1982 there was an increase of 252 million kg. in production, and the increase in productivity accounted for 72 per cent, growth in area 18 per cent and combined effect 10 per cent.

He has also made an attempt to study the supply response of tea in three regions of West Bengal: Terai, Dooars and Darjeeling during 1961 to 1982. His analysis indicated a positive price response of yield in the short term response behaviour and there are considerable variations in the magnitude of elasticities. All the regions and size classes under consideration indicated positive response of yield to increased price with substantial variation in elasticity estimates.

In this study Misra also attempted to figure out distribution and concentration of area under tea in India. The structural pattern of tea industry in Northern and Southern regions of India is illustrated with the help of Lorenz Curve.

2.5 The export market of Indian tea

George (1980) conducted a study on the evolution of the marketing system of tea in India. As part of this study he also examined the nature of domestic demand and export performance. Tea is an export-oriented industry and India and Sri Lanka are the two main exporters. At the same time India is the largest tea consuming country in the world. According to George, there are two stages in tea marketing, primary and retail. The primary marketing channels are: 1) direct export or forward contract 2) ex-garden sales and 3) the auction system. Of these three channels, the auction system is the most important one because it has got some advantages such as possibility of distribution of huge quantities, high competition, and improved grading. George's investigation over the deterioration of auction price of Indian tea discerns the fact that the British play an important role in determination of price since they are major consumers of Indian tea. He observes that after independence of India and Sri Lanka, the British interest shifted to African countries especially to Kenya and as a result of this the auction price in India slumped.

The export market of Indian tea was analysed by Kumar (2000). The specific objectives of the study were to analyse the domestic and export market for Indian tea, the Russian and CIS market for Indian tea and the future prospects of Indian tea in Russian market.

According to him the product of tea may be classified generally into two: CTC (crush, tear and curl) tea and Orthodox tea.[4] The CTC tea has high domestic demand whereas orthodox tea has high demand in export market. The major export market to Indian tea are CIS countries, Britain, Germany,Holland, Poland and Australia. Liberalisation of imports and crisis in Russian economy has adversely affected tea export from India. The Russia and CIS countries have been switching gradually from the high priced high quality tea to the low priced low quality tea due to the crisis in their countries. As a result of this low priced Sri Lankan tea is dumped into India and that was exported to these countries. This process has adversely affected the Indian tea industry.

Bhowmik (1990) examined the trends in export of Indian tea. He observed that the increase in domestic demand adversely affected export. The internal consumption has been increasing consistently while export of Indian tea stagnated at around 200 million kg. per annum. The increase in domestic

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[4] See Appendix I – Part II for details of CTC tea and Orthodox tea.

demand is reflected in the auction price. During the year 1989 the price of ordinary tea is doubled from Rs. 30/- to Rs. 60/-. But the supply response to the increase in price has been very poor; there has not been much increase in production. The production has almost reached saturation level with the existing bushes and became uneconomic as a result of aging. It is found that one-third of the total existing bushes are uneconomic. In order to increase productivity replanting and rejuvenation are necessary, but it requires huge investments. The growers are resorting to short-term increases such as spraying and increased use of fertilisers for boosting production. The researcher suggests that government support may be extended as subsidy for replanting for long-term increase in productivity.

Potential exportability of Indian tea has been studied by Asha (1993). The study is focussed on the potential exportability of agricultural exports, taking tea as a case, considering the case of expansion of domestic market due to growing population pressure. Indian tea export faces the threat of competition from the growing domestic market as well as the competiting countries and as a result the domestic price is increasing. The study reveals that Indian tea is getting less and less due to growing domestic market, resulting in the decline of potential competitiveness of tea export.

The export market of Indian tea has been analysed by Krishna (1995). He observed that production of tea in India has been increased at an annual percentage growth of 1.5 per cent, but the total volume of export

declined. Reasons for this decline in exports were lower imports by CIS countries, Iran, Egypt and Saudi Arabia and competition from other producing countries. Sri Lanka is emerging in the world market with increasing productivity and price competitiveness.

The export market of tea is also studied by Sundaram (1995). He observed that tea industry in India faced a crisis in 1992 when production lowered, export fell down and the price slumped. India's share in export market has been declining. Since the extensive cultivation is limited in scope, the productivity of the existing plantations has to be increased for increasing production. Most of the tea bushes in India have become uneconomic. Scientific management of small gardens, replanting the existing area, etc. are some of the measures that may be taken for improving productivity. For effective marketing, both in domestic and in international market, branded products have to be introduced with strict quality control.

2.6 Quality of tea

Quality of tea depends on a number of factors, including the variety of bush, the land and climatic conditions etc. Tea produced in Darjeeling is of high demand. The climatic factors, soil, high elevations (i.e.1000 to 2000 meters above the sea level), type of bush etc. constitutes the Darjeeling tea.[5]

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[5] See Appendix I – Part II for details of Darjeeling tea

Darjeeling produces about 12 million kg. tea annually. It is interesting to note that more than this quantity is marketed as Darjeeling tea. This creates confusion among consumers. Thus, lack of quality control seems to be one of the important problems of the marketing of Indian tea.

Dudeja (1996) argues strongly that strict quality control is required for improving export of Indian tea. Demand for Indian tea in the International market seems to be declining due to absence of quality control. Basically Indian tea is of good quality. But the traders are importing cheap tea from other countries and they re-export it. And this has created problem of ensuring quality of Indian tea.

Krishnan (1996) observed that the change in consumption pattern, increase in production cost and high price made tea less competitive in the export market. Importing tea for re-exporting and blending of imported tea with Indian tea, etc. are some of the options for promoting exports from India. The Indian Tea Board has been working in this line.

Krishna (1996) disagrees with the Tea Board's idea of importing cheap quality tea for domestic consumers and export high quality Indian tea.

For increasing production of tea, Tea Board has been implementing various schemes. Short term measures include optimisation of inputs and improved agricultural practices. Medium term measures are irrigation and drainage, rejuvenation, pruning (trimming a tree, shrub or bush by cutting away

dead or overgrown branches or stems) and infilling. And long term measures are replanting and extension planting.

As against the general observations of under production, Chakraborthy (1997) warns against the possibility of over supply of tea in the world market and a depression in international price. The disintegration of the USSR and United Nation's economic blockade on Iraq affected Indian exports adversely. In export, India's position slipped to fourth position, but in value terms India fetches maximum price due to superior quality.

In order to overcome the threat of oversupply internal consumption may be increased further. Ninety five per cent of Indians consume tea. Consumption of tea is inelastic to income.

Chakraborty and Acharya (1998) examined the international trade of Indian tea. They observed that average annual export of Indian tea is about 200 million kg. and it reaches about 80 countries in the world. During 1980s Indian teas were not in much demand due to the alleged complaint that the pesticide residue was beyond the permissible level. But later, this allegation was proved to be a wrong one. Chakraborty and Acharya observed a declining share in India tea export. The important reasons for the constraints of export are: (1) Indian tea is incompetitive compared to the teas of other countries (2) high domestic demand (3) discrimination under Income Tax Act towards producer exports. Inadequate shipment credit facilities and high import duty on package materials are other important problems.

Dwibedi (1999) conducted a study on tea plantation industry in West Bengal. Growth trends in tea production, area and yield and influence of climatic factors like rainfall, temperature and humidity are also taken into account. The study revealed that area under tea in West Bengal has been increasing more or less at a constant percentage rate between 1961 and 1993. Production of tea has been increased with a declining rate of growth and yield rate increased with a declining trend. The analysis revealed that rainfall and temperature effects are dominant in crop production in West Bengal, particularly Dooars. His examination of the size of plantation and type of ownership and its impact on productivity showed that there exists a positive relationship between size and yield; and the propriety ownership is found to be less efficient. The analysis on acerage and yield response to price suggests that planter's decision in expanding acerage under tea in any year is influenced by the magnitude of the difference between the price realised and the price which the planter expects to realise. He concluded that decision to bring more area under tea is dependent on the last two year's price level.

Sukarchakia (1999) and Mohan (1995) studied the problems of Darjeeling tea. The most important problem related to absence of quality control in Indian tea. Substandard teas are mixed with Darjeeling tea and market it as Darjeeling tea; as a result people are suspicious of buying it with a high price. The cost of production of Darjeeling tea is high and people are ready to buy it at a high price. But it is a fact that average annual production in Darjeeling is around 10 to 11 million kg. only. But about 40 million kg. of tea

is marketed as Darjeeling tea in the world market. Other problems of tea in Darjeeling are over age of plants and declining productivity.

2.7 Institutional aspects of Tea

Tea Board plays an important role in the promotion of tea plantations. A critical review of the Tea Board by Bhowmik (1991) showed that the promotional activities are only towards large estates. The benefits of the scheme of the Board are really going to large plantations, leaving most of the small growers unsupported. The Board believes that, according to Bhowmik, only large plantations can increase production. The small growers are flourished in the periphery of large plantations. The small ones can make tie-up arrangements with large estates for technical know-how and for selling green leaves. So the Board's conclusion is that supporting large estates will also be helpful to the small ones. The Tea Research Association and United Planters Association of India (UPASI) are focusing on the development of large estates. Tea Board's implementation of schemes through these institutions will support only large estates. Bhowmik argues that a way out lies in the formation of co-operative tea factories by small growers. At the same time, the Board may extend some direct support to the small growers also.

Bhowmik (1988) highlighted the importance of the institution of co-operatives in Indian tea industry by making a study on Allied Plantation Worker's Co-operative Limited in West Bengal and Tachai Workers Co-operative in Tripura. He observed that worker co-operatives are based on

democratic principles and it encourages and make provision for worker's participation in decision making. This helps to prevent concentration of power in bureaucracy. Apart from sharing of benefits among members, co-operatives are working with the larger objective of welfare of the society as a whole, the researcher observes.

Socio-economic aspects of small growers of tea in Nilgiri's district were studied by Reddy and Bhowmik (1989). In India the largest concentration of small growers are in Nilgiri district. In order to reap the economies of scale the farmers have formed co-operatives, and membership to the co-operatives has been increasing. One of the important limitations of small growers is that they cannot establish tea processing unit in their farm since factory requires a huge amount of investment. Furthermore, small farmers are too small to produce leaves for a factory. So traditionally they have been selling their leaves to large factories at a very low price. The prices are set by the factories who enjoys the status of monopoly or monopolistic competition. In order to come out of the clutches of these large factories, small farmers in Nilgiris district formed co-operative factories. These co-operative factories give remunerative prices to small growers. The study was conducted at two levels, one at the aggregate level analysing trends in growth of tea in Nilgiri district, and the other at a co-operative level case study. The macro analysis show that tea production in Nilgiri has been increasing at an annual rate of three per cent. Co-operatives played an important role by providing remunerative price to their products. The researchers suggest that just as the

Tea Board has linkage with large estates through UPASI, the Board may create a link to small growers through these co-operatives.

In India, most of the tea is grown in large estates, and small growers have only a very limited role. While more than 96 per cent of Indian tea is grown in large tea estates owned by joint stock companies, only less than 4 per cent is produced by small growers. But there is an emerging trend of developing small growers by forming co-operatives. They also made a study on co-operative tea factories in Nilgiris. The largest concentration of small tea growers in India is in Nilgiris. Here small growers emerged with the support of large growers due to Government restriction on further area expansion and export quota system. Forming co-operatives small growers established tea factories with a view to provide remunerative price to small growers for their leaves and to prevent middlemen from exploiting them. The apex body of industrial co-operative tea factories in Nilgiris is known as Nilgiris Small Growers Service Industrial Co-operative (Incoserve). The study came to the conclusion that the co-operative tea factories in Nilgiris have had a positive effect in helping small tea growers. As a result of this, the share in production of tea of small growers has been increased considerably.

Sarkar (1970) organised a group discussion on some of the important issues relating to the prospects of tea plantation industry in India. Tea plantation industry is a labour intensive one particularly in plucking of leaves. The suggestions emerged from the group discussion were different, some

argued for mechanisation while some others expressed concern over huge amount of displacement due to mechanisation. Another important problem of Indian tea plantation industry is low productivity. One of the reasons for this is existence of uneconomic old bushes. The only solution to this is replanting and there is no disagreement on this. But the issue is who would finance this. The group suggested that capital investments could be shared by Government, Agricultural Refinance Corporation, The State Finance Corporation and the Nationalised Commercial Banks. The group also discussed the need for rationalisation of tax structure and improving efficiency of management.

2.8 Harvesting and processing of tea

An introduction about tea, the history of it, the main tea growing countries, etc. are given by Ashby (1977). Ashby gives a detailed description about the drying and processing of beans and leaves and about the by-products which can be developed in the process. The details of planting, nurturing, manufacturing, and pest control measures in tea cultivation are also explained in the book.

In India research and development activities are undertaken for developing technologies for tea plantations. Muraleedharan (1998) gives a description about the innovations in this aspect by UPASI. They have developed two types of skiffing (pruning) machines and two models of plucking machines. But the machines have some drawbacks such as high

weight, over heating, noise and problems related to technical services and spare parts.

Harvesting is an important aspect in tea plantation industry. Plucking of leaves accounts for about 60 per cent of the field cost and 20 per cent of the production cost (Hudson, 1998). Plucking interval is a determining factor in plucking. During peak season shear harvesting can be adopted. Alternate row lane plucking in mature fields will increase plucking average. Pruned bush height of 40 inch is suitable.

Human resource development is also important. Training for motivation, annual performance evaluation and rewards to workers and supervisors are suggested measures.

Frost injury is a problem in high ranges. Hudson (1997a) made a study on this problem. Frost causes damage of cells when temperature falls below O^{o} centigrade. The water between the cells freezes rapidly and forms ice crystals. Soon water from the cell diffuces out and adds to ice formation, resulting in the dehydration of the protoplasm and subsequently the death of the cell.

Spraying of certain chemicals, heating of air by log fire and using wind propellers are some of the scientific options for this problem. But all these measures are found to be uneconomical. The possible method is to acquire maximum yield during the frost free period.

Hudson (1997b) gives details of shear harvesting and its advantages. According to him shear harvesting will increase plucking average and reduce labour requirement.

2.9 Socio – economic conditions in general and women in tea plantations in India with special reference to Kerala

Tea plantation industry is a labour intensive one and majority of workers are women. Concentrating on the role of women workers in trade unions Sarkar and Bhownik (1988) made a study on West Bengal tea plantation industry. They found that participation of women in trade union activity is low, and the major reasons, according to them, are inequality, low literacy rate, low political consciousness and burden of the household duties.

Socio-economic conditions of the South Indian tea plantation workers were examined by Raman (1986). Historically, colonization paved the way for the formation of plantation system in India. During the early period, standard of living of workers in plantations was very poor. They were ill-fed, ill-housed and ill-treated, the researcher observes. Since independence, the constant protest of these labourers resulted in the introduction of Plantation Labour Act 1951. Raman also analysed the labour market. In Kerala and Tamil Nadu there are two types of workers, permanent and temporary. But in Karnataka, in addition to these permanent and temporary workers, casual/contract workers are also engaged. An important factor noted by the investigator is that productivity of women workers is high. Living conditions of

workers are poor with inadequate drinking water, poor housing facility, and insufficient medical care.

Nair (1989) examined the socio-economic conditions of labourers in the Ponmudi tea estate, a unit which is closed since 1973. He made a case study of this unit to highlight the fate of workers in a sinking factory. The employees are continuing in the factory because of the single reason that they have no other option. They are virtually suffering from poverty as a result of unemployment.

Kurian (1990) made a study on socio-economic background and consumption pattern of women workers in tea plantation industries in Munnar, Idukki District in Kerala. The study was focussed on the personal and family background of women workers, their economic and living conditions, income and expenditure pattern, standard of living, social status, working conditions, welfare facilities, and security. The tea industry is labour intensive and majority of workers are women.

Information on households of the workers revealed the fact that women are major income earners of their family. Their educational status is very low. The workers get housing facility, electricity, day care facility, and social security benefits such as gratuity, family pension, and maternity benefits. Despite all these facilities given by the companies, their socio-economic status is found to be very poor. They spend much of their income on food items.

Their consumption of nutrients is found to be low. Medical care provided by companies, in general, is poor in quality.

The women workers are facing many problems. Even though they are provided with housing facility, they have to travel by foot to distant places of work. In the work place, they are not provided with latrine facility; and they do not have any resting sheds. Leaf pluckers have no promotion and they do not have any recreation facility. The workers are not satisfied with the existing leave facilities and job security. The study suggests that the Sate, the management, and the trade unions have to give more attention to the problems of women workers.

Kurian (1999) made an evaluative study on the socio-economic background, working and living conditions, consumption pattern and physical quality of life of women workers in the plantation sector of Kerala. The terms and conditions of work of women workers in plantations are governed by the Plantation Labour Act, 1951, Kerala Plantations Labour Rules, 1959 and other statutory benefits. The study stresses that provisions of these Acts are not implemented fully and the physical quality of life of these women workers are far from satisfactory.

The study reveals that facilities provided to them are not sufficient. Most of the women workers in tea, coffee and cardamom get the housing facility provided by the management. But it is very limited in the case of rubber. Considering the case of consumption pattern major spending is on food,

but the consumption of nutrients is very limited. Most of the women workers do not get proper toilet facility in plantations and they have to walk long distance from their house to the work place. Medical and child care facilities provided are also not fully satisfactory. Women in the plantations are educationally backward and social interaction and general awareness etc. are also poor. The study suggests to the authorities to give little more attention to these problems and find proper solutions. Literacy programme for women workers in plantations also must be strengthened.

A socio-economic study of tea plantation industry was made by Sarkar (1984) with special emphasis on the aspect of labour. He discerns the fact that during the initial period labourer's life in estates are comparatively good. Houses are provided by the industry. Medical services are given free of cost. The management also takes care of free milk service for mother and child, creche service, and primary schooling.

However, when the industry expands, there seems to be a tendency to form an attitude detrimental to the interests of the labourers. In this regard, there exists differences of opinion regarding the behavioural pattern from the management side. Some expressed good opinion about the attitude of the management while others opined that the behaviour need not be favourable to the labourers. For example, there were incidents of forcing labourers to work when they are not well. The major problem among the estate workers are absenteeism and alcoholism.

Sarkar has also made some observations on improving the tea industry. He is of the opinion that for the best marketing, tea made from 'two-leaves and a bud' and its processing are very important. He suggests for mechanical harvesting for countries having shortage of labour.

2.10 Tribal participation

Role of tribals is not unimportant in the development of tea plantations in India. Basically they provided cheap labour in the interior areas wherein tea plantations are developed. Parthasarathy (1995) examined the role of tribals in the development of plantations of Nilgiri district in Tamil Nadu. Nilgiri district is the smallest district in Tamil Nadu with more than one third of its population belonging to tribal groups.

Plantation agriculture was completely unknown to tribals and they worked as labour when the British developed plantations. The Todas, the Paniyans, and the Kattunayakans adopted plantation economy. The post-independence tribal development programmes by the State Government are encouraging it. Now tribals are coming up as small growers of tea.

2.11 Problems of tea industry

George (1982, 1984) and Sen and George (1992) have analysed the problems of tea plantation in South India, particularly the crisis of tea industry in the 1970's. They have identified the problem as both developmental and financial. These studies focussed on the reasons for the rise in cost of production, price and profitability of tea industry, factors governing the level of

investment and long term finance and development strategy. They have also taken care of the special features in agro-climatic aspects, manufacturing and export aspects.

Apart from the analysis of trends in growth they studied the socio-economic conditions prevailed in these areas during the British period in comparison with latter period. They observed the structural changes in the tea plantations, the pattern of production, the evolution of the present system of marketing, and the peculiarities of the plantation labour in South India. For the collection of data George (1982) employed stratified random sampling method covering 148 large estates and 94 small growers in the states of Tamil Nadu, Karnataka and Kerala.

Thus it is observed that the major causes of crisis during 1970's were cost escalation, declining or stagnant prices, fall in domestic demand, structural changes in management system, and inadequate support from Government.

Apart from cost escalations other factors affected the tea industry are unfavourable tax policy and entry of new producers. Another problem relates to slow pace of growth in production compared to increase in domestic demand for tea.

For example, George (1982) pointed out that the domestic consumption has been rising at an average annual growth of 5 per cent while the production has been increasing at a rate of 3.5 per cent per annum. Due to

lack of development activities in tea plantations most of them became unproductive.

Some of the reasons for deterioration in the conditions of the South Indian tea plantation industry may be traced to the changes in the ownership pattern. The ownership pattern of tea industry became changed from propriety to partnership firms, and then to public limited companies. Before independence, complete control of Indian tea plantations was with the British Managing Agencies. But after independence, India Government abolished the managing agency system in 1970. Then some British companies migrated to East Africa and some collaborated to Indian capital.

Marketing of tea in India are made in two stages, primary and retail. Primary disposal channels are public auctions, direct exports or forward contracts and ex-garden sales. Of these auction is the most important one. South Indian tea is mainly export-oriented. Price escalation and reliability are more in domestic auctions. The field survey reveals strong preference for domestic auctions.

There exists wide disparity between the auction prices and the retail prices. The auction prices of India and Sri Lanka have been falling because British people prefer Kenyan tea which was under their control. The South Indian tea prices have been worst hit and the price fluctuations have become non seasonal. The analysis showed that cost of production and price decline is high in Kerala compared to other South Indian states.

The suggestions for improvement include replanting of uneconomic bushes. Producers demand more Government assistance and subsidies for tea industry. They argue that tea cultivation is highly expensive. Rejuvenation, infillings, use of fertilizers, weedicides and pesticides, transportation cost, wage cost, taxes etc. are high and costly. Increase in labour cost is claimed to be the most important cost pushing factor. The assistance extended by Tea Board and National Bank for Agriculture and Rural Development (NABARD) is found to be inadequate.

Baak (1992) studied the historical evolution of plantations in Travancore. In Travancore, plantations were developed later in 1860s compared to Ceylon, Assam and Bengal where the process started in 1820s, 1830s and 1840s respectively. Baak points out that plantations are developed with political influence from the Colonial Government, and the pressure came to Travancore was from the British through Madras Government during 1860s. Initially, the main investment was for construction of roads. The British owned the plantations and the labour came from the backward communities. With the ownership rested with the British, profit during the colonial period went out of the country. The positive aspects of development of plantations are development of infrastructure such as roads, transport and communication facilities, increase in economic activity and increase in employment opportunity.

Radhakrishnan (1997) observed that there is scope for developing tea plantations in Wayanadu District of Kerala. The average yield of Wayanadu in 1997 was 2300 kg./hectare. Recurring draught is one of the major factors affecting productivity here. Radhakrishnan suggested that replantation, rejuvanation, pruning, infilling and shading with trees are options before planters for improving productivity. The organic content of soil may be enriched by burial of prunings. By introducing these aspects, the author argues that, the yield level of tea in the district can be increased by 25 per cent to 30 per cent.

Raman (1991) studied the marketing channels of tea by evaluating the marketing system of AVT Premium Tea. In India distribution and marketing of tea is a difficult task because tea plantation industrial units are located in remote areas. Tea is available in market in the form of loose tea and packet tea. Loose tea gives flexibility to consumer and it is cheaper than packet tea, so the business of loose tea is going up. But the advantage of packet tea is that it provides uniform taste through blending. The marketing channels may be identified at three levels. At the first level the product comes for auctions wherein the wholesalers come for bidding. In the second level, the wholesalers packet (or in loose form) tea and distribute among sub-dealers/retailers. The retailers distribute tea to the consumers, at the third level. Many tea plantation companies packet their products directly and market under their brand name.

Market survey on packet teas of Harrisons Malayalam Limited is done by Venugopal (1992) in the Calicut city. The details relating to the buying behaviour and effectiveness of advertisement are collected from retailers and consumers in the city. The study reveals that the middle income group is the largest consumers of tea and middle and high income groups have preference for packet tea. Among the branded tea, Kanan Devan stood first in marketing.

From the foregoing review we may note that tea plantation industry has an important place in economic activities all over the world. Tea is a universal stimulating drink; and it has got both positive and negative aspects.

Major tea plantations in the world have been developed during the colonial period and hence an element of exploitation has historically been associated with it. India is not an exemption to it.

In India tea flourishing areas are South India and North East India. These plantations were developed during the British period. After independence, interest of the British shifted to African countries like Kenya, and consequently the Indian plantations began to suffer. Export to England declined, demand for Indian tea slumped and export market began to suffer.

However, India is still the largest producer and consumer of tea in the world. But India has slipped from the prestigious position of the top exporter of tea in the world to a distant fourth, with Sri Lanka as the largest exporter followed by China and Kenya.

The analysis of literature shows that the world market has been subjected to fluctuations and there has always been a mismatch between supply and demand. The same is the trend observed in Indian market. Supply response of tea to its price is found to be very low.

In general, developing countries are producing tea and they export all the good quality tea, and consume the low quality tea. Due to globalisation and liberalisation of trade, tea exporting countries are found to be importing and re-exporting it. They blend domestic tea with imported tea for exporting. Though theoretically it is worthwhile, in practice it will have serious implications for quality control. A classic example is the case of Darjeeling tea. Tea produced in Darjeeling is of high demand in the export market. Total tea branded and marketed as Darjeeling tea are four times the actual production of tea in the Darjeeling area. Thus one of the most important problems created for Indian tea industry is marketing without adequate quality control. Quality of tea depends on a variety of factors including place of growth, variety of plant, process of production, etc. Generally product of tea may be classified into two categories: CTC and Orthodox. The CTC tea has high domestic demand whereas the Orthodox tea has high demand in export market.

Tea plantation industry is subjected to large economies of scale. It is a synthesis of agriculture (plantation) and industry. Most of the small planters cannot afford a factory in their estates. Even if they are the raw leaves produced in small plantations may not be sufficient for economic running of a factory. As

a result, historically, tea industry is relatively a big business and the size distribution is skewed towards large firms.

Recently, small planters formed their co-operative factories and started processing of tea leaves in their co-operative factories.

Another characteristic feature of tea industry is that it is labour intensive. Approximately 65 per cent of the total cost of production is accounted by labour. Attempts are being made on technological advancements for substituting labour with machines.

Another problem of Indian tea plantation is over aging. Much of the area are having plants with more than 50 years of age. This has to be viewed against the fact that productivity of tea plant declines substantially after 30 years of age. Thus replanting is required for rejuvenating productivity. But it requires huge capital investments and the industry is not in a position to bear such investment. They are looking for support from Government.

The socio-economic conditions of employees in tea plantations are not satisfactory. Even though provision for basic facilities such as housing, drinking water, sanitation, recreation and travelling are mandatory, in some of the tea plantations its implementation is not properly executed.

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Chapter III

HISTORICAL EVOLUTION OF TEA

Tea, the broad-leaved tree crop, is believed to have originated from South-East Asia and the original home is an indefinite area.[1] It may be the Tibetan Plateau including Sze-Chuan, Yu-nan, Sain, North-East India or China. Tea was known to China even before B.C. 2000 and was first used as a medicine during forth century, and later as a beverage by the end of the sixth century onwards. The Europeans came to know about tea in the sixteenth century.

3.1 Nomenclature of tea

The word '*tea*' came from the Chinese local Amoy dialect word '*t'e*', pronounced '*tay*'. In Cantonese language it is '*Ch'a*' pronounced as '*Chah*', but '*tha*', '*thea*', '*tay*', '*t'e*' were forms used by the inhabitants from whom the earliest cargoes were obtained. In Persia, Russia, Japan and India, tea has also been known as '*Chah*'. It is said that the Dutch brought the form '*t'e*' to Europe (Chaudhuri, 1978; Swaminathan et. al., 1990a; Hill, 1979).

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[1] There is an interesting legend regarding the origin of tea plant. "Legend ascribes the creation of the tea plant to Daruma or Bodhidarma – the founder of the Zen sect of Budhism. In the course of his meditation near Naking in China, the saint fell asleep. On waking up he was so angry that he punished himself by cutting off his eyelids. Where the eyelids dropped to earth, a strange plant came up. Its leaves were found to give a brew that could banish sleep. And so the tea plant was born and the tea beverage came into being" (Goradia, 1979, pp:27).

The tea plant was first described as '*Thea sinensis*' in the first volume of the '*Species Plantarum*' by Linnaeus in the year 1973. In the second edition of the book Linnaeus abandoned the name '*Thea sinensis*' and described two varieties: one with six petals as '*Thea bohea*' and the other with nine petals as '*Thea viridis*'. But later, these names also were abandoned and tea was named as '*Camellia thea* Link'. A uniformity in nomenclature has now been accepted internationally and tea has been ultimately named botanically as '*Camellia sinensis*' (Chaudhuri, 1978; Kirtikar et. al., 1981; Nair, 1984; Kochhar, 1981).

3.2 China

As noted in the outset of this chapter, tea is believed to have originated in China. Tea was known to the Chinese as early as B.C. 2737. Tea was first used in China, as a medicine, during the fourth century A.D., and by the end of the sixth century onwards it began to be used as a beverage (Willson and Cifford, 1992). Tea became widely known in China during the T'ang dynasty (A.D. 618 - A.D. 906), an era that marked the highest point of Buddhism in that country. Buddhist priests were long reputed to be the large growers of tea, as distinct from small farmers in China. In the year A.D. 780, the first authentic account of tea was written. This famous book, Cha Ching (tea book) written by Lo-Yu, describes about the preparation of the leaf and manufacture. In that same year the Chinese government introduced a tax on the produce (Willson and Cifford, 1992; Brahmah, 1972; Pandey, 1988).

A regular trade in tea was permitted during the Sung dynasty (A.D. 960 - A.D. 1127) by the government across its boarder to Mongolia. Almost at the same time the first tea was exported to Tibet. Until 1887 China was the largest supplier of tea in the World (Willson and Cifford, 1992).

3.3 Japan

The Buddhist priests were also credited with the introduction of tea in Japan. Chanoyu, the tea cult of the country, was originally a monastic custom introduced by Japanese Buddhists who had gone to China for study, according to Yasunosuke Fukukita, author of a treatise on the subject. The earliest record of tea drinking in Japan goes back to A.D. 729, when the Emperor invited one hundred Buddhist monks to his palace to take tea (Sarkar, 1984).

3.4 Europe

Tea was not known to the Europeans till the sixteenth century. With the end of the sixteenth century their trades with Eastern countries were flourished and so they became aware about tea. The British became familiar with tea in A.D. 1598 and Portughese in A.D. 1600. It was the Dutch, who gave publicity to tea as a beverage in Europe. Dutch trade introduced tea to Europe in A.D. 1610. Russians by 1618 and French people in 1648 tasted tea. With the middle of the seventeenth century Americans also tasted tea. The East European countries, who mainly used coffee became aware about tea only after A.D. 1650 (Swaminathan et. al. 1990b).

3.5 England

In London tea was first served to the public in 1657, at a coffee house, Garraways Coffee House in Exchange Alley in the city. Tea was very expensive until the mid nineteenth century. All early teapots were very small and were sent from China with the tea. Teapots were not made in England until about 1790. As tea became cheaper, teapots became larger and tea became more a meal than a ritual (Ashby, 1977).

3.6 International Tea Trade

From 1689 onwards the English East India Company commenced importing tea directly from China. By the mid 1750s tea houses and tea gardens were appearing in and around London (Willson and Cifford, 1992).

Until 1833, East India Company's ships monopolised the China tea trade. Company's ships, known as 'East India Men', took six months to make the long and often dangerous voyage from China to London. By 1860s a much faster type of sailing ship replaced the former strongly built merchantmen - the Tea clipper. The tea clippers, on their outward passage to China, carried manufactured goods from Britain to ports such as Shanghai and Hongkong (Ashby, 1977).

> *"With the opening of the Suez Canal in 1869, the sailing ships, which still had to sail around the Cape of Good Hope, were doomed. These were replaced by the new steamers which, by travelling through the canal, could do the passage in as little as 44 days - just half the time taken by the tea clippers. Another incident during this time is that American shippers competed for carrying the tea and built fast*

sailing ships (tea clippers) to deliver the goods more quickly" (Willson and Cifford, 1992, pp.5)

Until 1880's, China supplied most of the tea drunk in the world, but her share in the European market had been falling for fifty years and trade relations were disturbed. The discovery of a similar tea plant growing wild in the remote jungles of north-east India was to lead to a pioneering enterprise of great magnitude in the history of world crop cultivation - Empire grown tea. The year 1887 was the turning point, when for the first time, Britain imported more tea from India and Ceylon than she did from China. Since the methods of cultivation on small plots of land had remained unchanged for centuries in China, they could not compete with the new 'Plantation' way of growing tea that was to be started in British India. The table 3.1 shows the rise in imports of Indian and Ceylon tea and the progressive fall in the consumption of China tea.

3.7 Sri Lanka

Sri Lanka started its plantation industry in 1825. The expansion of tea planting industry in Sri Lanka did not start until the 1870's. Until then planters had been growing coffee, but leaf rust fungus (*Hemilia vastatrix*) for which there was no known cure, soon caused the industry to collapse. Individual planters then turned to tea. By 1895 they had planted more than 1,20,000 hectares. In the early years of the present century large public companies were set up in the island for growing tea (Ashby, 1977).

Table 3.1 United Kingdom (UK) imports of tea

(in pounds)

Year	UK imports of China Tea	UK imports of Indian Tea	UK imports of Ceylon Tea
1883	111780000	58000000	1000000
1884	110843000	62217000	2000000
1885	113514000	65678000	3217000
1886	104226000	68420000	6245000
1887	90508000	83112000	9941000
1888	80653000	86210000	18553000
1889	61100000	96000000	28500000

Source: Willson and Cifford (1992) *Tea Cultivation to consumption*, Chapman and Hall, London, pp: 5.

3.8 Other Countries

In Java, tea planting was started slightly later than in India. Until 1860 it was government monoploy but was not profitable. Assam-type tea was introduced in 1878. They built a successful export industry, but it suffered a severe setback during and after the second world war. In East Africa, Malawi was the first country who started growing tea in 1891 and the others followed are, Kenya in 1921 to 1925, Tanzania and Uganda in the early 1930's. Russia also started growing tea. But China continued the supply of brick tea to Russia, which she started it in early seventeenth century. Tea drinkers worldwide found the new Indian and Ceylon teas much to their liking with the result that by the year 1900 China's exports of tea had dropped catastrophically (Willson and Cifford, 1992).

3.9 International Tea Agreement 1933

> *"The International Tea Agreement was signed in February 1933. This agreement had been planned and worked out by British and Dutch tea producing interests and was ratified and implemented by their respective governments. Binding regulations were made not to extend cultivation areas and to regulate tea exports from India and Ceylon and the Netherlands East Indies (Indonesia). The 1933 International Tea Agreement was one of the first International Commodity Agreements in the world and probably the only one that worked excellently"* (Willson and Cifford, 1992. pp: 653).

3.10 International Tea Committee

The International Tea Committee (ITC) was formed in 1933 to administer the agreement and collect statistical data from producing and consuming countries so as to make recommendations in respect of quotas. The ITC is an independent organisation representing tea worldwide. Until 1978 ITC was funded by producing countries and thereafter on an equal basis by most of the principal producing/exporting and consuming/importing countries.

The Public Auction system of tea started in United Kingdom (UK) and the first tea sale was held in Mincing Lane in 1834. Indian teas came under the hammer for the first time in 1839 in London at India House with the East India Company as the vendor. Thereafter, public auction of tea gained wider acceptance and more and more auction centres came into being. The following is the chronological order of the establishment of the principal tea auction centres of the world; Calcutta in 1861, Colombo in 1883, Chittagong in 1949, Mombasa in 1969, Limbe in 1970, Jakarta in 1972, Singapore in 1981. The Cochin auction centre was established in 1947, followed by Coonoor in

1963, Amritsar in 1964, Gauhati in 1970, Siliguri in 1976 and Coimbatore in 1980 (Tea Board and UPASI, 1999, Dwibedi, 1999).

On 3rd September 1939 when World War II broke out, all stocks of tea in the UK were taken over by the UK government including tea afloat and tea shipped to Holland or landed in the UK after Germany invaded Holland. The London tea auctions were cancelled on 5th September 1939 and tea was rationed in the UK in July 1940 at the rate of two ounce per head per week. The first auction in London after the War was held in April 1951. The interruption due to the war had lasted twelve years (Willson and Cifford, 1992).

3.11 Discovery and growth of tea in India

The event which marked the birth of the Indian tea industry was the discovery by Major Bruce in 1823, of the indigenous tea plants in Assam. Major Robert Bruce made friendship with a Singpho (a tribal community) Chief known as Bessagaum and obtained indigenous plants and seeds in 1823. The exact location was at a place near Sadiya in north east Assam, adjacent to Burma. In the following year Robert Bruce showed the wild tea plants to his brother Charles Alexander Bruce. Some of these plants were sent down to the Botanical Gardens, Calcutta, where upon close examination they were pronounced to be of the same family, but not the same species from which the Chinese manufactured tea. But this discovery went unrecognised and no official action was taken at that time (Sarkar, 1984; Regi, 1946).

Then in 1832, Lieutenant Charlton of the Assam Light Infantry at Sadiya, found similar tea plants growing in the jungle close to his garrison. He also sent some seeds and leaf samples of this *Camellia* to the Botanical Gardens, Calcutta.

East India Company lost its monoploy of tea trade by the year 1833. When parliament abolished the company's monopoly with China in 1833 it was ready to take some positive action with regard to replacing that trade in some way. In January of 1834, Lord William Bentinck proposed to the Council of the East India Company, the setting up of a Tea Committee to investigate and make recommendations to the most suitable areas in which to grow tea. The Tea Committee decided to send their secretary G.J. Gordon to China in order to acquire tea seeds as well as tea makers and those familiar with the cultivation of the tea plant. Gordon left Calcutta in June 1834 on the sailing ship 'Water Witch' (Willson and Cifford, 1992).

The Tea Committee also decided to prepare suitable sites at chosen places in India where the imported China plant would flourish. This is with the idea that, if successful, these experimental 'tea land' could later be handed over to private enterprise for future development. To this effect, the Government secured the services of Charles Bruce, and he was appointed as 'superintendent of tea culture' in 1835. The cultivation of tea in China was centuries old and it was also a large and flourishing industry; its secrets had been jealously guarded

by the Chinese people. For the Government it was a bold undertaking to enter into competitions with that country (Willson and Cifford, 1992).

The committee was able to inform the Government, that the so called tea plant found near Sadiya was indigenous and was the true tea, *Camellia* of commerce, only after Gordon left to China for procuring tea seeds. The seeds brought by Gordon in 1835, were sent to the Botanical Gardens, Culcutta for germination. From this original consignment of 80,000 China seeds, the resultant 42,000 young plants were allocated to three main areas: 20,000 seedlings to the hill districts in Kumaon in North India; 2,000 to the hill districts of South India and the remaining 20,000 to Upper Assam on the north east frontier.

Among the seedlings of China tea planted in different hill districts of North India, only those planted at Ghurwal and Sirmoor were met with any degree of success. Places like Ranchi, Dhra Dun and Kangra valley never developed the tea plants on a large scale equivalent to the hills around Darjeeling. In South India, nearly all the plants sent to Nilgiri Hills died but those put out at experimental farm near Ootacamund fared best. Seedlings planted in Wayanad were also successfully established, but tea was commercially planted in this region only after 1853.It was planted alongside coffee and was only in the late 1890's large acreages of tea were opened in Wayanad (Willson and Cifford, 1992).

Indigenous plants of Assam and the China plants were planted in North – East India on a trial basis. Dr. Wallich, assistant surgeon and botanist, Dr. McClelland, a geologist and Dr.William Griffith, a botanist were deputed by the tea committee for investigating the wild tea plants grew in the Upper Assam in the year 1835. They decided to plant China tea plants next to a plot of Assam indigenous tea plants, which were collected from the surrounding jungle by Charles Bruce, the superintended of tea culture.

It was found that the Assam indigenous plants are thrived well than the sick China type. But the China plants were very prolific seed – bears and it caused rapid spreading of the plants. In the mean time Gordon did a second visit to China in the year 1836 to secure more tea makers.

Bruce was looking for tracts of wild tea plants, and many of the wild tea tracts were converted into cultivated tracts by cutting down the jungle. After three months drying out, it was fired. A year later, after the ordeal by fire, the tea burst forth with renewed vigour and the plants were pruned down to spring up to form a sturdy bush. Replanting was also done to in – fill all the gaps between existing plants, thus building up a bari of tea or a "tea clearing". The aim was to have the tea plants spaced at six feet by six feet. The process was repeated, if the plants were not in neat rows of bushes. During the early years of jungle clearance, only richest tracts of indigenous tea were opened out to form tea clearings. Later, the small scattered baries of tea were extended to join up with each other by felling the intermediate jungle and in – filling as

described above. This was the way, the first type tea gardens were turned in Assam (Willson and Cifford, 1992).

3.12 Development of Tea in India

In 1837, the first samples of tea were sent down to Calcutta, which were manufactured from the leaves of indigenous plants growing in tea tracts of Upper Assam. The first historical consignment of Indian tea samples were sent to London in 1838. The auction of eight chests of Indian tea was held at the London Commercial Sale rooms in Mincing Lane on the 10th January, 1839.

In 1840, two - third of the tea land of East India Company were handed over to Assam Tea Company - a private enterprise. Charles Bruce joined the company in 1840. During 1850's private partners took up land on their own account, and the most notable among the new comers was the Jorehaut Tea Company in 1859.

In 1848 East India Company again procured seeds from China for a trial planting in North India. The small - leafed, frost – resistant China plant was well suited to the Kangra valley and surrounding hill districts. At the same time original China plants were abandoned from Assam and Jaipur in 1935.

After the nineteenth century only, the number of large plantations had risen to almost 300. Before that there was only one large plantation near Dibrugarh. In 1854, the Assam Waste Land Rules were revised to enable Government leases of land upto 3000 acres to any planter who undertook to cultivate for export, perhaps, the first instance of statutory export obligation in the country. In the same year Indian exports of tea had risen to 250,000 pounds from the trickles of 1938 to 1939 (Sarkar, 1984).

In Manipur, which also border onto Burma, the indigenous tea plant was found growing over a wide area particularly in the Surma Valley of Sylhet and Cachar. Hence again the Assam Company was one of the earliest on the scene. The first tea baries were formed in the mid 1850s and the first tea garden was opened in 1857. In the foot-hills of Himalayas at elevation of between 2500 and 6000 feet also early operations were done. Tea cultivation was first started in Dargeeling district in the early 1950s with the China plants in an area below the town of Darjeeling. It proved that in colder and higher elevations, the China plant is suitable. After the first garden was opened in 1857, the tea growing district was extended down to the Terai, where the first garden was opened in 1862. In Dooars tea garden was opened in 1874. The tea growing area gradually spread eastwards until it ultimately reached the boundary of Assam. In South India, rapid growth took place in the Nilgiris, Travancore, Wayanad and the Annamalais within the last one-third of the century. During the period 1860 to 1866 about 20,000000 pound tea per year was exported to England. Tea exports from Travancore increased from 3,577

pounds (1882 to 1883) to 678,363 pounds (1888 to 1889) (Willson and Cifford, 1992).

Although the Chinese tea makers were of crucial importance in the starting of the tea industry in Assam they were found to be both troublesome and insubordinate and as the secrets of Chinese tea cultivation methods were revealed, they were replaced by local labour. The Chinese tea trade and industry are fundamentally different from the tea plantation industry founded by British and Dutch investors. Chinese tea was and still is a small holders industry and in the hands of local farmers. The plantation structure under which tea production was organised from the beginning in India, brought to the industry, the advantage of economies of scale. There was sustained increase in area, production, yield and export of Indian tea. The table 3.2 gives an idea about the development of the area, production, yield and export of Indian tea, from the year 1885 to 1915. The export share of Indian tea was increasing. The table 3.3 gives a picture about world export of tea in the year 1900.

Table 3.2 Area, production, yield and export of Indian tea

Year	Area (in hectares)	Production (in 10 lakhs kg.)	Yield (in kg./hectare)	Export (in 10 lakhs kg.)
1885	114900	282	282	31
1890	139546	364	364	47
1895	168234	387	387	61
1900	211443	424	424	87
1905	213675	471	471	98
1910	228062	524	524	116
1915	256951	657	657	154

Source: Swaminathan, P., Hadson, J.B., Udayakumar, S., Kanthaswami, C. and Raamamoorthi, K. (1990 b), *Dakshinendiayile Theyilakrishi*, United Planters Association of Southern India, Coonoor, Nilgiri. pp: 8.

Table 3.3 World export of black tea in 1900

Country	Black Tea (in metric tonnes)
India	87000
Ceylon	68000
Dutch East Indies	7600
China	84000*

* Includes green tea.

Source: Willson and Cifford (1992), *Tea Cultivation to Consumption*, Chapman and Hall, London, pp: 651.

According to this data the export of Indian tea is more than the export of China tea at that time.

Ninety eight per cent of the tea consumed in England in 1905 was exported from India. That was an important period in the development of Indian tea industry.

The production of black tea in the period between the two world wars is given in Table 3.4. It is also visible that Indian share was increasing.

Table 3.4 Production of Black Tea in the period between the two World Wars

(in 1000 million tonnes)

Country	1923	1932	1938
India (including Bangladesh	170	197	204
Ceylon (Sri Lanka)	80	116	112
Indonesia (The Netherlands/East Indies)	45	82	70
TOTAL	295	395	386

Source: Willson and Cifford (1992), *Tea Cultivation to Consumption*, Chapman and Hall, London, pp: 651.

A detailed picture of the area, production and yield rate of Indian tea from the year 1916 to 1950 is given in Table 3.5.

Table 3.5 Indian tea: area, production and yield

Year	Area (in hectares)	Production (in tonnes)	Yield (in kg./hectare)
1916	262335	167973	640
1917	269960	168419	624
1918	274592	172578	629
1919	279948	171031	611
1920	284922	165645	549
1921	286924	124405	434
1922	286597	141359	493
1923	287816	170260	592
1924	289232	170215	588
1925	294474	164886	559
1926	299233	178233	595
1927	305939	177320	579
1928	313994	183322	584
1929	318892	196336	615
1930	325177	177393	546
1931	326512	178755	547
1932	327574	196711	601
1933	331000	174033	526
1934	334406	188099	541
1935	336572	178912	331
1936	337553	179252	531
1937	337630	195160	578
1938	337414	204963	608
1939	336901	205296	610
1940	337034	210415	624
1941	339832	226844	688
1942	310081	233502	752
1943	309919	237834	768
1944	308518	213856	693
1945	308922	229038	741
1946	309256	246068	796
1947	309986	254801	822
1948	310798	262092	843
1949	312398	236753	850
1950	315656	278212	881

Sources: 1. Tea Board (1994-'95), *Tea Statistics*, Tea Board, India, Calcutta, pp: 26.
2. Government of Kerala (1997), Report of the Taskforce on Plantation Crops, Ninth Five Year Plan (1997-2002), State Planning Board, Thiruvananthapuram.

In India the major tea producing areas are Assam, West Bengal, Tamil Nadu, Karnataka and Kerala. The history of the Indian tea industry up to the dawn of Independence can be briefly described as a case of expansion and consolidation. By 1950 tea had become an important agricultural crop of the country. By that year India became the largest producer and exporter of tea in the world.

3.13 History of South Indian tea

Dr. Christi was the pioneer, who experimented tea in Nilgiris on 1832. But unfortunately on November of the same year he died, consequently his experiment also ended. In 1834, with the help of Calcutta Tea Committee, Lord William Bentinck recommended to cultivate 2000 tea seeds in Nilgiris and Kudak. But it was flourished only at Nilgiri Hills along with coffee. Coffee was the major plantation crop in South India. Tea plantations were introduced in South India on commercial scale around the late 1840s. In the beginning of 1840 coffee plantations were affected by the disease 'Leaf Rust'. That paved way for wide tea cultivation in south India (Swaminathan et. al., 1990b).

First tea plantation in South India was started by a European Mr.Man at Coonoor in Nilgiri District. During 1859 and 1869, tea cultivation in these areas was largely expanded. In Nilgiris, Britishers started Thaichola estate and Dun Sandal estate. These cultivations were done with the help of Chinese Prisoners. By the year 1875, in Peerumedu area of Kerala tea

cultivation was started. A.H. Sharp from Europe, was the pioneer who started tea cultivation in Kannan Devan Hills during 1878. The James Finley Company started in 1897, helped very much in the growth of tea industry of South India. The cultivation started at Wayanad in 1889, and at Anamalais (in Coimbatore district) during 1897. By the year A.D.1900 tea cultivation in South India was established in 12670 hectares, the production of that year was 23000000 kg. (Swaminathan et. al., 1990b). The table 3.6 shows the growth of South Indian tea industry from the year 1900 to 1950.

Table 3.6 Growth of South Indian tea industry from the year 1900 to 1950

Year	Area (in hectares)	Production (in 10 lakhs kgs.)	Yield (in kg./hectare)
1900	12670	2.3	182
1905	13677	5.4	395
1910	19614	9.1	464
1915	27516	14.3	520
1920	35775	16.2	453
1925	40468	22.4	554
1930	58039	24.9	429
1935	65693	29.2	445
1940	65950	35.6	540
1945	66056	41.9	634
1950	67619	44.2	654

Source: Swaminathan, P., Hudson, J.B., Udayakumar, S., Kanthaswami, C. and Ramamoorthi, K. (1990 b), *Dakshinendiayile Theyilakrishi*, United Planters Association of Southern India, Coonoor, Nilgiri, pp: 5.

Tea in South India is grown in areas which either receive only the South West Monsoon or only the North East Monsoon or both. In Kerala both the South West and the North East Monsoon rains are received in Idukki which contributes major portion of Kerala's tea production. It is observed that tea is

suitable to grow in regions having moderate to high rain fall through out the greater part of the season. The climate and soil of the tea growing regions in India show great variations and its effect are reflected in difference in productivity (Sen and George, 1992).

3.14 History of Kerala tea

Organised commercial cultivation of plantation crops in Kerala State started in the order of coffee, cardamom, tea and rubber under the British patronage.

Tea cultivation in Kerala started in 1832 and it came on a commercial scale during 1840s. By the year 1875 tea cultivation was started in Peerumedu. A.H. Sharp started tea cultivation in Kannan Devan Hills during 1878. Tea cultivation started at Wayanad in 1889. Later the tea cultivation expanded to a vast area of the State. The unfavourable global market for coffee and devastating coffee leaf disease, 'leaf rust' - caused by *Hemilia vastatrix* - gave fillip to the coversion of lands into tea, and as a result, the early decades of this century witnessed phenomenal expansion of tea area. (UPASI and APK, 1989; Swaminathan et. al., 1990a).

Unlike the other three plantation crops in the State tea is basically an estate crop due to the specific issues related to the technology of processing.

3.15 Summing Up

Tea is believed to have been originated from South-East Asia and more specifically from China or India. At first it was a medicine and later on it has become one of the important beverages in the world. Now-a-days tea is consumed in almost all countries in the world.

Tea industry played a major role in the colonial activities of the Western countries. It has become one of the powerful commodities having commercial trade value. Indeed, it was the prime objective of colonisation to cultivate tea. This was particularly so in the case of India under colonial period of the British.

Until 1886 China had been the largest producer of tea in the world. Since then India has been the largest producer and exporter of tea.

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Chapter IV

ROLE OF TEA PLANTATION IN KERALA ECONOMY AND AN ANALYSIS OF ITS GROWTH PERFORMANCE

It has been observed in the previous chapter that tea cultivation in Kerala began in the first half of the eighteenth century, and by the time of independence, it has become an important economic activity in the State. In this chapter, an attempt is made to understand the role of tea plantation industry in Kerala economy, in comparison with other plantation crops, in terms of area, production, employment and contribution to the State Domestic Product. Part I of this chapter is devoted to this. In order to understand the dynamism behind the contribution of tea to the regional economy an analysis of trends in growth, in terms of area, production and productivity, is made in Part II of the present chapter.

Part I

TEA PLANTATION AND KERALA ECONOMY

It has been noted at the outset, that plantations have a predominant role in the agrarian regional economy of Kerala. In this section an attempt is made to analyse, in detail, the role of tea plantation in Kerala in terms of its contribution to the regional economy. The analysis is made based on estimates

of contribution to the agricultural net State Domestic Product, total production, employment, export earning, etc.

Kerala is the only state in India with a substantial stake in all major plantation crops accounting for 45 per cent of the planted area in the country. Table 4.I.1 provides a macro picture about the position of Kerala in the plantation sector in India. Plantations are labour intensive and provide round the year employment mostly in rural and backward areas where there is no other alternate employment opportunity.

4.I.1 Area under cultivation

Tea, Coffee, Cardamom and Natural Rubber are the important plantation crops in India. Out of the total area under plantations in India, 44.85 per cent are located in Kerala and 41.13 per cent of total production is in Kerala. In the case of area under important plantation crops in India 84.31 per cent of natural rubber, 56.31 per cent of cardamom, 24.44 per cent of Coffee and 8.41 per cent of tea are located in Kerala.

Area under tea in Kerala accounts for 8.41 per cent of area under tea in India. And out of the total area under plantations in India, 44.85 per cent are in Kerala.

Area under various plantation crops over a period of two decades 1980 to 2000 in Kerala is given in Table 4.I.2. As a percentage share of the net cultivated area in the State rubber plantation has improved its position

Table 4.I.1: Place of Kerala in India's plantation map

(Year: 2000-2001)

Sl.No	Type of crop	Area (in hectares)			Production (in tonnes)		
		India	Kerala	Kerala as percentage of India	India	Kerala	Kerala as percentage of India
1	Tea	437857	36826	8.41	818359	66093	8.08
2	Coffee	346716	84735	24.44	301200	70550	23.42
3	Cardamom	72444	40867	56.41	10450	7555	72.3
4	Natural Rubber	562670	474364	84.31	630405	579886	91.99
	Total	1419687	636792	44.85	1760414	724084	41.13

Note: Percentages - calculated.

Source: Government of Kerala (2001) *Economic Review*, State Planning Board, Thiruvananthapuram, PP: S-23

Table 4.1.2: Area under plantation crops vis-à-vis total net cultivated area of Kerala State

Year	Tea		Coffee		Natural rubber		Cardamom		Total for plantations in Kerala		Total net cultivated area in Kerala
	Area (in hectares)	Percentage	Area (in hectares)	Percentage	Area (in hectares)	Percentage	Area (in hectares)	Percentage	Area (in hectares)	Percentage	Area (in hectares)
1980-'81	36164	1.66	57564	2.64	237800	10.91	56376	2.59	387904	17.8	2179590
1981-'82	36130	1.65	57905	2.64	248000	11.32	54516	2.49	396551	18.11	2189850
1982-'83	35228	1.62	62368	2.86	259700	11.91	54516	2.50	411812	18.89	2179753
1983-'84	35021	1.61	64009	2.94	294300	13.50	56376	2.59	449706	20.63	2180355
1984-'85	35003	1.60	65641	3.00	310200	14.20	58769	2.69	469613	21.5	2184423
1985-'86	34760	1.59	65641	3.00	330315	15.08	60628	2.77	491344	22.43	2190985
1986-'87	34639	1.57	65641	2.97	347814	15.76	62740	2.84	510834	23.15	2206736
1987-'88	34642	1.57	65637	2.97	358957	16.23	64548	2.92	523863	23.69	2211274
1988-'89	34642	1.57	65637	2.97	366500	16.56	64548	2.92	531327	24.01	2212866
1989-'90	34605	1.54	75057	3.33	376800	16.73	64548	2.87	551010	24.47	2252118
1990-'91	34706	1.54	84000	3.74	407821	18.15	43640	1.94	570167	25.37	2247000
1991-'92	34623	1.54	84016	3.74	419174	18.65	43670	1.94	581483	25.87	2248000
1992-'93	34622	1.54	84000	3.73	428864	19.07	43388	1.93	590874	26.27	2249000
1993-'94	34688	1.55	82348	3.68	437138	19.53	43459	1.94	597633	26.7	2238000
1994-'95	36817	1.64	82348	3.68	443300	19.80	44237	1.98	606702	27.1	2239000
1995-'96	36755	1.62	82348	3.64	448988	19.82	41268	1.95	614023	27.11	2264842
1996-'97	36798	1.62	82556	3.65	455566	20.11	41268	1.82	616261	27.21	2264842
1997-'98	36817	1.62	82878	3.65	465282	20.49	40867	1.80	625844	27.56	2270593
1998-'99	36877	1.63	84139	3.73	472900	20.94	40867	1.81	634783	28.1	2258674
1999-'00	36826	1.64	84735	3.78	474364	21.18	40867	1.82	636792	28.44	2239363
2000-'01	36826	--	84735	--	474364	--	40867	--	636792	--	--

Note: Percentages indicate percentage share of area under plantation crops in total net cultivated area of Kerala State

Sources:
1. Government of Kerala (1991, 1995a, 2000, 2001) *Economic Review*, State Planning Board, Thiruvananthapuram
2. UPASI (1990) *Hand Book of Plantation Facts*, United Planters Association of Southern India, Coonoor
3. Government of Kerala (1995 b), *Land Resources of Kerala State*, Kerala State Land Use Board, Thiruvananthapuam

compared with other plantations. The share of tea remained more or less the same during the period. A small increase is observed in the case of coffee while a marginal decline is observed in the share of cardamom. Altogether the share of plantations in the net cultivated area increased from 17.8 per cent in 1980 to1981 to 28.44 per cent in 1999 to 2000.

In Kerala, 36762 hectares are under tea cultivation. Table 4.I.3 shows area under cultivation of tea in various producing districts of Kerala from 1951 to 2000. In Kerala, the major tea producing district is Idukki with 26615 hectares under tea, followed by Wayanad with 5454 hectares. Other major tea producing districts are Kollam, Kottayam, Thiruvananthapuram and Palakkad. Figure 4.I.1 shows the tea planting areas in Kerala.

India has second position in the world next to China, in the case of area under cultivation of tea. About 19.05 per cent of world area under tea is located in India. It may be noted that 1.38 per cent of tea plantation in the world is located in Kerala. Table 4.I.4 shows area under tea in India and other major producing countries and in Kerala.

4.I.2 Contribution to Agricultural State Domestic Product

Plantations, including tea, contribute substantially to the States' economy. Around 19.96 per cent of the net agricultural state domestic product was contributed by plantations in the year 1999 to 2000. Out of this 2.85 per cent was contributed by tea. The contribution of plantation crops to the agrarian

Table 4.I.3: Area under tea in various districts of Kerala, 1951 - 2000

(Figures in hectares)

Sl.No	Districts	1951	1961	1971	1978	1980	1981	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1	Idukki (e)		-	-	24069	24130	23930	23621	23584	23571	23357	23440	26855	26710	26800	26764	26608	26610	26615
2	Wayanad (++)		-	-	-	5354	5387	5360	5375	5366	5359	5418	5479	5475	5480	5426	5447	5449	5454
3	Kannur		1448	1505	1513	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Ernakulam		161	147	30	30	30	2	2	2	2	2	2	2	2	2	2	2	2
5	Kozhikode		4014	3874	3891	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Kottayam		29098	26747	2352	2266	2232	2009	2019	2026	2038	2039	673	776	776	776	840	840	840
7	Palakkad		574	635	662	664	665	665	681	688	744	744	825	829	830	829	841	841	841
8	Kollam		3006	2673	2216	1999	1653	1362	1362	1362	1362	1362	1348	1348	1348	1348	1348	1348	1348
9	Trissur		401	459	436	442	447	447	466	466	466	486	496	496	496	533	523	523	523
10	Thrivananthapuram		1082	1057	1069	1071	1071	1071	1023	1023	1023	1023	965	965	965	965	965	965	965
11	Malappuram (d)		-	174	174	174	174	174	174	174	174	174	174	174	174	174	174	174	174
12	Total Kerala	33203	39784	37271	36412	36130	35589	34711	34686	34678	34525	34688	36817	36775	36871	36817	36748	36752	36762

Note: (e) New district since 1972 formed out of Kottayam and Ernakulam Districts.
(d) New district since 1969 formed out of Kozhikode District.
(++) Tea area of Cannanore and Kozhikode Districts have been transferred to newly formed district of Wayanad, since 1980.

Sources : 1) Tea Board (various years) *Tea statistics* , Tea Board, India, Calcutta.
2) Tea board (2000) *Tea Digest*, Tea Board, India, Kolkatta, pp.6.

Source : Directorate of
Economics and Statistics,
Thiruvananthapuram.
[Reproduced from Kurian (1999)]

Figure 3.1 Map showing tea planting areas in Kerala.

Table 4.I.4: Area under tea: India and other major producing countries and Kerala

(Year: 2000)

Sl. No.	Country	Area (in hectares)	Percentage share in total world area	Rank
1	China	1089000	40.90	1
2	India	507196	19.05	2
3	Sri Lanka	188971	7.10	3
4	Indonesia	157488	5.92	4
5	Kenya	122236	4.59	5
6	Vietnam	78000	2.93	6
7	Turkey	76000	2.85	7
8	Myanmaar	68392	2.57	8
9	Japan	50400	1.89	9
10	Bangladesh	49195	1.85	10
	Others	275475	10.35	
	TOTAL WORLD	**2662353**	**100**	
	North India	393997	14.80	
	South India	113199	4.25	
	Kerala	36762	1.38	

Note: Percentage and rank - computed.

Source: Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta, pp: 102, 5, 6.

economy of Kerala is reported in Table 4.I.5. It may be noted that up to mid nineties the contribution of plantation has been increasing in terms of its percentage share. In 1980 to 1981 the share of plantation sector was 24.78 per cent and it increased to as high as 36.89 per cent in 1995 to 1996. Since then it has been showing a down turn reaching 19.96 per cent in 1999 to 2000. There exist wide year-to-year fluctuations in the share of plantation crops to the net agricultural State Domestic Product. In 1999 to 2000, the share of tea plantation was 2.85 per cent. The shares of coffee, natural rubber and cardamom were 2.75, 11.86 and 2.49 respectively.

Kerala produced 69355 tonnes of tea in 2000. The contribution from Idukki was 52000 tonnes followed by Wayand with 12585 tonnes in 2000. Table 4.I.6 gives details of tea production in various districts from 1951 to 2000. It may be noted that there has been wide year to year fluctuations in tea production in different districts.

Out of the total world production of 3013807 tonnes of tea in 2000, India produced 846483 tonnes which is 28.09 per cent and is the largest production in the world. Kerala produced 69355 tonnes which is 2.30 per cent of the world production. Table 4.I.7 shows production of tea in India and major producing countries and Kerala.

4.I.3 Yield level

Productivity (yield) variation has a significant impact on the production of tea. In Kerala the average productivity is 1887 kg./hectare. The

Table 4.1.5: Contribution of plantation crops to Kerala's State Domestic Product

(Rs. in lakhs at current prices)

Sl. No.	Year	Tea		Coffee		Natural Rubber		Cardamom		Total for plantations crops value of output	Percentage to net agricultural SDP	Total net agricultural SDP	Total Net SDP
		Value of out put	Percentage to net agricultural SDP	Value of out put	Percentage to net agricultural SDP	Value of out put	Percentage to net agricultural SDP	Value of out put	Percentage to net agricultural SDP				
1	1980-'81	7044.88	5.44	5168.16	3.99	17413.71	13.46	2438.46	1.88	32065.21	24.78	129384	382273
2	1981-'82	6377.79	4.86	6457.08	4.92	20343.57	15.51	3298.00	2.51	36476.44	27.81	131163	400803
3	1982-'83	7642.37	4.97	3742.05	2.43	21983.33	14.29	3152.67	2.05	36520.42	23.74	153826	466219
4	1983-'84	10405.44	5.22	2413.24	1.21	28419.54	14.26	3922.93	1.97	45161.15	22.66	199323	546515
5	1984-'85	15865.41	7.38	11349.55	5.28	28481.23	13.25	5689.74	2.65	61385.93	28.56	214908	607828
6	1985-'86	12075.85	5.93	5424.05	2.66	31966.31	15.71	3750.15	1.84	53216.36	26.15	203536	650341
7	1986-'87	9606.52	4.09	13841.01	5.90	33553.41	14.29	3351.07	1.43	60352.01	25.71	234755	375437
8	1987-'88	12757.77	4.88	6350.00	2.43	38786.25	14.82	2916.27	1.11	60810.29	23.24	261685	825756
9	1988-'89	13440.31	4.70	16299.97	5.70	43272.14	15.13	3756.50	1.31	76768.92	26.85	285915	918172
10	1989-'90	18401.39	5.96	6492.64	2.10	58687.10	19.02	5212.84	1.69	88793.97	28.78	308536	1066768
11	1990-'91	24320.60	6.91	6099.15	1.73	65471.22	18.61	9267.74	2.63	105158.71	29.89	351843	1219494
12	1991-'92	23735.11	6.41	9693.58	2.62	73459.64	19.82	8457.62	2.28	115345.95	31.13	370542	1353530
13	1992-'93	19113.99	4.73	12142.27	3.01	94005.24	23.27	5470.64	1.35	130732.14	32.37	403891	1508169
14	1993-'94	27225.52	4.17	18666.88	2.86	104895.10	16.07	14597.90	2.24	165385.40	25.34	652558	2660258
15	1994-'95	21709.38	3.07	31075.20	4.40	161101.55	22.80	11686.05	1.65	225572.18	31.92	706607	2837516
16	1995-'96	27196.86	3.12	35954.40	4.13	246958.42	28.36	11151.13	1.28	321260.81	36.89	870793	3446965
17	1996-'97	27523.52	2.82	38402.87	3.94	251301.72	25.79	15708.00	1.61	332936.11	34.17	974337	3965630
18	1997-'98	44741.07	3.97	36225.00	3.21	194012.73	17.20	25127.50	2.23	300106.30	26.60	1128190	4617801
19	1998-'99	52646.11	4.03	35667.30	2.73	171502.31	13.12	32750.00	2.51	292565.72	22.38	1307244	5355261
20	1999-'00	43204.99	2.85	41624.50	2.75	179700.47	11.86	37775.00	2.49	302304.96	19.96	1514715	6255675
21	2000-'01	35029.29		41624.50		176053.39		38832.70		291539.88			

Note: 1) The value of output of each crop is arrived at by multiplying the physical output with the respective average price obtained.

2) Percentage to net agricultural SDP indicate percentage share of plantation crops to state's agricultural SDP.

Sources: 1) Government of Kerala (1997) *Report of the Taskforce on Plantation Crops*, Ninth Five Year Plan *1997-2002*, State Planning Board, Thiruvananthapuram.

2) Government of Kerala (1999, 2000, 2001) *Economic Review*, State Planning Board, Thiruvananthapuram.

3) Tea Board (2000) *Tea Digest*, Tea Board, India, Kolkatta.

4) Government of Kerala (1993), *Statistics for Planning*, Department of Economics and Statistics, Thiruvananthapuram.

Table 4.1.6: Production of tea in various districts of Kerala, 1951 - 2000

(production in tonnes)

Sl.No	Districts	1951	1961	1971	1975	1980	1981	1988	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1	Idukki (e)		-	-	30818	39699	36087	40054	46697	51507	40023	46370	47641	49473	46434	52394	48254	51200	52000
2	Wayanad (++)		-	-	-	9395	7436	8438	9180	10198	10521	11059	10727	10742	10480	11797	12148	12196	12585
3	Kannur		1175	1441	1177	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Ernakulam		29172	30706	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Kozhikode		4827	6140	6547	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Kottayam		1878	1648	527	198	181	392	324	458	366	239	99	140	169	139	244	300	320
7	Palakkad		720	975	1175	1336	1214	1421	1697	1746	1607	1910	1959	1999	1980	2466	2398	1800	1950
8	Kollam		1058	940	1126	960	872	465	423	470	254	334	384	438	343	417	366	360	375
9	Trissur		669	674	871	1099	1001	1406	1503	1614	1324	1612	1611	1553	1614	1922	1951	1500	1650
10	Thrivananthapuram		46	67	826	836	760	928	744	713	532	479	706	433	561	641	582	440	475
11	Malappuram (d)		-	138	148	91	80	-	97	97	-	-	-	-	-	-	-	-	-
12	Total Kerala	25775	39545	42729	43215	53614	47631	53104	60665	66803	54627	62003	63127	64778	61581	69776	65943	67796	69355

Note: (e) New district since 1972 formed out of Kottayam and Ernakulam Districts.
(d) New district since 1969 formed out of Kozhikode District.
(++) Tea areas of Cannanore and Kozhikode Districts have been transferred to newly formed district of Wayanad, since 1980.

Source : 1) Tea Board (various years) *Tea statistics*, Tea Board, India, Calcutta.
2) Tea Board (2000) *Tea Digest*, Tea Board, India, Kolkatta, pp.8.

Table 4.I.7: Production of tea: India and major producing countries and Kerala

(Year: 2000)

Sl. No.	Country	Production (in tonnes)	Percentage share in total world production	Rank
1	India	846483	28.09	1
2	China	683324	22.67	2
3	Sri Lanka	306794	10.18	3
4	Kenya	236286	7.84	4
5	Turkey	170000	5.64	5
6	Indonesia	159346	5.29	6
7	Japan	89309	2.96	7
8	Myanmaar	60000	1.99	8
9	Argentina	60000	1.99	8
10	Vietnam	59000	1.96	9
11	Bangladesh	53950	1.79	10
	Others	289315	9.60	
	TOTAL WORLD	**3013807**	**100**	
	North India	641961	21.30	
	South India	204522	6.79	
	Kerala	69355	2.30	

Note: Percentage and rank - computed.

Source: Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta, pp: 103, 7, 8.

level of productivity varies from year to year and from district to district. Table 4.I.8 shows yield of tea in various districts of Kerala, 1951 to 2000. In Kerala, Thrissur distict ranks first in productivity with 3155 kg./hectare, followed by Palakkad with productivity of 2319 kg./hectare. The lowest productivity is recorded in Kollam with 278 kg./hectare.

In the world, Zimbabwe stood first in productivity with 3295 kg./ hectare in 2000. India's position was 11th in the same year, with 1669 kg./ hectare. It is interesting to note that the productivity in Kerala is better that of all India level and that of Japan. Table 4.I.9 shows ranking of average yield of tea in the world and Kerala.

4.I.4 Employment

One of the advantages of plantations is that it provides employment opportunities to a large number of people sustainably. Among the plantations, tea is the most labour intensive. Table 4.I.10 shows labour intensity of plantation crops in 1989 and in 1994. It may be observed that tea plantation has the highest labour intensity with 2.28 persons employed per day per hectare, followed by 0.52 persons per day per hectare in rubber plantation. In the case of Coffee it is 0.30 persons and 0.50 persons in cardamom plantations.

Table 4.I.11 gives persons employed in tea plantations in various districts in Kerala, major producing states, and in India during 1975 to 1997. It may be noted that there are about 10 lakhs persons employed in tea plantations in India. Out of these, 74776 persons are employed in Kerala. In Kerala, Idukki

Table 4.I.8: Yield of tea in various districts of Kerala, 1951-2000

(in kg./ hectare)

Sl.No	District	1951	1961	1971	1976	1980	1981	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1	Idukki (e)		-	-	1289	1645	1496	1694	1980	-	-	-	-	1852			1814	1924	1954
2	Wayanad (++)		-	-	-	1735	1389	1569	1708	-	-	-	-	1962			2230	2238	2307
3	Kannur		811	957	779	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Ernakulam		-	456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Kozhikode		1203	1585	1631	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	Kottayam		1002	1148	224	82	80	195	160	-	-	-	-	180	-	-	290	357	381
7	Palakkad		1254	1535	1775	2012	1828	2137	2492	2538	2160	2567	2375	2411	2388	2975	2851	2140	2319
8	Kollam		626	617	509	480	436	338	311	-	-	-	-	325	-	-	272	267	278
9	Trissur		1668	1468	1998	2498	2265	3145	3225	3464	2841	3317	3248	3131	3134	3606	3730	2868	3155
10	Thrivananthapuram		978	889	773	780	710	866	727	697	520	468	732	449	581	664	603	456	492
11	Malappuram (d)		-	793	851	523	460	-	557	558	-	-	-	-	-	-	-	-	-
12	Kerala	776	994	1146	1187	1484	1318	1528	1749	1926	1582	1788	1715	1761	1675	1895	1794	1845	1887

Note: (e) New district since 1972 formed out of Kottayam and Ernakulam Districts.
(d) New district since 1969 formed out of Kozhikode District.
(++) Tea area of Cannanore and Kozhikode Districts have been transferred to newly formed district of Wyanad, since 1980.

Sources:
1) Tea Board (various years) *Tea statistics*, Tea Board, India, Calcutta.
2) Tea Board (2000) *Tea Digest*, Tea Board, India, Kolkatta, pp. 10

Table 4.I.9: Ranking of average yield of tea in the world and Kerala

(Year 2000)

Country	Average yield rate (in kg./hectare)	Rank
Zimbabwe	3296	1
Cameroon	2590	2
Malawi	2242	3
Turkey	2237	4
Malasia	2033	5
Equador	1968	6
Ethiopia	1957	7
Mauritius	1954	8
Kenya	1933	9
Japan	1772	10
India	1669	11
World Average	**1132**	
North India	1629	
South India	1807	
Kerala	1887	

Note: Ranks are computed.

Source: Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta, pp: 104, 9, 10.

Table 4.I.10: Average employment intensity in plantation crops (Kerala)

Sl.No.	Type of crop	Average number of labour employed per planted area (in number of persons /hectare)	
		1989	1994
1	Tea	2.04	2.28
2	Coffee	0.56	0.30
3	Natural Rubber	0.66	0.52
4	Cardamom	0.50	0.50
	Average	0.71	0.60

Note: Average number of labour employed per planted area is calculated from the data obtained from Association of Plantation of Kerala (APK) Ernakulam/Thiruvananthapuram and *Economic Review*, 1999.

Source: Government of Kerala (1999), *Economic Review*, State Planning Board, Thiruvananthapuram

Table 4.1.11: Estimated average daily number of labour employed in tea plantations in India

Sl.No.	Districts/ States	Year						
		1975	1980	1985	1990	1995	1996	1997
1	Idukki	54010	51779	48879	54020(b)	48907	55312	56808
2	Wayanad	[a]	12109[a]	12720	12922[a]	15822	14815	12112
3	Kannur	3071	-	-	-	-	-	-
4	Ernakulam	-	-	-	-	-	-	-
5	Kozhikode	1354[+]	-	-	-	-	-	-
6	Kottayam	672	528	326	1070	1000	1000	1050
7	Palakkad	1899[@]	1458[@]	1644	1138	2045	2095	1914
8	Kollam	2791	2280	1535	1466	1056	1175	538
9	Trissur	879	1186	1118	1600	2161	2119	1515
10	Thiruvananthapuram	1763	1746	1220	2172	1291	1259	839
11	Malappuram	-	-	-	-	-	-	-
12	Kerala	78599	71086	67442	74388	72282	77775	74776
13	Tamil Nadu	72251	86359	86048	102786	110749	107091	113036
14	Karnataka	3138	4000	3702	4217	3987	3997	3699
15	South India	153988	161445	157192	181391	187018	188863	191511
16	Assam	402195	448949	484380	541661	567398	572311	579803
17	West Bengal	200130	218848	232553	248671	258179	252103	243768
18	North India	620909	685214	735206	805390	841769	840788	840756
	INDIA	774897	846659	892398	986781	1028787	1029651	1032267

Note: (a) New district formed since 1980 which includes tea areas of Kannur, Kozhikkode and Malappuram.
(+) Including Malappuram upto 1979
@ Including Ernakulam
(b) Including Ernakulam

Source: 1) Tea Board (various years), *Tea Statistics*, Tea Board, India, Calcutta.

has 56808 persons in tea plantations followed by Wayanadu with 12112 persons.

4.1.5 Location of tea plantations

In India, there are 38707 plantations, out of which 6126 are located in Kerala. The distributions of these units are given in Table 4.1.12. Majority of these units are located in Idukki (4973), Kottayam (953) and Kollam (104). It is important to note that, over the years, the numbers of plantations have been increased. In 1951, there were only 1125 units in Kerala, it increased to 4096 units in 1991 and further to 6126 units in 1997. The largest increase in number of plantations is seen in Idukki district. There were only 212 units in 1980; and the number increased to 4973 in 1997.

4.1.6 Export of tea

The importance of tea, emerges primarily from the point of view of export earnings. In terms of its export earnings, India stood fourth, in world export of tea, by exporting 206816 tonnes in 2000, which was 15.6 per cent of the total export in the world. Sri Lanka ranked first with 21.14 per cent of world export, followed by China and Kenya with 17.18 per cent and 16.37 per cent respectively. North Indian exports accounted for 7.22 per cent of the world exports while the South Indian exports amounted to 8.38 per cent. The export from Kerala with 44436 tonnes was 3.35 per cent of the world exports. Table

Table 4.1.12: Number of plantations in various districts of Kerala, South India, North India, India, 1951-2000

(Total number)

Sl.No	Districts/States	1951	1961	1971	1978	1980	1981	1986	1990	1991	1992	1993	1994	1995	1996	1997
1	Idukki (e)	-	-	-	176	212	212	202	204	204	204	204	4978	4978	4973	4973
2	Wayanad (++)	-	-	-	-	32	32	33	34	34	34	34	53	53	53	53
3	Kannur	-	8	11	12	-	-	-	-	-	-	-	-	-	-	-
4	Ernakulam	-	4	16	3	3	3	2	2	2	2	2	2	2	2	2
5	Kozhikode	-	22	19	18	-	-	-	-	-	-	-	-	-	-	-
6	Kottayam	-	1902	2863	3839	3713	3712	3699	3705	3712	3721	3722	953	953	953	953
7	Palakkad	-	5	5	32	32	32	32	32	32	32	32	33	33	33	33
8	Kollam	-	28	110	115	110	110	104	104	104	104	104	104	104	104	104
9	Trissur	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	Thrivananthapuram	-	6	6	6	6	6	6	6	6	6	6	6	6	6	6
11	Malappuram (d)	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Kerala	1125	1976	3032	4203	4110	4109	4080	4089	4096	4105	4106	6131	6131	6126	6126
13	Tamil Nadu	2772	4989	6450	6520	6704	6725	6791	6817	6819	6830	6845	25807	25811	25797	25796
14	Karnataka	12	13	16	15	15	15	16	21	22	34	37	37	37	36	36
15	South India	3909	6978	9498	10738	10829	10849	10887	10927	10937	10969	10988	31975	31979	31959	31958
16	Assam	785	744	750	756	777	777	844	848	848	851	850	1012	1196	2472	2472
17	West Bengal	296	301	296	297	305	305	323	347	347	347	347	348	343	453	453
18	Others	1224	1476	1471	1473	1479	1479	1483	1738	1741	1751	1751	1781	3801	3821	3824
19	North India	2305	2521	2517	2526	2561	2561	2650	2933	2936	2949	2948	3141	5340	6746	6749
20	India	6214	9499	12015	13264	13390	13410	13537	13860	13873	13918	13936	35116	37319	38705	38707

(e) New district since 1972 formed out of Kottayam and Ernakulam Districts.

(d) New district since 1972 formed out of Kottayam and Ernakulam Districts.

(++) Tea area of Cannanore and Kozhikode Districts have been transferred to newly formed district of Wyanad, since 1980.

Source 1) Tea Board (various years), *Tea statistics*, Tea Board, India, Calcutta.
2) Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta.

4.I.13 shows export of tea from India and other major exporting countries and Kerala.

In sum, Kerala has an important place in the plantation map of India accounting for 45 per cent of the area under plantations and 41.13 per cent of output. In the case of area under cultivation, it has 84.31 per cent of natural rubber, 56.41 per cent of cardamom and 24.44 per cent of Coffee and 8.41 per cent of tea. Out of the total area under tea in the world, 1.38 per cent is located in Kerala. Export of tea from Kerala is about 3.35 per cent of the world exports.

Out of the total 38707 plantations in India, 6126 are located in Kerala. It is important to note that, over the years, the number of plantations have been on the increase, despite stagnation of total area under cultivation in Kerala. In 1951, there were only 1125 units in Kerala, it increased to 6126 units in 1997.

In the regional agrarian economy of Kerala, tea plantation industry has a predominant role in terms of its contribution to the net agricultural state domestic product and in providing employment opportunities especially for women and backward class people living in rural areas. Plantations in Kerala contribute 19.96 per cent of net agricultural state domestic product and tea contributes 2.85 per cent of the net agricultural state domestic product. It is important to note that, among plantations, tea plantation is the most labour intensive one with 2.28 persons employed per day per hectare. About 74776 persons are employed regularly in tea plantations in Kerala.

Table 4.I.13: Export of Tea: India and other major exporting countries and Kerala.

(Year: 2000)

Sl. No.	Country	Export (quantity in tonnes.)	Percentage share in total world exports	Rank
1	Sri Lanka	280133	21.14	1
2	China	227661	17.18	2
3	Kenya	216990	16.37	3
4	India	206816	15.60	4
5	Indonesia	105581	7.97	5
6	Argentina	49794	3.76	6
7	Vietnam	42000	3.17	7
8	Malawi	38436	2.90	8
9	Uganda	26389	1.99	9
10	Tanzania	22462	1.69	10
	Others	109061	8.23	
	TOTAL WORLD	**1325323**	**100**	
	North India	95727	7.22	
	South India	111089	8.38	
	Kerala	44436	3.35	

Note: 1) Percentages and ranks are computed.

2) According to Tea Board and UPASI, Kerala's quantity of export is approximately 40 per cent of South India. So here it is derived from the South Indian data.

Source: Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta, pp: 105, 3, 4.

Within Kerala the major tea producing districts are Idukki and Wayanad. There have been wide year to year fluctuations in district level production figures.

Productivity level in Kerala is relatively high with an average yield of 1887 kg./ hectare. There exist wide variations in productivity levels in various districts. The highest productivity is in Thrissur district with 3155 kg./hectare followed by Palakkad district with 2319 kg./hectare. And the lowest productivity was recorded in Kollam with 278 Kg./hectare in the year 2000.

Part II

ANALYSIS OF GROWTH PERFORMANCE

In this part an attempt is made to examine, in detail, the growth performance of tea plantation industry in Kerala in comparison with neighbouring states and at the all India level. It is initiated with estimation of index numbers of area, production and productivity, and using these indices an attempt is made to discern certain broad patterns of growth. Such an analysis has been supplemented by estimating growth rates employing econometric methods. These estimates provide more comprehensive figures of growth. Decomposition of observed growth in production is also attempted by estimating area effect and yield effect.

Tea production has two components - yield rate and acreage. Total production of tea can be influenced by varying either of these two components. Therefore, any systematic attempt to understand the trends in growth in tea plantation industry should understand the movements in area, production and productivity.

Factors behind the trends in production of tea may be observed in terms of short term and long term measures for increasing production. The relatively short term measures for increasing the yield rate, that is, output per hectare, would involve adoption of improved methods of tea culture in existing plantations; inter-planting of rows in the existing areas coupled with rejuvenation; improvement of drainage; extending the pruning cycle; optimum

use of fertilizers, control of weeds, pests and disease in the plantations, etc. The long term measures, on the other hand, include extension, replanting and replacement activities along with the expansion of productive capacity and manufacturing facilities for processing the additional crop planned.

4.II.1 Index numbers of area, production and productivity

The analysis of growth begins by calculating index numbers of area, production and productivity.[1] The index numbers for India in general, South India and North India in particular are given in Table 4.II.1.

It may be observed that the index numbers of production of Indian tea increased from 100 in 1950 to 212 in 1980 and to 304 in 2000. This increase in output has been made possible by an increase in both area under cultivation and in productivity. While the index number of area increased from 100 in 1950 to 121 in 1980 and further to 161 in 2000, the corresponding figures of productivity are 100, 170 and 189. Thus at the all India level, there has been an increase in output of growth and the apparent increase in output has been as a result of growth in both area under cultivation and in yield level.

Looking at the performance of growth in terms of South India and North India, it can be seen that the performance is better in South India, compared to North India. The index number of production for South Indian tea

[1] Data utilised for estimations are given in Appendix II

Table 4.II.1 Index numbers of area, production and yield of tea in India, North India and South India.

(1950 = 100)

YEAR	India			North India			South India		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
1950	100	100	100	100	100	100	100	100	100
1951	100	103	102	100	100	100	101	117	116
1952	101	100	100	100	98	97	102	113	111
1953	101	100	99	100	95	95	103	126	122
1954	101	106	105	100	101	101	104	131	126
1955	101	111	109	101	105	105	104	139	133
1956	102	111	109	101	106	106	105	136	130
1957	102	112	109	102	103	101	106	158	150
1958	103	117	114	102	108	105	106	166	156
1959	103	117	113	102	109	107	108	159	147
1960	105	112	110	104	104	101	109	176	161
1961	105	127	121	104	117	113	110	183	167
1962	105	124	118	104	112	108	110	190	172
1963	106	125	118	105	110	105	110	201	182
1964	107	134	125	106	124	117	111	186	169
1965	108	132	122	108	117	109	111	211	190
1966	109	135	124	109	120	110	111	216	194
1967	109	138	126	110	125	114	111	206	186
1968	111	145	130	111	130	121	110	220	199
1969	112	141	126	113	128	113	110	217	198
1970	112	150	134	113	137	120	109	229	209
1971	113	157	139	114	142	125	109	233	214
1972	114	164	144	115	151	131	109	234	214
1973	114	170	149	115	157	136	110	235	214
1974	115	176	155	116	167	144	110	225	206
1975	115	175	152	117	163	139	109	241	221
1976	115	184	159	117	171	146	110	251	229
1977	116	200	172	118	183	155	110	290	264
1978	117	203	173	119	185	156	110	295	267
1979	118	195	165	121	173	143	111	315	285
1980	121	212	170	124	187	152	111	296	267
1981	122	201	166	125	187	151	110	277	250
1982	125	201	161	129	187	149	110	279	255
1983	125	209	167	130	199	153	109	261	238
1984	126	230	182	131	210	161	109	336	307
1985	126	236	187	132	220	167	109	321	294
1986	129	223	173	134	206	153	110	315	286
1987	130	239	184	136	222	163	111	332	300
1988	131	252	192	137	224	164	111	396	358
1989	131	247	188	137	226	165	111	358	324
1990	132	259	196	137	233	170	111	396	356
1991	133	271	204	139	241	173	111	432	389
1992	133	263	198	139	244	175	111	366	329
1993	133	273	206	138	249	180	112	405	363
1994	135	271	201	136	243	178	130	418	322
1995	135	272	201	137	243	178	130	424	326
1996	137	280	205	138	256	185	130	411	317
1997	138	291	212	139	258	185	131	464	354
1998	150	314	209	150	287	191	151	460	304
1999	155	296	191	154	266	173	160	455	285
2000	161	304	189	159	274	173	167	462	276

Source: Computed from the data given in, Tea Board (various years), *Tea Statistics*, Tea Board, India Calcutta and Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta.

is 462 for the year 2000 as against the index of 274 for North India. In the case of growth in area and productivity also, the South Indian performance is far ahead of North India. And this over all trend is glaring particularly during 1980s. The graphical representation of area, production and productivity of tea for India, North India and South India are given in Figure 4.II.1, Figure 4.II.2 and Figure 4.II.3 respectively.

Now the growth performance of Kerala can be looked at vis-à-vis other major producing states in South India–Karnataka and Tamil Nadu. Index numbers of area, production and yield for these states are given in Table 4.II.2.

It may be observed that the overall performance of Kerala is poor compared to other states. The index number of production of Kerala increased from 100 in 1950 to 311 in 2000. As against this, in the case of Karnataka and Tamil Nadu, the index of production reached 794 and 611 respectively. In the case of area under cultivation, the index of Kerala reached 114 in 1970, then declined to 110 in 1980 and further down to 105 in 1990. In the year 2000 index stood at 112. In contrary to this, the area under cultivation in Karnataka has been increasing in a sustained manner reaching an index of 124 in 2000. There exist considerable differences in patterns of growth in yield among the three states. In the case of Kerala the growth has been at very slow pace reaching the index 168 in 1970; increased to 219 in 1980 and reached only 278 in the year 2000. As against this, the index of yield reached 639 in the case of Karnataka. In the case of Tamil Nadu, the yield index reached 443 in 1990 and then declined to 272 in 2000.

Figure 4.II.1: India: Area, Production and Yield

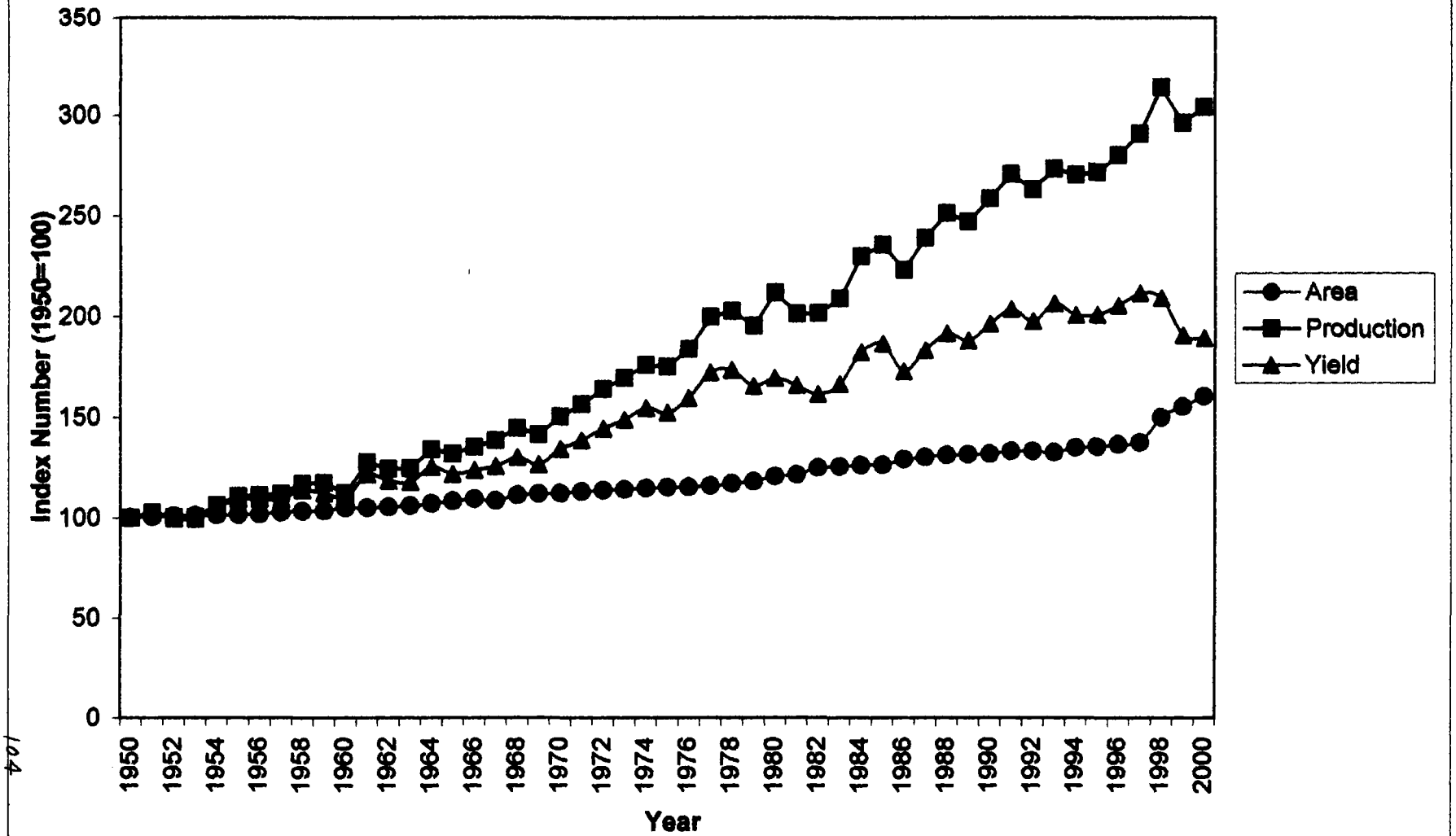


Figure 4.II.2:North India: Area, Production and Yield

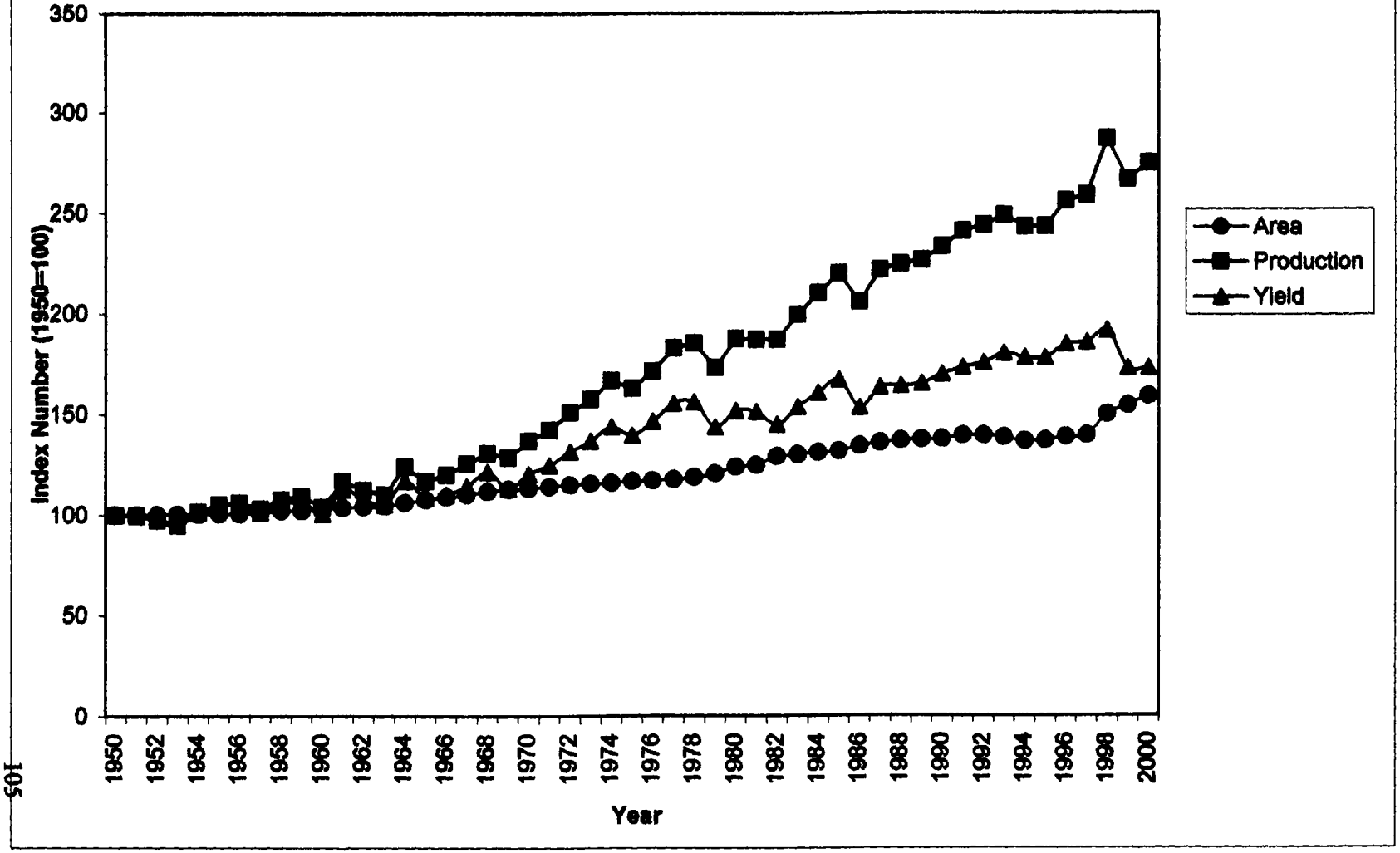


Figure 4.II.3: South India: Area, Production and Yield

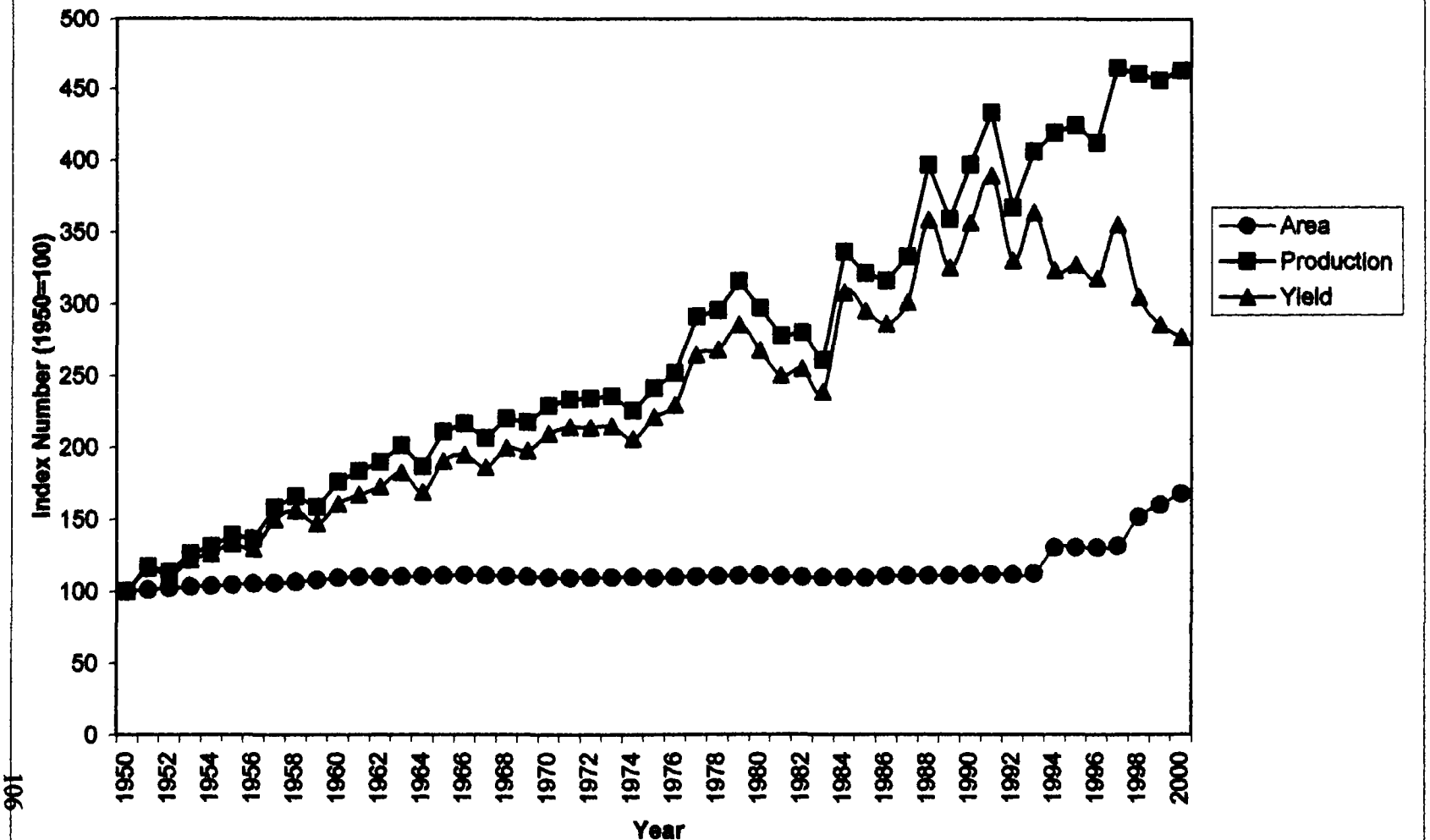


Table 4.II.2 Index numbers of area, production and yield of tea in Kerala, Karnataka and Tamil Nadu.

(1950 = 100)

YEAR	Kerala			Karnataka			Tamil Nadu		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
1950	100	100	100	100	100	100	100	100	100
1951	101	116	114	98	127	127	101	119	118
1952	102	110	108	100	127	127	103	117	114
1953	103	115	112	101	133	132	104	137	132
1954	103	121	118	101	142	141	105	142	135
1955	103	119	116	100	167	167	106	158	150
1956	104	138	133	111	201	181	107	133	125
1957	119	159	134	109	225	206	92	154	169
1958	120	166	139	106	241	226	94	164	175
1959	120	160	133	106	222	209	96	155	162
1960	121	172	142	107	245	230	98	178	181
1961	121	177	146	106	258	244	99	187	189
1962	121	183	151	105	265	254	99	194	237
1963	122	189	155	105	313	299	100	211	212
1964	122	173	143	105	264	251	100	198	198
1965	122	195	161	107	322	302	100	223	222
1966	121	201	167	107	328	307	102	228	224
1967	119	189	158	108	314	290	103	220	215
1968	118	183	155	110	333	304	103	255	248
1969	116	185	160	110	371	339	104	245	236
1970	114	192	168	110	413	376	105	262	250
1971	113	192	169	110	418	379	105	271	259
1972	114	201	177	110	480	435	105	264	247
1973	113	201	178	110	417	379	106	264	249
1974	112	189	168	110	411	372	107	257	241
1975	111	194	175	105	420	401	108	285	264
1976	111	215	194	104	499	480	109	282	258
1977	110	232	210	108	516	478	110	345	314
1978	110	230	209	108	488	450	111	357	323
1979	110	261	237	110	510	463	111	365	329
1980	110	240	219	111	504	365	112	348	311
1981	108	214	194	112	495	445	112	337	301
1982	108	218	202	113	525	466	112	336	301
1983	107	200	187	113	467	412	112	317	284
1984	107	261	244	113	599	529	112	405	364
1985	106	238	225	114	567	499	112	399	357
1986	106	218	206	112	602	535	115	408	355
1987	106	252	239	112	617	549	115	406	352
1988	106	287	272	112	599	534	116	505	437
1989	106	242	229	113	575	510	115	474	411
1990	105	272	258	116	579	498	117	521	446
1991	106	300	284	116	657	564	117	565	483
1992	105	245	233	119	610	514	117	485	415
1993	106	278	263	121	647	533	117	531	453
1994	112	283	253	123	623	505	148	553	375
1995	112	291	259	124	681	550	148	555	375
1996	112	276	247	124	664	537	148	545	368
1997	112	313	279	124	781	630	150	613	408
1998	112	296	264	124	793	639	192	622	324
1999	112	304	272	124	788	635	209	603	288
2000	112	311	278	124	794	639	225	611	272

Source: Computed from the data given in, Tea Board (various years), *Tea Statistics*, Tea Board, India, Calcutta and Tea Board (2000), *Tea Digest*, Tea Board, India, Kolkatta.

The graphical representation of area, production and yield of Kerala, Karnataka and Tamil Nadu are given in Figure 4.II.4, Figure 4.II.5, and Figure 4.II.6. From these figures, it may be discerned that there is a trend break around 1977, as seen in the case of national level analysis. This similarity may be due to the significant contribution to the production at the national level and co-integration with the national market structure.

Now an attempt can be made to understand the observed trends in tea plantation industry in a more systematic way, computing the growth rates statistically.

4.II.2 *Statistical Estimation of Growth Rates*

Growth rate of a variable may be defined as the rate of change per unit of time, usually a year. The growth rate can be measured statistically by estimating different functional forms of growth overtime such as linear, semi-log, logistic curve, etc.; each one of these having certain unique characteristics. In the present study, however, an exponential trend is being employed, which approximates best the uniform rate of growth.

Equation (1) represents the exponential trend.

$$\ln Y = a + bt \qquad \ldots.(1)$$

where Y = the variable under consideration
t = time point,
a = contant to be estimated
b = growth rate to be estimated

Figure 4.II.4: Kerala: Area, Production and Yield

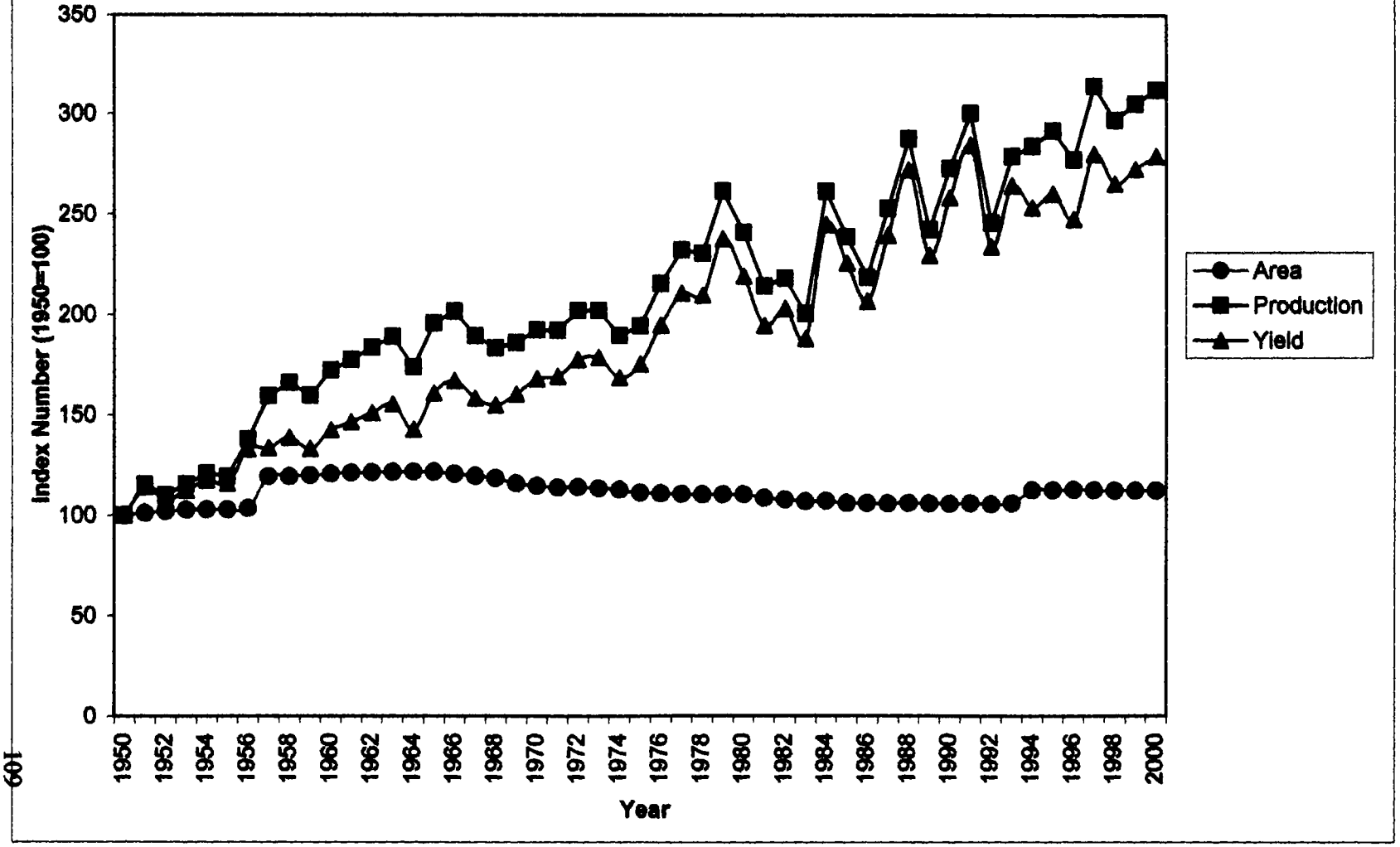


Figure 4.II.8: Karnataka: Area, Production and Yield

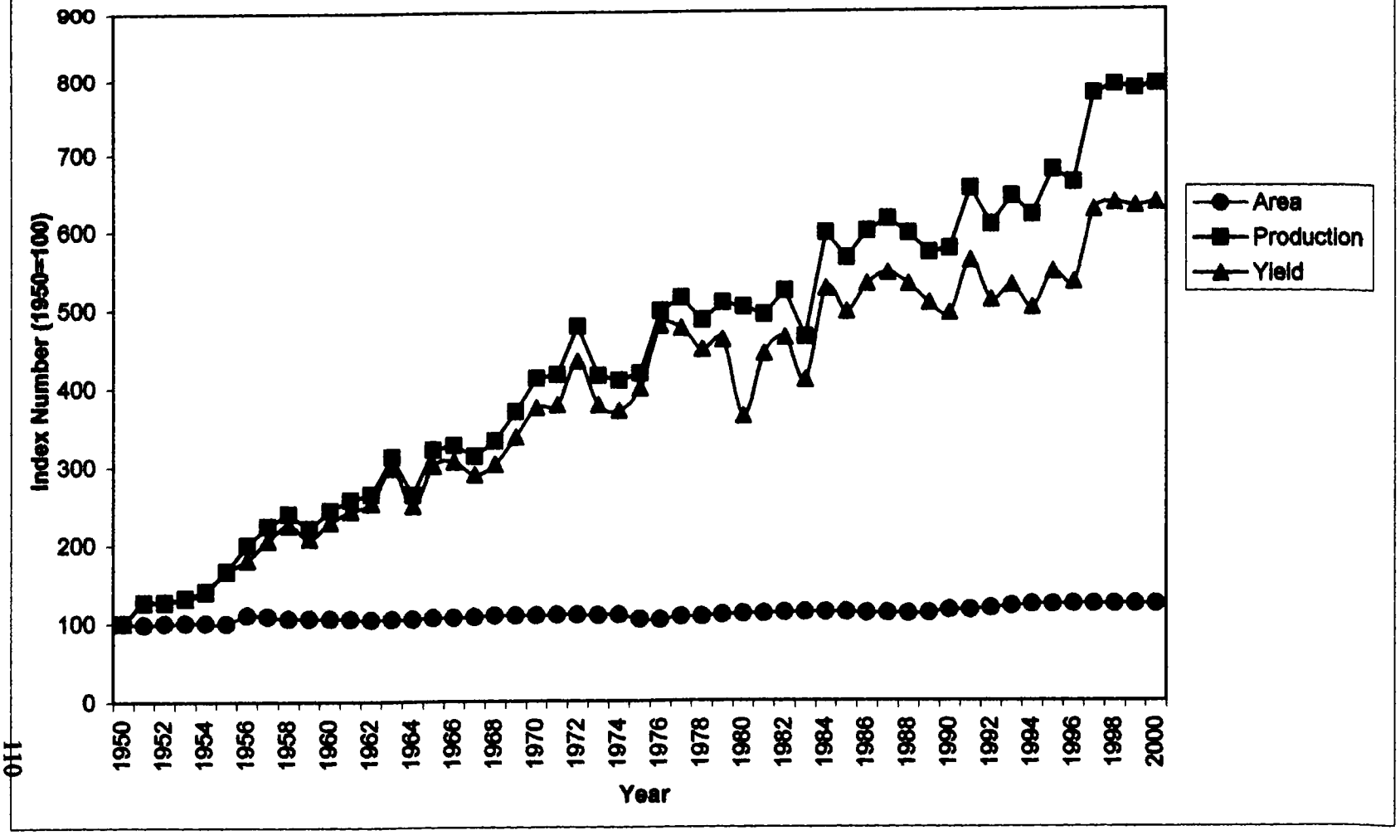
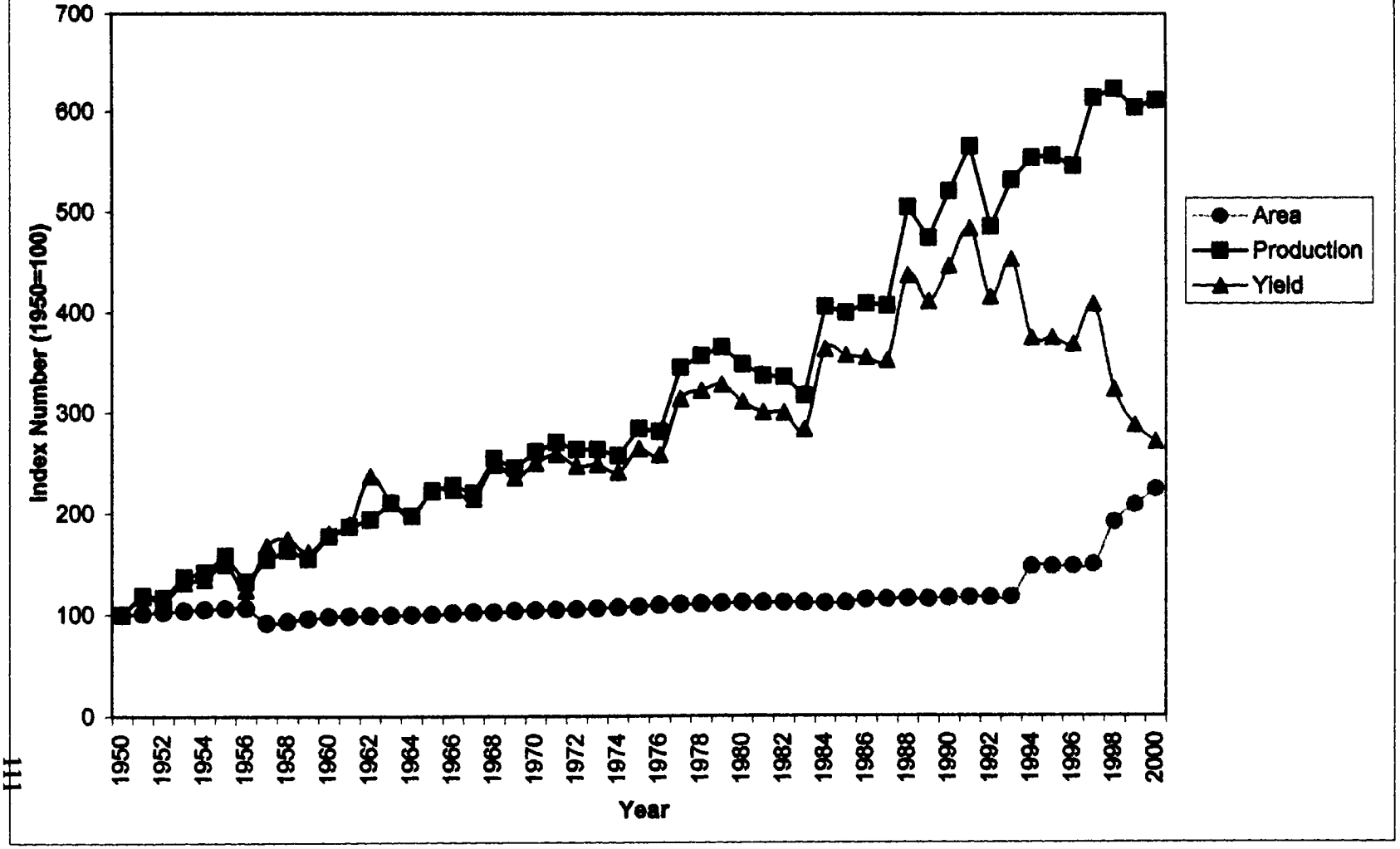


Figure 4.II.6: Tamil Nadu: Area, Production and Yield



Now to get the growth rates, differentiating equation (1) with respect to time,

$$\frac{d(\ln Y)}{dt} = b$$

Thus, exponential trend growth rate is uniform over the period of estimation (Boyce, 1987). Here in the empirical analysis the exponential equation have been estimated.

The growth rate of area, production and yield have been estimated for Kerala, Karnataka, Tamil Nadu, North India, South India and India and are presented in Table 4.II.3.

Table 4.II.3 : Growth rates of area, output and yield of tea, 1950 to 2000

(in per cent)

State	Growth rate 1950 to 2000		
	Area	Production	Yield
Kerala	-0.06 (-1.02)	1.85 (19.18)*	1.91 (27.97)*
Karnataka	0.39 (15.33)*	3.48 (21.82)*	3.08 (18.65)*
Tamil Nadu	1.03 (8.81)*	3.41 (45.89)*	2.43 (14.99)*
South India	0.63 (3.91)*	2.77 (36.58)*	2.28 (21.19)*
North India	0.88 (38.95)*	2.32 (48.67)*	1.44 (30.57)*
India	0.80 (31.36)*	2.43 (60.48)*	1.61 (34.09)*

Note : * Significant at one per cent level.
Growth rates are estimated by fitting and exponential trend equation: $\ln Y = a + bt + u$
Bracketed figures are 't' values

Source: Computed.

It can be seen that the growth performance of the Indian tea plantation industry is not impressive with an average annual output growth of 2.43 per cent per annum during the period 1950 to 2000. The estimated growth rates for Kerala, Karnataka and Tamil Nadu are 1.85, 3.48 and 3.41 respectively. Thus, among the three states, Kerala stood the lowest in growth performance.

Area under tea in India has been growing at an average annual rate of 0.80, while in Kerala, the rate of growth has been found to be negative. The highest rate of growth in area is witnessed in Tamil Nadu with an estimated rate of growth of 1.03 per cent per annum.

The rate of growth of productivity in Indian tea has been around 1.61 per cent per annum. Karnataka recorded the highest rate of growth in yield with an average annual rate of growth of 3.08 per cent per annum. Among the three states, the lowest rate of growth in yield is observed in Kerala.

Thus, the growth performance of Indian tea has been moderate with 2.43 per cent per annum. The performance of Kerala has been the poorest among the three states of major producing states in South India.

An examination of the movement of the variables - area, output and yield - showed a structural break around the year 1977.

4.II.3 Structural shift and application of Kinked Exponential Model

When there is a structural shift (trend break) a separate growth rate is needed for the two time periods. Independent estimates for the periods would lead to unreliable conclusions as pointed out by Boyce (1987). In order to estimate period-wise growth rates without any discontinuity, kinked exponential model developed by Boyce is employed. The discontinuous growth for the two periods can be estimated using the dummy variable method as given below.

$$\ln Y_t = a_1D_1 + a_2D_2 + (b_1D_1 + b_2D_2)t + U_t \quad \ldots.(2)$$

Where D_1 = 1 for the first period,

= 0 otherwise

D_2 = 1 for the second period,

= 0 otherwise

The estimation of the above equation without the intercept term will give the growth rates for the two periods. The discontinuity between the two trend lines can be eliminated via a linear restriction such that they can intersect at the break point k.

$$a_1 + b_1k = a_2 + b_2k \quad \text{....(3)}$$

substituting for a_2 in equation (2)

$$\ln Y_t = a_1D_1 + (a_1 + b_1k - b_2k)D_2 + (b_1D_1 + b_2D_2)t + U_t \quad \text{....(4)}$$

$$\ln Y_t = a_1D_1 + a_1D_2 + (b_1k - b_2k)D_2 + (b_1D_1 + b_2D_2)t + U_t \quad \text{....(5)}$$

$$\ln Y_t = a_1 + b_1(D_1t + D_2k) + b_2(D_2t - D_2k) + U_t \quad \text{....(6)}$$

since $a_1D_1 + a_1D_2 = a_1$.

Obviously b_1 and b_2 are the growth rates for the two periods with a kink at k if the estimated values of the growth rates are different.

In order to compare growth rates for the two time periods separate growth rates have been estimated for the two periods – 1950 to 1977 (period I) and 1977 to 2000 (period II) were estimated, employing the kinked exponential model. The period-wise estimates show that there is a significant decline in the rate of growth of tea plantation industry during the second period compared to the first period. This trend is applicable to the estimates for the national level and for the state level, including Kerala. This may perhaps, be due to the early impact of trade liberalisation which had influenced the already internationally integrated market of tea.

The estimated growth rates for the two time periods are reported in Table 4.II.4.

Table 4.II.4: Growth rates of area, output and yield of tea, 1950 to 1977 and 1977 to 2000

(in per cent)

State	Period I : 1950 to 1977			Period II: 1977 to 2000		
	Area	Output	Yield	Area	Output	Yield
Kerala	0.08 (0.70)	2.31 (12.86)*	2.23 (17.54)*	-0.23 (-1.71)	1.24 (5.44)*	1.48 (9.17)*
Karnataka	0.24 (5.36)*	4.96 (24.04)*	4.66 (22.57)*	0.59 (10.32)*	1.48 (5.67)*	0.97 (3.69)*
Tamil Nadu	0.02 (0.13)	3.71 (26.17)*	3.67 (14.57)*	2.38 (11.34)*	3.01 (16.77)*	0.75 (2.34)**
South India	0.21 (0.66)	3.10 (21.85)*	3.1 (18.12)*	1.19 (2.97)*	2.31 (12.85)*	1.19 (5.52)*
North India	0.76 (18.53)*	2.38 (24.72)*	1.62 (17.89)*	1.05 (20.13)*	2.26 (18.52)*	1.20 (10.48)*
India	0.60 (15.16)*	2.6 (33.22)*	1.9 (23.57)*	1.0 (21.14)*	2.23 (22.76)*	1.2 (11.72)*

Note: * Significant at one per cent level.
** Significant at five per cent level.
The estimated equation is : $\ln Y_t = a_1 + b_1(D_1t + D_2k) + b_2(D_2t - D_2k) + U_t$
Bracketed figures are 't' values

Source: Computed.

It may be observed from the table that the output growth of Indian tea has declined from 2.6 per cent per annum during the first period (1950 to 1977) to 2.23 per cent per annum during the second period (1977 to 2000). The rate of growth in yield also has shown a similar tendency declining from 1.9 per cent per annum during the first period to 1.2 per cent per annum during the second period. In the case of area under cultivation, there has been a slight improvement from first period growth rate of 0.6 per cent per annum to one per cent per annum during the second period.

A similar trend is also observed in all the three states under consideration, with a lower rate of growth in the second period. In the case of

Kerala, the rate of growth of output declined from 2.31 per cent per annum to 1.24 per cent per annum during the second period.

For understanding the factors behind the changes in growth rates, the output growth may be decomposed into area effect and yield effect.

4.II.4 Growth decomposition

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

$$Q_t = A_t Y_t \qquad \ldots.(7)$$

Where Q = Output
A = Area
Y = Yield
t = time point

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

$$b_Q = b_A + b_Y \qquad \ldots.(8)$$

Where $\ln Q_t = a_Q + b_Q t$

$\ln A_t = a_A + b_A t$

$\ln Y_t = a_Y + b_Y t$

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

$$AE = \left[\frac{b_A}{b_Q}\right] \times 100 \quad \text{....(9)}$$

where AE = area effect

Similarly, yield effect (YE)

$$YE = \left[\frac{b_Y}{b_Q}\right] \times 100 \quad \text{....(10)}$$

where YE = yield effect

The decomposition analysis has also been done for the entire period (1950 to 2000) and for the two time periods (Period I = 1950 to 1977; and Period II = 1977 to 2000). Table 4.II.5 reports the estimates for the entire period.

Table 4.II.5 : Decomposition of output growth into area effect and yield effect, 1950 to 2000

(in per cent)

State	(1950 to 2000)		
	Output growth	Area effect	Yield effect
Kerala	1.85	-3.24	103.24
Karnataka	3.48	11.21	88.51
Tamilnadu	3.41	30.20	71.26
South India	2.77	22.74	82.32
North India	2.32	37.93	62.07
India	2.43	32.92	66.26

Source: Computed.

It may be seen that at the national level, 66.26 per cent of the output growth has been accounted for by increase in productivity.

It is interesting to note that for Kerala the area effect is negative, indicating that whatever output growth has been achieved by it has been primarily because of an increase in the level of productivity. In the case of both Karnataka and Tamil Nadu yield effect contributed 88.51 per cent and 71.26 per cent respectively to the output growth.

The period-wise decomposition estimates of area effect and yield effect are given in Table 4.II.6.

Table 4.II.6 : Decomposition of output growth into area effect and yield effect, 1950 to 1977 and 1977 to 2000

(in per cent)

State	Period I			Period II		
	Output Growth	Area Effect	Yield Effect	Output growth	Area Effect	Yield Effect
Kerala	2.31	3.46	96.54	1.24	-18.55	118.55
Karnataka	4.96	4.84	95.16	1.48	39.86	60.14
Tamil Nadu	3.71	0.54	99.46	3.01	79.07	20.93
South India	3.10	6.78	93.22	2.31	51.52	48.48
North India	2.38	31.93	68.07	2.26	46.46	53.54
India	2.6	23.08	76.92	2.23	44.84	55.16

Source: Computed.

It may be noted that Karnataka maintained its output growth during both the periods by high yield growth with an estimated yield effect of 95.16 per cent for the period I and with 60.14 per cent for the period II. As against this, Tamil Nadu improved its productivity during the period I with an yield

effect of 99.46 per cent while in the second period, it concentrated on extensive cultivation resulted in the area effect of 79.07 per cent. As observed earlier, in the case of Kerala, yield effect was predominant during both the periods.

Thus, each of the three neighbouring state has a unique pattern of growth. The least impressive performance has been that of Kerala. The point of emphasis becomes more explicit when comparing the absolute levels of yield in Kerala in 1950 and in 2000 in comparison with the neighbouring states. Kerala which stood first in productivity, compared to Karnataka and Tamil Nadu, with 679 kg./hectare lost its competitiveness with a productivity level of 1887 kg/hectare in 2000 compared to Karnataka (2596 kg./hectare). This trend has to be observed in the context of a continuous decline in area under tea in Kerala.

In sum, the growth performance of Indian tea has been moderate and contribution of South India has been significant. A trend break is observed in the late seventies and the period wise estimates showed that the rate of growth has declined after the seventies. The performance of Kerala has been the poorest among the three major tea producing South Indian States. Decomposition analysis showed mixed pattern among the three states. While Tamil Nadu improved its yield effect in the first period, Karnataka and Kerala improved its productivity during both the periods. There exist significant differences in productivity levels among the three states.

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Chapter V

PROFILE AND PROBLEMS OF TEA PLANATAION INDUSTRY IN KERALA

In this chapter an attempt is made to understand the problems and prospects of the tea plantation industry in Kerala. In this attempt opinions from two viewpoints have been collected - one from point of view of managers and the other, the opinion of the workers. As a pre-requisite for understanding the problems, the profile of the industry and the socio-economic background of the workers have also been analysed.

While thinking about the problems of the industry, the factors affecting the profitability of the industry, both short term and long term, and the problems of the persons employed in the units are analysed. Therefore, this chapter is divided into two parts: Part I, for the profile and problems of the tea companies and Part II, for the socio-economic conditions of the labourers employed in the companies and their problems. Primary data were collected with the help of survey shedules [1, 2]. Table 5.1 gives the name of the companies selected and the estates identified for data collection. Table 5.2 shows estates with factory.

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1 See Appendix III - Part I, for details of Survey Schedule utilised for collecting information from companies.

2 See Appendix III - Part II, for details of Survey Schedule utilised for collecting information from employees.

Table 5.1. Sample companies and its selected estates.

Sl. No	Company	Total Number of tea estates in Kerala	Name of visited estates	Number of visited estates		
				Visited estates in Idukki district	Visited estates in Wayanad district	Total number of visited estates
1	Tata Tea Limited Calcutta	26	Periavurai Pullivasal Sevenmalai	3	-	3
2	Harrisons Malayalam Plantations (India) Limited, Kochi.	17	Lockhart Panniar Achoor Chundale	2	2	4
3	Ram Bahadur Thakur (Private) Limited, Kochi	9	Munjamullay Nellikai	2	-	2
4	Assambrook Limited, Calcutta	4	Cherakkara	-	1	1
5	A.V. Thomas Group Companies, Kochi*	4	Arnakal	1	-	1
6	Manathavady Tribal Plantation Co-operative Limited, Wayanad**	1	Priyadarsini	-	1	1
7	Periya Peak Estate Private Limited, Wayanad	1	Periya Peak	-	1	1
8	Chandravanam Estate Private Limited, Idukki	1	Chandravanam	1	-	1
9	Kairali Tea Plantations Private Limited, Idukki	1	Kairali	1	-	1
	Total	**64**		**10**	**5**	**15**

* A.V. Thomas Group (AVT) tea companies include Midland Tea and Produce Company Limited, Kochi, Highland Produce Company Limited, Kochi and Kalpetta Estates Limited, Kochi.

** Manathavady Tribal Plantation Co-operative Limited is being undertaken by Government of Kerala through Co-operative Society managed by Board of Directors with the purpose of more tribal participation.

Source: Primary survey.

Table 5.2 Tea estates with factory

Sl.No.	Company	Estate	District	Estate with Factory
1	Tata Tea Limited, Calcutta	Periavurai	Idukki	3
		Pullivasal	Idukki	3
		Sevenmalai	Idukki	-
2	Harrisons Malayalam Plantations (India) Limited, Kochi.	Lockhart	Idukki	3
		Panniar	Idukki	3
		Achoor	Wayanad	3
		Chundale	Wayanad	3
3	Ram Bahadur Thakur (Private) Limited, Kochi	Munjamullay	Idukki	3
		Nellikai	Idukki	3
4	Assambrook Limited, Calcutta	Cherakkara	Wayand	3
5	A.V. Thomas Group Companies, Kochi	Arnakal	Idukki	3
6	Manathavady Tribal Plantation Co-operative Limited, Wayanad	Priyadarsini	Wayand	3
7	Periya Peak Estates Private Limited, Wayanad	Periya Peak	Wayand	3
8	Chandravanam Estate Private Limited, Idukki	Chandravanam	Idukki	-
9	Kairali Tea Plantations Private Limited, Idukki	Kairali	Idukki	3
	Total			13

Source: Primary survey.

Part - I

PROFILE AND PROBLEMS OF TEA COMPANIES

5.I.1 Size distribution of selected estates

On an average, the selected companies have 2346.05 hectares of area under tea cultivation. Tata Tea is the largest with 10234.48 hectares of tea plantation, followed by HML with 5838.56 hectares under tea cultivation. The smallest company is Kairali Tea Plantations with 22.10 hectares of area under tea.

Average size of the estates identified for data collection is 332.34 hectares. Out of the fifteen estates, Sevenmalai is the largest one with 644.18 hectares under tea followed by Achoor in Wayanad district with 623.05 hectares under cultivation of tea. Table 5.I.1 gives the distribution of area under tea in companies and estates selected for the study.

Though Tea Board has classified tea estates into two categories, large estates (above 10.12 hectares tea area) and small estates (below 10.12 hectares tea area), in the present study, estates are classified into four categories according to the tea cultivated area. They are 1) tea area below 200 hectares, 2) tea area between 201 and 400 hectares, 3) tea area between 401 and 600 hectares and 4) tea area between 601 and 800 hectares. Based on this categorisation four estates - Nellikai, Periya Peak, Chandravanam and Kairali - have tea area below 200 hectares, five estates - Lockhart, Panniar, Chundale,

Table 5.I.1 Tea area of the companies and its selected estates

Sl. No	Company	Total tea area of the company in Kerala (in hectares)	Estate	District	Estate wise tea area in Hectares	Category			
						1-200 Hectares	201-400 Hectares	401-600 Hectares	601-800 Hectares
1	Tata Tea Limited Calcutta	10234.48	Periavurai	Idukki	529.83			3	
			Pullivasal	Idukki	418.78			3	
			Sevenmalai	Idukki	644.18				3
2	Harrisons Malayalam Plantations (India) Limited, Kochi.	5838.56	Lockhart	Idukki	393.45		3		
			Panniar	Idukki	294.01		3		
			Achoor	Wayanad	623.05				3
			Chundale	Wayanad	265.88		3		
3	Ram Bahadur Thakur (Private) Limited, Kochi	2338.97	Munjamullay	Idukki	272.36		3		
			Nellikai	Idukki	181.51	3			
4	Assambrook Limited, Calcutta	1121.23	Cherakkara	Wayand	338.88		3		
5	A.V. Thomas Group Companies, Kochi	1074.22	Arnakal	Idukki	516.11			3	
6	Manathavady Tribal Plantation Co-operative Limited, Wayanad	414.68	Priyadarsini	Wayand	414.68			3	
7	Periya Peak Estate Private Limited, Wayanad	35.22	Periya Peak	Wayand	35.22	3			
8	Chandravanam Estate Private Limited, Idukki	35.00	Chandravanam	Idukki	35.00	3			
9	Kairali Tea Plantations Private Limited, Idukki	22.10	Kairali	Idukki	22.10	3			
	TOTAL	21114.46			4985.04	4	5	4	2
	AVERAGE	2346.05			332.34				

Source: Primary survey.

Munjamullay and Cherakkara - have tea area between 201 and 400 hectares, four estates - Periavurai, Pullivasal, Arnakal and Priyadarsini – have tea area between 401 and 600 hectares and two estates - Sevenmalai and Achoor - have tea area between 601 and 800 hectares. The categorisation of estates according to the tea area is represented in figure 5.1.1.

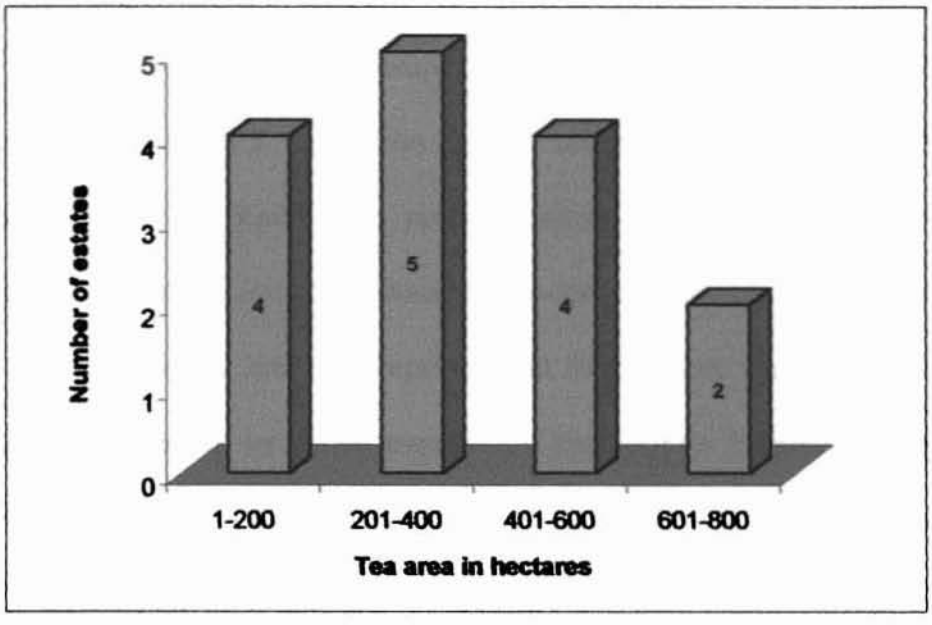

Figure 5.1.1. Categorisation of tea area of the selected estates

Some of the companies have plantations such as coffee, rubber and cardamom other than tea. Out of the nine companies six companies have other plantations. Tata Tea Limited has coffee and cardamom, but their major income is from tea. HML has coffee, rubber and cardamom and RBT has coffee and cardamom besides tea. AVT group has coffee and rubber where as

Mananthavady Tribal Plantation Co-operative and Chandravanam Estate have coffee and cardamom other than tea. Besides this Tata Tea Limited, HML, RBT, Mananthavady Tribal Plantation Co-operative and Chandravanam have pepper cultivation too. Assambrook, Periya Peak and Kairali do not have plantations other than tea. It is found that no company has other plantations larger than tea.

5.1.2 Ownership of the company and management of the estates

Out of the selected sample companies, Tata Tea Limited, HML, Assambrook and AVT are public limited companies. RBT, Periya Peak, Chandravanam and Kairali are private limited companies. Mananthavady Tribal Co-operative Limited is owned by Co-operative society of Government of Kerala. All public limited companies' and RBT private limited company's estates are managed by estate managers. Other private limited companies' estates, Periya Peak, Chandravanam and Kairali are managed by owners themselves (owner-manager type). Mananthavady Tribal Co-operative Limited's Priyadarsini estate is managed by a Board of Directors. Table 5.1.2 shows the details of pattern of ownership of the companies and management of the estates.

In general it is found that the profitability is related to the professional management and product diversification. This is particularly explicit in the case of estates under Tata Tea and A.V. Thomas Group (AVT).

Table 5.I.2 Ownership of the companies and management of the estates

Sl. No.	Company	Ownership of the Company	Management of the Estate
1	Tata Tea Limited, Calcutta	Public Limited Company	Estate Manager
2	Harrisons Malayalam Plantations (India) Limited, Kochi	Public Limited Company	Estate Manager
3	Ram Bahadur Thakur (Private) Limited, Kochi	Private Limited Company	Estate Manager
4	Assambrook Limited, Calcutta	Public Limited Company	Estate Manager
5	A.V. Thomas Group Companies, Kochi	Public Limited Company	Estate Manager
6	Mananthavady Tribal Plantation Co-operative Limited, Wayanad	Co-operative (Government of Kerala Ownership)	Board of Directors
7	Periya Peak Estates Private Limited, Wayanad	Private Limited Company	Owner Manager
8	Chandravanam Estate Private Limited, Idukki	Private Limited Company	Owner Manager
9	Kairali Tea Plantations Private Limited, Idukki	Private Limited Company	Owner Manager

Source: Primary survey.

5.I.3 Tea plant varieties in the estates

Two varieties of tea plants are found in estates. They are China tea and Assam Tea.[3] Thirteen estates have both China tea and Assam tea plants, and two estates have only Assam tea plants. Estates having China tea and Assam tea are Periavurai, Pullivasal, Lockhart, Panniar, Achoor, Chundale, Munjamullay, Nellikai, Cherakkara, Amakal, Priyadarsini, Periya Peak and Chandravanam. Estates which have only Assam tea are Sevenmalai and Kairali. Table 5.I.3 shows the types of tea plants in the estates.

[3] See Appendix I - Part I for details of tea plant varieties

Table 5.I.3 Types of tea plants in the estates

Sl.No.	Company	Estate	District	Tea Plant	
				China Tea	Assam Tea
1	Tata Tea Limited Calcutta	Periavurai	Idukki	3	3
		Pullivasal	Idukki	3	3
		Sevenmalai	Idukki		3
2	Harrisons Malayalam Plantations (India) Limited, Kochi.	Lockhart	Idukki	3	3
		Panniar	Idukki	3	3
		Achoor	Wayanad	3	3
		Chundale	Wayanad	3	3
3	Ram Bahadur Takur (Private) Limited, Kochi	Munjamullay	Idukki	3	3
		Nellikai	Idukki	3	3
4	Assambrook Limited, Calcutta	Cherakkara	Wayand	3	3
5	A.V. Thomas Group Companies, Kochi	Arnakal	Idukki	3	3
6	Manathavady Tribal Plantation Co-operative Limited, Wayanad	Priyadarsini	Wayand	3	3
7	Periya Peak Estates Private Limited, Wayanad	Periya Peak	Wayand	3	3
8	Chandravanam Estate Private Limited, Idukki	Chandravanam	Idukki	3	3
9	Kairali Tea Plantations Private Limited, Idukki	Kairali	Idukki		3

Source: Primary survey.

5.I.3.1 Age of plants

Age of the tea plant is one of the important factors which influence productivity. Productivity of tea begins to decline after 30 years of age. Many scholars examined the relationship between age of the tea plants and productivity. While reviewing the literature it is found that chiranjeevi (1994), Bhomick (1990) and Sarkar (1970) clearly stated that after 20 to 30 years of age the tea plant becomes unecnomic as a result of aging and they stress the importance of replanting.

Most of the estates have tea plants with 60 to 100 years old. Kairali estate and a few hectares of Panniar estate have plants below 10 years old. All other estates have over aged plants.

Periyavurai estate has 60 to 80 years old tea plants and Pullivasal estate has 100 years old plants. Panniar estate has plants below five years old in 5 hectares, 10 to 20 years old in 4.13 hectares, 21 to 30 years old in 21.18 hectares, 31 to 40 years old in 25.57 hectares and above 50 years old plants in 238.13 hectares. Plants of Achoor estate are more than 100 years old, Chundale estate has 50 to 95 years old plants. Munjamullay's plants are more than 100 years old and plants of Nellikai estate are 85 years old. Sixty Five percent of the plants in Cherakkara estates are 80 to 90 years old. Arnakal estate has plants of approximately 80 years old and Periya Peak's plants are more than 100 years old. Chandravanam estate's plants are 50 years old and Kariali estate has plants of only 5 to 6 years old.

Replanting is required for rejuvenating productivity, but none of the estates properly replanted their tea plants (Kairali is a new venture so the plants are young). Since the price of tea is declining most of the company owners are not interested to make further investments in the estates, so the replanting is not taking place in most of the estates. A few of the estates do partial replanting. Due to lack of replanting many estates have more than 80 years old plants. And the existence of over aged plants affects productivity adversely.

5.1.4 Harvesting of tea

Harvesting is an important aspect in tea plantation industry. According to Hudson (1998) plucking of leaves accounts for about 60 per cent of the field cost and 20 per cent of the production cost and plucking interval is a determining factor in plucking average.

From the sample survey it is observed that the month of October and November are the peak time for tea production. This is followed by May and September.

Plucking of tea leaves by hand is the normal method of harvesting. The quality of raw leaves is high when harvested by hand plucking. At the same time many of the estates are adopting mechanical harvesting - shearing – (plucking of tea leaves using very large scissors known as shears) too. The plucking intervals are different for hand plucking and mechanical harvesting and also it varies due to climatic conditions. Average plucking interval in the estate for hand plucking is 7 to 10 days and for shearing it is 12 to 16 days.

The plucking interval of Periyavurai estate is 7 to 10 days for hand plucking and 12 to 15 days for shearing. Pullivasal estate gives a plucking interval of 10 to 20 days and Sevenmalai estate, 15 days. The plucking interval of Lockhart estate is 12 to 16 days, Panniar estate is 6 to 15 days, Achoor estate is 7 to 13 days and Chundale estate is 6 to 12 days. Plucking interval of Munjamullay and Nellikai estate is 15 days. Plucking interval of Cherakara estate is 7 to 10 days, Arnakal estate is 10 to 20 days, Priyadarshini

estate is 7 days and Periyapeak estate is 12 to 15 days. Chandravanam and Kairali estates are plucking the leaves at an interval of 12 days.

5.1.5 Mechanical harvesting and its impact on the quality of tea

Hudson (1997b) mentions about shear harvesting and its advantages and according to him this will increase the plucking average and reduce the labour requirement.

Many of the estates have adopted mechanical harvesting in plucking of tea leaves. Periyavurai, Pullivasal and Sevenmalai of Tata; Lockhart, Panniar, Achoor and Chundale of HML; Munjamullay and Nellikai of RBT, Cherakara of Assam Brook, Arnakal of AVT and Chandravanam estates have adopted the new method of plucking tea leaves. Other estates Priyadarsini, Periya Peak and Kairali have not changed the method of hand plucking.

Shearing is the most commonly adopted method of mechanical harvesting. Hand held manual shears and hand held motorised shears are used for harvesting. (a) Hand held manual shears: by using this the workers will be able to pluck more leaves, so the productivity of the workers will be high. Since it is a manual shearing, workers will have to use more effort to cut the leaves with shears (b) Hand held motorised shear: motorised shear is more easy and worker need not use more effort to handle it. Since it has a motor plucking of leaves will be easier and motorised shearing is much faster than hand held manual shearing. Some of the estates have adopted these methods partially.

Estate managers have reported different opinions regarding mechanical harvesting and its impact on the quality of tea. Managers of most of the estates reported that mechanical harvesting has improved the productivity and quality of tea. According to them with the adoption of shearing, growth of new leaves will become even and it will improve the quality of tea leaves by facilitating plucking in time. It also helps to reduce the number of labour through high productivity. Two estate managers reported that productivity has improved by shearing, but quality has not improved.

5.I.6 Types of tea manufactured by the estate factories

The product of tea is generally classified into two: CTC (Crush,Tear, and Curl) tea and Orthodox tea. Kumar (2000) points out that CTC tea has high domestic demand whereas Orthodox tea has high demand in export market.

All the thirteen factories surveyed are manufacturing Black tea.[4] Periyavurai and Pullivasal factories of Tata manufacture only CTC tea. Lockhart factory of HML manufacture Orthodox and CTC tea and Panniar factory of HML manufacture Orthodox tea. Munjamullay factory of RBT manufacture CTC and Nellikai factory of RBT manufacture orthodox tea. Arankkal of AVT and Kairali manufacture only CTC tea. Out of eight factories in Idukki district only one manufacture orthodox and CTC tea.

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[4] See appendix 1 – Part II for details of Black tea.

Table 5.I.4 Types of manufactured tea

Sl. No.	Company	Factory	District	Black Tea		
				Orthodox and CTC	Orthodox	CTC
1	Tata Tea Limited Calcutta	Periavurai	Idukki			3
		Pullivasal	Idukki			3
2	*Harrisons Malayalam Plantations (India) Limited, Kochi.*	*Lockhart*	*Idukki*	3		
		Panniar	*Idukki*		*3*	
		Achoor	*Wayanad*			*3*
		Chundale	Wayanad			3
3	Ram Bahadur Takur (Private) Limited, Kochi	Munjamullay	Idukki			3
		Nellikai	Idukki		3	
4	Assambrook Limited, Calcutta	Cherakkara	Wayand			3
5	A.V. Thomas Group Companies, Kochi	Amakal	Idukki			3
6	Manathavady Tribal Plantation Co-operative Limited, Wayanad	Priyadarsini	Wayand			3
7	Periya Peak Estates Private Limited, Wayanad	Periya Peak	Wayand			3
8	Kairali Tea Plantations Private Limited, Idukki	Kairali	Idukki			3
	Total			1	2	10

Source: Primary survey.

Other *five factories manufacture CTC tea and two factories orthodox tea. In* Wayanadu district, Achoor, Chundale, Priyadarsini, Cherakara and Periya Peak factories manufacture only CTC tea. But none of the visited factories manufacturing Green tea, Oolong tea, Brick tea and Instant tea[5]. Table 5.I.4

[5] See appendix 1 -Part II for details of Green tea,Oolont tea ,Brick teaand Instant tea

shows the different types of tea manufactured by the factories. The blending of tea is taking place in the blending division after the auction. Blending means mixing up of different types of tea from different gardens for getting the proper taste to supply.

Electricity, firewood, solid fuel,coal and agricultural waste are the main sources of energy used in factories.

5.1.7 Marketing methods followed by the companies

According to George (1980) ,(1982) there are two stages in tea marketing, primary and retail and the primary marketing channels are : 1) Direct export or forward contract , 2) Ex-garden sales, 3) the Auction system. The auction system is the most important one because it has got some advantages such as possibility of distribution of huge quantities, high competition and improved grading.

Companies follow different marketing methods for selling their products. A single company itself follows different methods to market tea. Companies that do not have their own factory to manufacture tea follow ex-garden sale. The following are the important methods of marketing.

(i) **Auction:** Auction is the most important marketing method followed by most of the tea companies. Manufactured tea will be sent to the auction centres for pricing and selling. Auction system facilitates distribution of huge quantities of the product in the shortest possible time, increased competition

among buyers and sellers and improved grading and packing. (London auction centre is the first one started in the world. Calcutta, Guawahati and Siliguri in North India and Cochin, Coonoor and Coimbatore in South India are the Indian auction centres.)

(ii) **Direct export or forward contract:** Through this method companies export tea directly to other countries without going through the procedure of auction. In direct export or forward contract only two parties are involved, one is the manufacturer and the other, the purchaser.

(iii) **Ex-garden Sale:** Ex-garden sale is mainly followed by the estates having no factory. If the estates do not have their own factory either they supply the leaves to the factory of their own company for manufacturing or they sell it to outside. Companies like Tata are manufacturing tea in factory of the nearest estates if the estate does not have a factory. For example Sevenmalai estate of Tata which does not have a factory, is supplying its leaves to Pullivasal or other near by factories for manufacturing.

(iv) **Packet tea:** Some of the companies have packet tea division either in the factory itself or in other places. They manufacture branded products in packet tea division and market in different brand names. Tata Tea Limited manufacture packet tea in the name of Kannan Devan, Agni etc.

Most of the visited companies follow auction and packet tea marketing method. Tata tea follows auction, direct export or forward contract, ex-garden ale and packet tea method of marketing. Companies such as HML,

RBT, Assambrook, AVT and Kairali follow auction and packet tea methods. Mananthavady Tribal Plantation Co-operative follows auction method and ex-garden sale. While Chandravanam company follows ex-garden sale and Peria peak follows only auction method. Table 5.I.5 shows the marketing methods followed by different companies and the same is represented diagrammatically in figure 5.I.2.

Table 5.I.5 Marketing methods of the companies

Sl. No.	Company	District	Marketing Methods			
			Auction	Direct Export or Forward contract	Ex-garden sales	Packet tea
1	Tata Tea Limited, Calcutta	Idukki	3	3	3	3
2	Harrisons Malayalam Plantations (India) Limited, Kochi.	Idukki and Wayanad	3			3
3	Ram Bahadur Thakur (Private) Limited, Kochi	Idukki	3			3
4	Assambrook, Calcutta	Wayanad	3			3
5	A.V. Thomas Group Companies, Kochi	Idukki	3			3
6	Mananthavady Tribal Plantation Co-operative Limited, Wayanad	Wayanad	3		3	
7	Periya Peak Estates Private Limited, Wayanad	Wayanad	3			
8	Chandravanam Estate Private Limited, Idukki	Idukki			3	
9	Kairali Tea Plantations Limited, Idukki	Idukki	3			3

Source: Primary survey.

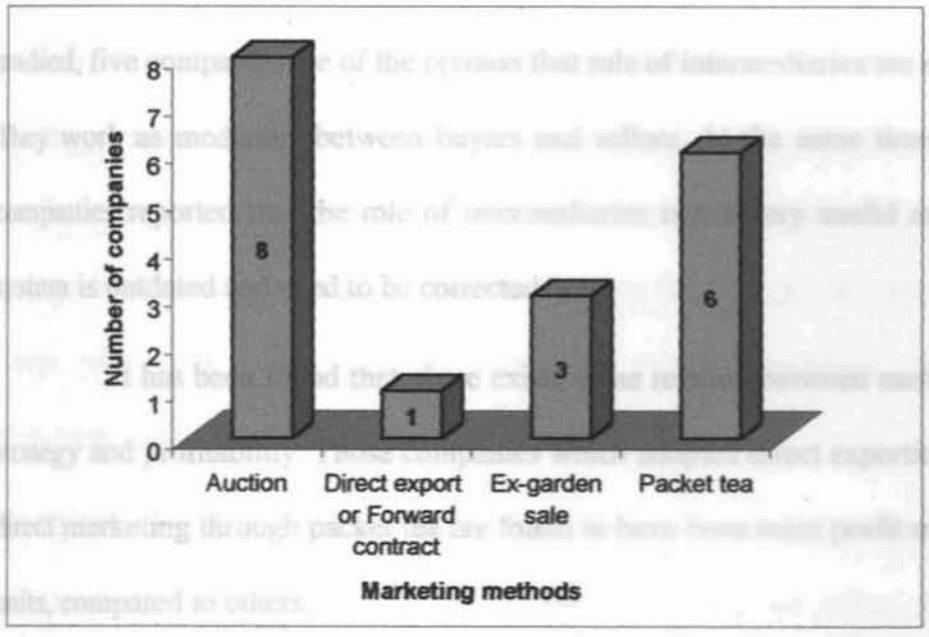

Figure 5.1.2. Marketing methods of the companies

Mananthavady Tribal Plantation Co-operative, Periya Peak and Chandravanam do not have packet teas. Tata tea company is marketing packet teas such as Kanan Devan and Agni. HML's packet teas are Mountain Mist, Harrison's Gold and Surya and AVT is marketing its packet teas as AVT Premium and AVT Raja. AVT has sizable share in packet tea market in Kerala.

5.1.7.1. Role of intermediaries

Intermediaries (or brokers) are mediators in auction. Through intermediaries marketing becomes little more easy and effective. But at the same time some of the companies are of the opinion that the system of using intermediaries in auction is outdated and the system did not have any

valuable contribution to the marketing of tea. Out of the nine companies studied, five companies are of the opinion that role of intermediaries are useful. They work as mediators between buyers and sellers. At the same time three companies reported that the role of intermediaries is not very useful and the system is outdated and need to be corrected.

It has been found that, there exists some relation between marketing strategy and profitability. Those companies which adopted direct exporting and direct marketing through packet tea are found to have been more profit making units, compared to others.

5.I.8 Depletion in the quality of tea over the last fifty years

Estate managers have reported different opinions regarding the depletion in the quality of tea over the last fifty years. Most of the estate managers reported that there is no change in the quality of tea over the last fifty years. Due to the introduction of mechanical harvesting productivity has improved but quality has not changed. According to two estate managers over the last 50 years the quality of tea has improved. But from the sample survey it is understood that due to poor maintenance of some estates the quality of tea has deteriorated.

5.I.9 Different types of employees in the estate and factory

Estate and factory have different types of employees. For the present study the employees are mainly categorised into five types.

(i) **Field workers**: Field workers do plucking, pruning (trimming a tree, shrub or bush by cutting away dead or over grown branches or stems), weeding, planting, replanting, fertilizers and pesticides spraying , head load working etc. In field workers category females are more than males because plucking is done mainly by females. (Plucking is considered as the main job in tea estates). Males who work in the field are mainly for pruning, weeding, spraying (fertilisers and pesticides etc.), planting and replanting.

(ii) **Field supervisors/officers**: Every estate has different field supervisors/ officers under whom field workers do their job. They are either directly appointed or promoted from field workers.

(iii) **Factory workers**: Factory workers are also coming under the same status of field workers. The difference is females are working in the field mainly and males are working in the factory.

(iv) **Factory supervisors/officers:** The factory supervisors/officers do the similar job of field supervisors/officers. They supervise the work in the factory.

(v) **Others**: Other workers in the estates are mainly balasevika, creche aya, tapal man (to collect and deliver letters of the estate office and employees) nurse and office staff.

5.1.10 Facilities provided by the companies to its employees

Tea companies are providing facilities such as housing, medical care, day care etc. to their employees. Since the plantations are very vast and

situated in remote rural areas provision of these facilities are very important and necessary.

(i) **Housing and other basic facilities:** Free housing facility is provided to all employees of Tata, HML, RBT, Assambrook, AVT, Mananthavady Tribal Plantation Co-operative, Periya peak and Chandravanam. Free water connection, drainage facility, toilet and in selected estates land for cultivation are also provided.

(ii) **Medical facility:** Medical facility is provided to all the employees of Tata, HML, RBT, Assambrook, AVT, Mananathavady Tribal Plantation Co-operative, Periya Peak and Chandravanam. Every estate of these companies has got dispensary in their estate premise itself and if the employees require better treatments they are either taken to the group hospitals or are provided medical expenditure for better treatment outside the estate.

(iii) **Education facility:** Primary education facility is provided in the estates either by the company or by the government in all plantations other than Chandravanam and Kairali. Most of the estates have only Tamil medium schools. Higher and technical education facility is not provided by any of the companies.

(iv) **Electricity:** Electricity facility is provided by Tata, HML, RBT, Assambrook, AVT, Periyapeak and Chandravanam. The companies provide only electricity connection and the electricity charge is paid by the employees. Some of the estates of RBT do not have electricity connection. Mananthavady

Tribal Plantation Co-operative and Kairali do not provide electricity connection to its employees.

(v) **Firewood:** Firewood is available in some estates on payment basis. In other estates the employees are allowed to collect it from the estate premise itself.

(vi) **Road:** Though the tea estates are situated in remote hilly areas, proper road facility is provided in all the estates.

(vii) **Play ground, club and reading room:** Play ground, club and reading room are provided as free in all the estates of Tata, HML, RBT, Assambrook, AVT, Mananthavady Tribal Plantation Co-operative, Periya peak and Chandravanam.

(viii) **Postal / telecommunication / banking:** Tapal man is appointed by the company to collect and deliver letters of the estate office and employees. In addition to this no other postal facility is provided within the estate. Banking and telecommunication facilities are not available within the estate for the employees. Telephone is available in the estate office only.

(ix) **Provident fund and family pension:** All permanent employees of the tea companies have provident fund and family pension.

(x) **Creche and balavady facility:** Creche (day care) facility is provided by the companies to their employees' children. Along with the day care facility, balavady (pre-school) facility is also provided in most of the estates. Table 5.I.6 shows the facilities provided to the employees by the companies.

Table 5.I.6 Facilities provided to the employees by the companies

Sl. No.	Company	FACILITIES								
		Housing and Other basic facilities	Medical	Edu-Cation *	Electri-city	Road	Play-ground, Club, Reading room	Postal (Tapal-man)	Provident fund	Day care (Creche)/ Balawadi facility
1	Tata Tea Limited, Calcutta	3	3	3	3	3	3	3	3	3
2	Harrisons Malayalam Plantations (India) Limited	3	3	3	3	3	3	3	3	3
3	Ram Bahadur Thakur (Private) Limited, Kochi	3	3	3	3**	3	3	3	3	3
4	Assambrook Limited, Calcutta	3	3	3	3**	3	3	3	3	3
5	A.V. Thomas Group Companies, Kochi	3	3	3	3	3	3	3	3	3
6	Mananthavady Tribal Plantation Co-operative Limited, Wayanad	3	3	3	-	3	3	3	3	3
7	Periya Peak Estate Private Limited, Wayanad	3	3	3	3	3	3	-	3	3
8	Chandravanam Estate Private Limited, Idukki	3	3	-	3**	3	3	-	3	3
9	Kairali Tea Plantations Private Limited, Idukki	-	-	-	-	3	-	-	-	-

* Either Government School or Company Estate School

** Some of the houses do not have electricity facility.

Source: Primary survey.

5.I.11 Subsidies and grants to the companies

Subsidies and grants are provided to all companies by centre and State Governments. Tea Board, India and National Bank for Agriculture and Rural Development (NABARD) give subsidies. Tea Board's stipend is given to each estate.

5.1.12 Problems of the tea companies

Many scholars such as George (1982), (1984) and Sen and George (1992) have made studies on the problems of tea industry in 1970's. They have indentified both developmental and financial problems. it is observed that the major causes of the crisis during that period were the cost escalation , declining or stagnant prices , falling domestic demand , structural changes in management system , unfavourable tax policy and inadequate support from the Government.

The tea industry was a flourishing one but now a days due to various reasons the tea companies are facing many problems. High cost of production and low price realisation are the major problems faced by the companies. Free import of tea from other countries also affects the profitability of the tea companies.

(i) **High cost of production and low price realisation:** Cost of production of the tea is increasing year by year but the price of tea is decreasing. When the price of the manufactured tea declines, it directly affects the price of the raw tea leaves also. According to the companies total cost of production of tea is higher than the auction price. Auction price (the price the producer actually gets) at present is approximately Rs. 51 to Rs. 52 per kg. Tea's manufacturing cost alone is Rs. 42 to Rs.45 per kg. and total cost (including transportation, intermediary expenses, selling costs etc.) is Rs. 60 to Rs. 65 per kg. Since the companies have to pay heavy taxes they are not able to sell the product with

reasonable margin. According to the companies 65 per cent of the total cost of production is accounted by labour.

One of the major problems faced by the companies is high wage rate. Though the employees complain that they did not get much wage increase, the company is finding it difficult to manage the wages due to decline of tea price. Compared to other states' plantation workers, wage rate in Kerala is high. In every three years, the salary is being revised and for the company a slight change in the wage rate will be a heavy burden because number of labour in tea plantations are very large.

(ii) **Labour problems/Union related problem:** Since tea plantations have large number of employees the companies are facing many problems related to labour and they are mainly caused by union pressures. When the workers have problems of insufficient salary or lapses in the facilties provided, they tend to make problems with the help of unions.

(iii) **Import of tea from other countries:** Cheaper tea is imported from other countries like Sri Lanka at a very low import duty. This results in unhealthy competition and often pushes price below cost of production. Free import policy of the Government has damaged the domestic plantations and their survival. According to the companies import can be permitted only by prescribing quality parameters and imposing duty to safeguard domestic tea industry. Import of cheaper tea for re-export either directly or mixing up with the Indian tea with the Indian brand name reduces the demand and price of

Indian tea in foreign markets. The disintegration of the former Soviet Union which accounted for more than half of the total exports of India caused serious problems for India's tea exports. It also created damaging effects on Kerala tea because Soviet Union used to be the major market for Kerala tea. Price variation in the market also plays a major role in the profitability of the plantations/companies.

(iv) **Electricity, coal/firewood:** The Factories require electricity, coal/ firewood etc. for manufacturing of tea. High price of electricity has pushed up manufacturing expenditure. Sufficient coal/ firewood also is not available in majority of estates.

(v) **Transportation problem:** Estates which are far from factory find very difficult to fetch the leaves to the factory. Some of the estates do not have factory within the estate so they have to carry the leaves from the plucking field to the factory. In the same manner to bring any item to the estate also becomes very difficult. Estates have transportation problem within the plantations. The companies face the same problem for transporting tea from factory to auction centres or sales division.

(vi) **Tax problems:** Free import of tea at present do not permit the companies to hike the price of tea. Due to this, the price and cost of the product will not be having much difference and in some cases cost will be more than the price. The present tax rates and import policy have negative impact on tea manufacturing companies.

5.I.13 Profitability of tea companies

All companies have reported that at present they are running at a loss. They are facing a loss of Rs. 14 to Rs. 20 per kg. tea approximately. Some of the companies like RBT is finding it very difficult to continue. They are not able to pay even the salary to the employees. Due to poor maintenance of estates and factories, quality of tea is deteriorating. According to the managers of the companies, the major reasons for loss are, high cost of production, low price realisation and free import of tea. Cost of production is the major factor which has contributed to the loss of the company. Wage rate and other costs are high compared to other states.

5.I.14 General observations about tea companies

Plucking or harvesting the tea leaves is the most important work in tea plantations. Adoption of mechanical harvesting (shearing) is the notable technological change in the plucking of tea leaves. Mechanical harvesting is being carried out on a large scale in many tea plantations. Companies claim that these technological changes improve productivity, provide better quality through facilitating plucking on time and reducing the number of labour. The major criticisms against the new harvesting method is that it increases the coarse leaf content and thereby decreases the quality of manufactured tea. (but it is observed that in factories sorting of tea leaves to remove coarse leaf content is taking place). From the survey it is observed that almost all estates have overaged plants. Replantation which is necessary for better productivity is

not properly taking place in any of the estates. It is observed that in factories outmoded machines installed years ago are still used.

Most of the companies highlighted the problem of increase in cost of production compared to the price of tea. The intervention of strong labour unions compel the companies to raise wage rate. Other production costs such as cost for fertilizer, chemicals and other inputs, coal and electricity charges etc. are also high. All these make cost of production in Kerala higher compared with tea plantations in other states.

Subsidies and grants are provided to tea plantations by the Tea Board, India and the NABARD. The Government gives subsidies to plantations through UPASI. UPASI mainly helps large plantations and so small growers often do not get these benefits. Because of this at present Tea Board gives some special helps to small plantations. Even then the companies are demanding more subsidies for replanting, new clearing, in-filling and for fertilizers.

Companies demand Government's help to develop more infrastructural facilities in tea plantations. Since the estates are being located in remote areas it requires better network of roads, telecommunication and other related facilities. Today all these are the liabilities of the companies and they are not able to sustain in the present context. Panchayats must provide funds for roads, balawadies etc.

Other major problems faced by the companies are high taxes and duties, price fluctuation, marketing and intermediary (high commission rate)

problems. Most of the companies highlighted the need for tax concession. They also suggested that free import policy must be changed. Unrestricted import of cheap quality tea from other countries is a major problem faced by the companies. Tea from other countries such as Sri Lanka are available at lower price than the domestic tea. These imported low quality teas reduce price of good quality domestic tea. Import can be permitted if quality parameters are met with and the duty should be imposed to safeguard the domestic tea industry.

Part – II

SOCIO-ECONOMIC PROFILE AND PROBLEMS OF THE TEA PLANTATION EMPLOYEES

In order to collect primary data 900 employees have been interviewed with the help of a survey schedule. Out of the 900 employees, 631 are field employees, 148 are factory employees and 121 are in others category. Table 5.II.1 shows the distribution of the employees interviewed for primary data collection.

Table 5.II.1 The distribution of the employees interviewed

Categories of employees identified for Primary Data Collection			
Category		Number	
Field employees	Field supervisors/officers	52	631
	Field workers	579	
Factory employees	Factory supervisors/officers	21	148
	Factory workers	127	
Others			121
GRAND TOTAL			900

Source: Primary survey.

It may be noted that 64 per cent of the total respondents are field workers and six per cent, field supervisors/officers, Factory workers account for 14 per cent and factory supervisors/officers, two per cent. The others category include balasevika, creche (day care) aya, tapalman, dispensary nurse, watchman, welfare officer and estate office workers.

An examination of the marital status shows that 89 per cent are married and the rest 11 per cent, unmarried. The average size of the family is five members. Details are as follows: Seventy nine per cent of the families have three to six members, 15 per cent of families have more than six members and six per cent of the families have less than three members respectively in their families.

5.II.1 Employment of women

Tea plantation industry is considered to be a labour intensive industry providing massive employment to rural people, particularly women. Out of the total respondents surveyed 53 per cent are males and 47 per cent, females. In Idukki district 53 per cent are males and 47 per cent, females and in Wayand district 51 per cent are males and 49 per cent, females. Table 5.II.2 shows gender - wise categorisation of the employees.

Table 5.II.2 Gender wise classification of employees

Sl.No	Gender	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	Male	369	53	107	51	476	53
2	Female	322	47	102	49	424	47
	Total	691	100	209	100	900	100

Source: Primary survey.

In order to study whether there is any difference in the proportion of male and female employment between the Southern district of Idukki and the Northern district of Wayanad, the t - test is applied. For applying the test the following hypotheses are formulated.

H_0: There is no significant difference in the proportion of employment by gender in the two districts.

H_1: There is a significant difference in the proportion of employment by gender in the two districts.

$$to = \frac{\left| P_1 - P_2 \right|}{\sqrt{Pq\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where , P_1 is the proportion of male employment in Idukki and P_2 is the proportion of male employment in Wayanad.

$$P = \frac{n_1 p_1 + n_2 p_2}{n_1 + n_2}$$

$q = 1 - p$

n_1 = Sample in Idukki

n_2 = Sample in Wayanad.

Here the calculated value of t is 0.513 and the table value at 0.05 level of significance is 1.96. Since the calculated value is less than the table value we accept the null hypothesis. Thus there is no significant difference in the proportion of male and female employment between the Southern district of Idukki and the Northern district of Wayanad.

5.II.2 Job, job status (gender wise) and wage rate

In tea plantations there are different type of jobs in the field and factory. Out of the sample respondents 64 per cent are field workers (33 per

cent male and 67 per cent female), six per cent, field supervisors/ officers, 14 per cent, factory workers, two per cent, factory supervisors/ officers, and 14 per cent, others (69 per cent male and 31 per cent female).

The main works of the field workers are plucking, planting, replanting, weeding, pruning, head load working, spraying (fertilisers and weedicides) etc. Among these plucking is mainly done by females and other works, by males. When the males do not have other works they also go for plucking. Field supervisors/officers supervise the field workers, mainly pluckers. Performance and productivity based incentives are given to the field workers.

Field workers do not require any technical education or training for the job. But in the case of factory work some of the employees require technical education/ training of the job.

Out of the 900 respondents 579 respondents are field workers, (64 per cent of the total respondents). Since plucking is the main field work which is done mainly by females, out of the 579 field workers, 386 are females (67 per cent of the total field workers). Six per cent of the total respondents are field supervisors/officers. Field supervising is done by male workers so all the respondents (52 respondents) are males. Fourteen per cent of the total respondents are factory workers, (127 respondents) and two per cent of the total respondents are factory supervisors/officers (21 respondents). Since majority of the factory workers are males, all respondents in the factory are

males. Fourteen per cent of the total respondents (121 respondents), come under others catagory which include balasevika, creche aya, tapalman, dispensary nurse, watchman, welfare officer and estate office workers. In this 69 per cent are males (83 respondents) and 31 per cent are females (38 respondents).

5.II. 3 Wage rate

Wage rate is fixed for the plantation employees according to the Plantation Labour Act 1951 and in every three years it is revised. Male and female workers of plantations get equal wage rate on the basis of Equal Remuneration Act introduced in 1975.

At present field workers' wage rate is Rs.77.26 and in the case of pluckers the standard output to get the Rs. 77.26 is 16 kg leaf. Adolescent workers are given a wage rate of Rs. 59.72. Standard output for ordinary plucking and shearing is the same. In addition to this they get productivity incentives, (for first 10kg, 44 ps./kg., second 10kg, 47 ps./kg, and third 10kg, 50 ps./kg). Average plucking of leaves by the employees vary from time to time. During the peak period the quantity of plucked leaves go up to 100kg. But in ordinary period it varies from 35 to 40 kg. and during low cropping period it is 25 kg approximately. Adoption of shearing increased productivity. According to the employees one day's sheering is equal to two days plucking.

Factory worker's wage rate is Rs. 79.26 for 8 hours and double charge is paid for over time work. Permanent employees have Provident Fund.

(PF) and Bonus. All the employees get salary monthly. Table 5.II.3 shows salary and wage rate of tea plantation employees.

Table 5.II.3. Salary and Wage rate of Tea Plantation Employees

I	Staff	Category of employees	Salary/Wage rate
	a.	Estate Office Section Officer Accountant assistant Junior assistant	Basic Rs.2900-Rs.5050 plus + quarterly D.A
	b.	Field Officer Assistant field officer	Rs. 1730-25-2030-28-2310 E.B (Efficiency Bar) – 30 Plus quarterly DA
	c.	Factory officer Assistant factory officer	Rs. 1730 – Rs. 2310 plus quarterly D.A
II	d. **Worker**	Day care (Creche) Aya Dispensary Nurse	Basic Rs. 1030-Rs.1300 plus quarterly D.A
	a.	Field supervisor	Basic Rs. 1076 – 1448 plus quarterly D.A
	b.	Factory supervisor	
	c.	Field workers	77.26
	d.	Pluckers	77.26 plus productivity incentive (Adolescents – Rs. 59.72 plus productivity incentive)
	e.	Factory workers	79.26 + OT (Over time)
	f.	Tapalman	Rs. 1059-Rs. 1431
	g.	Security	
	h.	Balasevika	
	i.	Peon	
	j.	Mason	
	k.	Plumber	

Source: Primary survey.

5.II.4 Age distribution

Of the 900 sample respondents in different categories, no respondent is below 15 years of age. Child labour was not found in any of the estates. One per cent of the total respondents fall within the age group of 15 and 20 years, 26 per cent, between 21 and 30 years, 31 per cent, between 31 and 40 years,

26 per cent, between 41 and 50 years and 16 per cent, above 50 years. From this it is understood that adolescent labour is not encouraged by the companies. Table 5.II.4 shows age - wise categorisation of the employees. It may be noted that 57 per cent of the workers fall within the age - group of 31 and 50 years. Only 16 per cent of the workers are having age greater than 50 years.

Table 5.II.4 Age - wise classification of employees

Sl. No	Age Group	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	10-14	-	-	-	-	-	-
2	15-20	5	1	3	1	8	1
3	21-30	159	23	73	35	232	26
4	31-40	203	29	75	36	278	31
5	41-50	201	29	37	18	238	26
6	51 and above	123	18	21	10	144	16
	Total	691	100	209	100	900	100

Source: Primary survey.

In order to examine whether there is any association between the age of the employees and the two areas (Idukki and Wayanad) the χ^2- test is applied. For this the following hypotheses are formulated.

H_0 : There is no association between age and the employment levels in the two areas.

H_1 : There is association between age and the employment levels in the two areas.

Table 5.II.5 gives the number of employees by age groups in Idukki and wayanad.

Table 5:II:5 Number of employees by age groups in Idukki and Wayanad.

Age Group	Idukki	Wayanad	Total
Age upto 30 years	64	76	240
Age above 30 years	527	133	660
Total	691	209	900

Source: Primary survey.

χ^2 is a non- parametric test, which is given by,

$$\chi^2 = \Sigma \left\{ \frac{(O - E)^2}{E} \right\}$$

Where,

O = observed frequencies

E = expected frequencies

The expected frequency (E) is given by,

$$E = \frac{RT \times CT}{N}$$

Where,

RT = the row total

CT = the column total

N = total number of observations.

The calculated value of χ^2 has to be compared with the table value of χ^2 for given degrees of freedom at a certain specified level of significance. The table value of χ^2 gives how χ^2 is distributed when chance alone is operative in bringing about differences between operation and observation.

The degree of freedom (v) is given by,

$$v = n - k$$

Where,

n – number of independent observations.

k = number of parameters required to compute the statistic.

In a 2 X 2 table the degrees of freedom (v) is given by,

$$v = (r - 1)(c - 1)$$

Where,

r = number of rows

c = number of columns.

Table 5.II.6 reports the result of χ^2- test between the age of the employees and the two areas (Idukki and Wayanad)

Table 5.II.6 Association between the age and employment levels in the two areas (Idukki and Wayanad).

χ^2	Degree of freedom	Level of significance	Table value
13.313	(2-1)(2-1) =1	0.05	3.84

Source : Estimated

The calculated value obtained is 13.313 and table value at 1 degree of freedom and 0.05 level of significance is 3.84. Since the calculated value is higher than the table value, the null hypothesis is rejected.

5.II.5 Level of education

From the sample survey it is clear that 13 per cent of the workers are illiterate. Sixteen per cent of the respondents are coming under the category

having 1st to 5th standard education, 48 per cent, having 6th to 10th standard education, 23 per cent, 11th and above standard education and 13 per cent, no education at all. Table 5.II.7 shows the level of education of the employees. The education-wise categorisation is diagrammatically represented in figure 5.II.1.

Table 5.II.7 Level of education of the employees

Sl. No	Education	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	1st-5th Standard	97	14	51	24	148	16
2	6th-10th Standard	337	49	97	46	434	48
3	11th Standard and above	183	26	22	11	205	23
4	No education	74	11	39	19	113	13
	Total	691	100	209	100	900	100

Source : Primary survey.

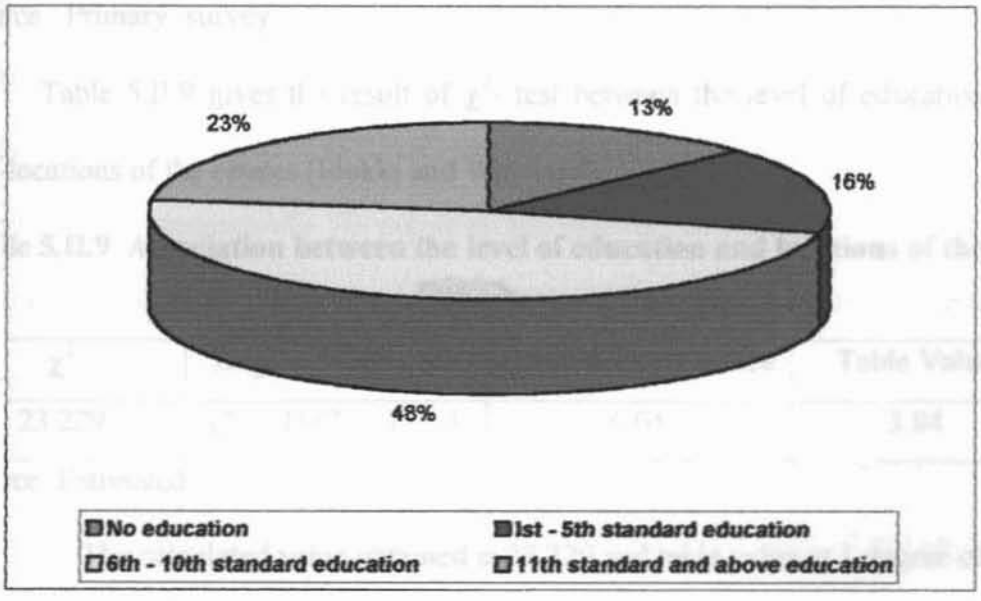

Figure 5.II.1 Education wise classification of employees

An attempt is made to find if there is any association between the level of education and the area of locations of the estates (Idukki and Wayanad). For this the X^2 test is applied. For applying the test, the following hypotheses are formulated.

H_0: There is no association between the level of education and locations.

H_1: There is association between the level of education and locations.

Table 5.II.8 provides details of level of education in Idukki and Wayanad

Table 5.II.8 Level of education in Idukki and Wayanad

Education	Idukki	Wayanad	Total
Education upto 10^{th} standard	508	187	695
Education above 10^{th} standard	183	22	205
Total	691	209	900

Source : Primary survey

Table 5.II.9 gives the result of χ^2- test between the level of education and locations of the estates (Idukki and Wayanad).

Table 5.II.9 Association between the level of education and locations of the estates.

χ^2	Degree of freedom	Level of significance	Table Value
23.229	(2 - 1)(2 - 1) = 1	0.05	3.84

Source: Estimated.

The calculated value obtained is 23.229 and table value at 1 degree of freedom and 0.05 level of significance is 3.84. The calculated value is greater than the table value. Therefore the null hypothesis is rejected. There is

association between the level of education of the employees in the two areas (Idukki and Wayanad). It may be noted that in both the districts majority of the employees have education below 10^{th} standard. However, Idukki has relatively higher education level than Wayanad.

5.II.6 Migration of labour

Labour is considered to be the least mobile factor of production. It is interesting to note that the tea plantations in Kerala have attracted labour from outside and within Kerala. This indicates that during the earlier periods, tea plantations had been a highly profitable venture and the labourers got a relatively better wage on a sustainable manner, compared to other activities.

Out of the respondents from Idukki district 79 per cent are from Tamil Nadu. They are mainly field workers. Majority of the office workers are from Kerala itself. In the case of Wayanadu district, majority of the workers are from Kerala and a very few are from Tamil Nadu. Though they are from Tamil Nadu, almost all are settled in Kerala very long ago. Of the respondents from Tamil Nadu approximately 90 per cent are staying more than 21 years in Kerala, and most of them are born in Kerala. Parents of most of these respondents were also working in the plantations.

From the sample it is revealed that 3 per cent of the respondents are settled in Kerala for 1 to 10 years, 12 per cent, for 11 to 20 years,30 per cent, between 21 and 30 years, 28 per cent, between 31 and 40 years, 21 per cent, for 41 to 50 years and only 6 per cent, for more than 50 years. Table 5.II.10

gives details about the year of settlement of the employees in tea plantations of Kerala.

Table 5.II.10 Year of settlement of the employees in tea plantations of Kerala

Sl. No	Years of settlement	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	1-10 years	21	3	6	3	27	3
2	11-20 years	84	12	27	13	111	12
3	21-30 years	221	32	48	23	269	30
4	31-40 years	179	26	74	35	253	28
5	41-50 years	147	21	41	20	188	21
6	51 and above	39	6	13	6	52	6
	Total	691	100	209	100	900	100

Source: Primary survey.

5.II.7 Employment of Scheduled Caste/Scheduled Tribe

As per this study 53 per cent of the workers in tea plantations belong to either Scheduled Caste or Scheduled Tribe category. Twenty five per cent of the respondents are Scheduled Castes (229 respondents), which include Parayan (154), Pulayan (31) and Sambava (44). Twenty eight per cent of the respondents are Scheduled Tribes (252 respondents), which include Vannar (38), Pallan (134), Adiyar(19), Kuruman(11),Valluvan(9),Paniyan (41).

5.II.8 Facilities available to the employees

Raman (1986), Nair (1989) and Sarkar (1984) made studies on socio – economic aspects of the employees of tea plantation industry in various areas. Both of them are of the opinion that during the early period the standard of

living of the employees was very poor. After the introduction of Plantation Labour Act 1951 the situations improved, but still some problems are existing and the employees are not fully satisfied.

The tea plantation employees are getting almost all the necessary facilities such as housing, medical care, day care for children etc. Since most of the employees are from distant places and plantations are situated in remote areas these facilities are essential.

(i) **House:** All the major companies provide company quarter (worker's lane) to their employees. They are situated in the plantations itself, so that the employees can reach their workplace without walking long distance. Even after having houses in the plantation itself some of the employees have to walk more than five kilometers to reach their work place. The houses are provided generally with the following facilities (1) living room (2) kitchen (3) varandah (4) latrine.

Out of the total respondents, 91 per cent are staying in Company quarters, 6 per cent, in own houses, 2 per cent, in rented houses and only one per cent, in relative's houses. *Table 5.II.11 shows the ownership of the house* of the employees and it is diagramatically represented in figure 5.II.2.

Most of the employees are of the opinion that the houses provided by the company is better than the houses they or their relatives have at their native place. So the employees are not preferring to have their own houses.

Table 5.II.11 Ownership of house

Sl. No	Ownership of house	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	Company Quarter	629	91	189	90	818	91
2	Own house	39	6	14	7	53	6
3	Rented house	16	2	4	2	20	2
4	Relative's house	7	1	2	1	9	1
	Total	691	100	209	100	900	100

Source: Primary survey.

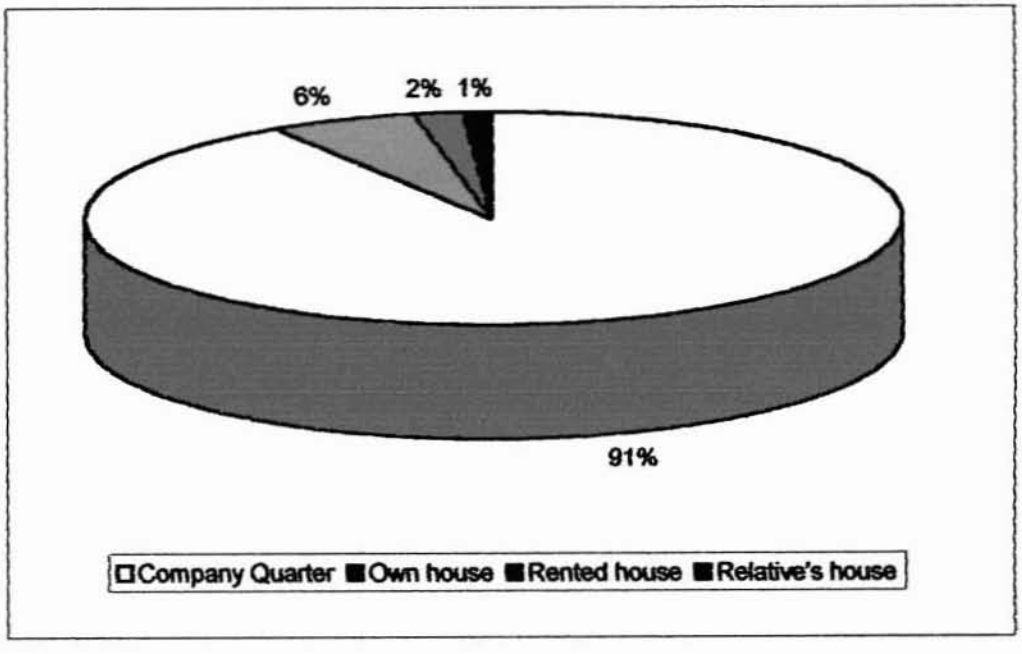

Figure 5.II.2 Ownership of house of the employees

Cattle keeping and grazing facilities are provided in some of the estates. Facilities for free collection of firewood is provided in some of the

estates and some companies are providing firewood in the estates with subsidised price.

(ii) **Land:** Additional land is not provided to the employees by the companies. A few estates have provided kitchen garden to their employees. This kitchen garden is for growing vegetables. Larger areas are given for raising paddy, but the employees do not get sufficient time to look after the garden. Since the houses are built in a lane, possibility of having land for cultivation also is very limited.

(iii) **Drinking water:** Arrangements are made for providing and maintaining sufficient supply of drinking water to all employees living in company quarters. Ninety per cent of the employees get drinking water through pipe connection provided by the company. So drinking water is available to them in their quarters itself. Only a few employees had their own wells or public wells. None of the employees have any problem regarding drinking water. Since the estates are situated in hilly areas pure drinking water is available to them.

(iv) **Source of light**: Electricity connection is provided by the companies to the employees in the quarters. The connection is provided along with meter so that the employees can pay the bill accordingly. Company does not provide electricity expenditure or free electricity to their employees. Eighty four per cent of the respondents had electricity as source of light and the rest had oil lamb as source of light. In a few companies all estates do not have electricity

connection in the housing lane. So the employees are finding it very difficult to manage without electricity.

(v) **Sanitation:** Proper sanitation facility is provided to the employees. All the quarters have latrine facility.

(vi) **Protective clothing:** Blankets, umbrellas or rain coats are provided to the employees for protection from rain or cold. Though protective clothes are provided by the company, at present due to financial problems many of them are not providing it in proper time.

(vii) **Medical care:** Medical facility is provided by the companies to the employees and their families. All major companies have dispensaries within the estates. Besides this major companies have group hospitals also. Companies who do not have group hospitals reimburse the treatment charges to the employees. So the employees do not get medical allowances and they get only medical care from the companies.

(viii) **Education:** Primary education facility is provided to the employees' children either by the company itself or through Government. But some of the estates do not have education facility. In these places employees find it very difficult to educate their children. Since majority of employees are from Tamil Nadu most of the schools are Tamil medium schools. So the employees other than Tamilians find it difficult to educate their children and are forced to send their children to Tamil medium schools. Free mid-day meals scheme has been

introduced in most of the schools. But some of the estates have not provided even primary education facilities for the children of their employees.

(ix) **Recreation facilities:** Employees are provided with recreation centers (labour club), in most of the estates, with provisions for indoor games for all workers. Where adequate open space is available, play grounds with necessary sport equipment for outdoor games are also provided. In major companies like Tata, inter estate competition are organized for different games namely, food ball, cricket etc.

Reading room also is provided in major estates. Employees can go to the reading room during recreation time. This facility is not provided by all companies. Only a few estates have provided reading room facility and many of the reading rooms do not have sufficient books for reading.

(x) **Creche:** Creches are provided in every plantation for the employees' children below the age of six years. The creches have adequate space, clean and good sanitary conditions. One or two trained women are placed in charge of the creche and they are known as creche ayas. Free food and milk are supplied to the children. Balavadies are also functioning along with the creches in most of the estates. So children above three years can sit in the balawady too.

(xi) **Conveyance facility:** Proper roads are provided in all the estates, and employees do not have any problem regarding the road facility provided to them. But what they find difficult is the distance between the living place and

the nearby town. Though they have good road facility, conveyance is a major problem in the estates which are far from towns.

(xii) Communication: Tapal man is available to collect and deliver letters from estate offices. No telecommunication facility is provided within the estate for the employees. If they want to make telecommunication they have to depend on public booth for the same. Banking facility within the estate is not available to the employees.

5.II.9 Service benefits available to the employees

Tea plantation employees are availing benefits such as leave with wages, festival holidays, maternity benefit for women workers, provident fund and family pension.

Leave with wages is granted to the employees at the rate of one day for every twenty days of work, casual leave upto thirteen days and sick leave for fourteen days in a year at the rate of two third of the average daily earning.

Maternity leave with benefits is granted to the women workers. Every woman worker is entitled to obtain maternity allowance for a period of upto six weeks immediately preceding the expected date of delivery and for a period of six weeks immediately following the date of delivery. The benefit is available at the average rate of wages earned during a period of three months immediately prior to the availing of the maternity leave. Women also have the provision for leave with wages for a period of six weeks in case of miscarriage.

Workers have the benefit of provident fund. The employee and employer have to contribute to the provident fund. Family pension is paid to the permanent employees. Estate employees are getting national and festival holidays with full wages.

5.II.10 Assets other than household

From the sample survey, it is understood that only a few respondents have assets other than household and most of them have assets worth between Rs. 10,000/- and Rs. 50,000/-. Of the respondents 20 per cent have assets other than household or company quarter and out of this 86 per cent have only land. They have purchased it mainly for the purpose of building houses. Some of them got it as inherited property. Though they have the land, almost all employees are finding it difficult to build a house in the land due to insufficient money for the same. A few of the employees have cultivation in their land and they approximately earn Rs. 1,000 to 10,000/- per annum. More than 50 per cent of the employees have plan to purchase land or house in their native place in the near future.

5.II.11 Income and expenditure pattern of the plantation employees

Salary is the main income of the employees. Almost all employees depend on salary and they do not have much income from other sources. More than 75 per cent of the employees depend only on plantation job for their income. In most of the families, more than one person earn for the family. On an average Rs. 2,000 to 3,000/- per month is the earning of an employee.

Field workers get productivity incentive in addition to the basic salary. If more than one member is working in the family approximate earning is more than Rs. 4,000/- per month. Generally, an average of two to three members in a family is working in the plantation.

Since the employees are occupied fully in the plantation job they do not get sufficient time to do additional works. Only a few employees especially ladies do sewing in addition to their job. Some of the employees' children are not occupied in the plantation job and they have other occupations like auto driving, painting, store keeping etc. Since the plantations are situated far from towns, other job opportunities are limited. Only 21 per cent of the respondents had income from other assets. Among them, 80 per cent have less than Rs.1,000/- per month.

Main expenditure of the employees is on food and 40 to 50 per cent of their salary is spent for the same. Since the cost of food items are very high 80 per cent of the respondents could not meet their other requirements effectively. When they compare with the past, prices of the items have doubled and salary has not increased proportionately.

Respondents do not spend much on clothing. Eighty per cent of the families spent less than Rs. 4,000/- per annum for clothing. Since they work in the field everyday and do not have much outing, their expenditure on clothing becomes very limited.

Since company has provided quarters with adequate facilities spending on household durables also is very limited. Eighty per cent of the respondents spend less than Rs. 2,000/- per annum for household durables. Only 20 per cent have to spend above 2000/- per annum.

Though company provides medical facility to the employees, 40 per cent of the respondents have additional medical expenditure.

Since the employees get only primary education facility for their children within the plantations, some of them are forced to send their children to other schools for good and higher education. Most of the estates have only Tamil medium schools so some of the employees find it difficult to educate their children in the estate premise itself. In order to send their children outside for education, they have to spend additional money for the same including accommodation. Technical education is also not available in the estates and to get technical education employees send their children, either to their native places or to other places where that facility is available. Of the total respondents 46 per cent have expenditure on education and 54 per cent do not incur expenditure on education. Out of the employees who spend on education 63 per cent spend more than Rs. 3000/- per annum and 37 per cent spend, less than Rs. 3000/- per annum.

Since majority of the employees stay in the company quarters they do not have any additional expenditure on house rent and house repairing. Employees who do not have housing facility provided by the company have

expenditure on house rent and house repairing. Only less than 5 per cent of the respondents have expenditure in this context.

One of the major areas where the employees spend a lot is festivals/ rituals. During festival time, many of the employees spend so much money to celebrate and the main occasions for the celebrations are Diwali, Christmas, Pongal etc. Thirty four per cent of the respondents do not incur any additional expenditures for festival/ rituals, but 43 per cent spend upto Rs. 1500/- and 23 per cent spend more than Rs. 1500/- per annum.

Other main expenditures are on electricity, kerosene, firewood, visit to other places like native place etc. Electricity bill is paid by the employees. Other unavoidable expenditures are expenditure on pilgrimage, visit to the city for major purchases etc.

5.II.12 Saving and indebtedness

Majority of the employees are finding it extremely difficult to save money. Most of them are some how managing their expenditure with the income without any saving. But in this situation also 50 per cent of the respondents have some savings. Out of the respondents who have savings 92 per cent save monthly and 8 per cent save yearly. Since the employees get salary on monthly basis they find it easy to save monthly rather than weekly or yearly.

Employees have different purposes for saving. But majority of the employees save for the education and marriage of their children. Twenty six

per cent of the respondents save for their future. Some of them save for more than one purpose. More than 50 per cent of the employees have post office savings and some of them save in banks, chit fund, co-operative and Life Insurance Corporation (LIC). Some of the employees were lending money to their friends and relatives on interest. A few of the employees are saving by depositing in more than one place.

Though 50 per cent of the respondents have savings, 56 per cent of the total respondents have borrowings. This means that some of the respondents who save also borrow to meet contingencies. The main reasons for borrowing are education and marriage of their children. Some of the employees had to borrow for medical expenditure also.

Among the respondents who borrow, 43 per cent borrow from friends and relatives. Since the employees find difficult to borrow money from proper sources like banks, co-operatives etc. they are forced to borrow from either friends and relatives or from private money lenders with very high interest rate. More than 40 per cent of the respondents have borrowed above Rs. 5000/- in which 12 per cent of the respondents have borrowed above Rs. 25000/-. Sixty eight per cent of the total respondents who borrowed make repayment on monthly basis. Since they get monthly salary they find it easy to make the payment monthly. But 23 per cent of the respondents are able to pay only yearly.

5.II.13 Source of information

Since the employees are not highly educated the reading habit is very low. After the work in the plantations and work at home the employees do not get sufficient time for reading. Radio is the source of information for 58 per cent of the respondents, 56 per cent have television as the source of information and only 16 per cent have newspaper and 21 per cent have magazines as source of information. Eleven per cent of the employees do not depend on any of the above mentioned sources for information. Some of the respondents have more than one source of information. Table 5.II.12 shows the source of information of the employees. Figure 5.II.3 explains the source of information of the employees diagrammatically.

Table 5.II.12 Source of information of the employees

Sl. No	Source of information	Idukki		Wayanad		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
1	Newspaper	117	17	24	11	141	16
2	Magazine	142	21	49	23	191	21
3	Radio	402	58	116	56	518	58
4	Television	409	59	94	45	503	56
5	Other sources	63	9	33	16	96	11
	Total Respondents	691		209		900	

Note: Some of the respondents have more than one source of information, so the total number of people using information sources is more than the total number of respondents.

Source: Primary survey.

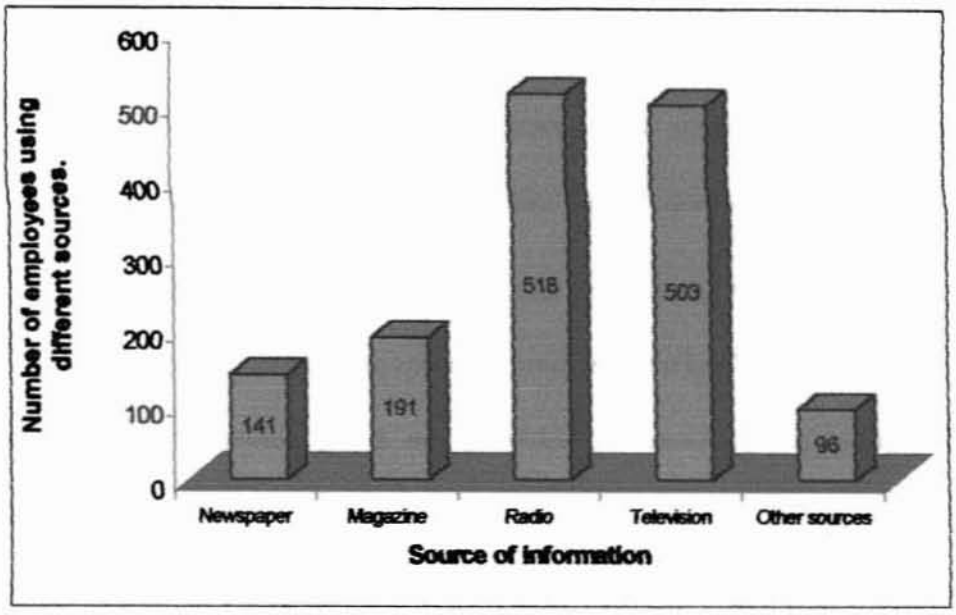

Figure 5.II.3 Source of information of the employees

5.II.14 Mobility of the employees

From the sample survey it is revealed that 84 per cent of the employees have visited other places last year in which 72 per cent of them have visited their native place. Since the employees are mainly from Tamil Nadu, they visit their native place at least once in a year to meet the dear and near ones. Most of the employees have to spend a lot of money to visit their native place. Some of the employees visit their relatives, holy places and other places. Some of the respondents are not able to visit other places due to poor financial conditions. They are not able to meet the expenses for the same. Since the employees have a monotonous life in the estate they are extremely happy to visit other places especially their native place.

5.II.15 Problems faced by the employees

Tea plantation employees are facing some specific problems even though they are provided with a lot of facilities by the companies.

Though houses are provided to the employees, facilities inside are very limited. They have only one room, varandha and a kitchen in the provided house. Electricity connection is not provided in some of the estates. The nonavailability of firewood is a problem for many of the employees. After working hours the employees will have to go very far for collecting firewood. Besides this some companies do not permit the employees to collect firewood from the estate premises.

The employees who are staying in estates, which are far from towns, do not have proper shopping facility. So to purchase necessary items employees have to go out of the estate and it is expensive and time consuming.

Some employees find it difficult to educate their children because convenient education facility is not available in some company estates.

Since the plantations are very vast and situated in remote areas conveyance is a major problem faced by them. Though good roads are provided in all estates bus services, auto and taxi facilities are very limited. Lack of proper communication facility is another problem faced by the employees. According to the employees life in tea plantations is monotonous and some of them reported that they have no opportunity to mingle with other

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people in different walks of life. Job opportunities other than plantation work are also very limited.

Employees, especially women in the field work, are facing some specific problems such as lack of resting sheds, toilet and drinking water facility. Since the plantations are very vast they have to walk long distance to reach the work place.

From the sample survey it is understood that some of the companies are not paying salary, provident fund and bonus properly. Employees get only a weekly amount to buy necessary food items.

According to the sample survey 19 per cent of the total respondents face physical problems due to the job in the estate or factory. Most of them are facing problems due to adverse climatic conditions and they are unable to adjust with the same. Other major problems faced by the employees are attacks from snakes and leeches, shoulder pain due to shearing, and the problem of dust in the factory.

5.11.16 General observations about the plantation employees

The life and job patterns of the employees in plantations are very much different from the life of employees in other places. They are living in a different world altogether without having any connection with other people and have no opportunity to mingle with other people working and living in different walks of life. Due to this some of the employees reported that they have no opportunity to get exposed and have an isolated life. Many of the

employees feel that though they have permanent job with all basic facilities provided, they do not find much improvement in their life standard. Most of the employees are not in favour of employing their children for the plantation work.

Though houses are provided, inside facilities are very limited. The employees have only one room, varandha and kitchen in the quarter. Other major problems the employees facing are lack of canteen facility, inadequate bus and auto services and shopping facility within the plantations. Communication facility and good reading room may be provided in all the estates.

Adverse climatic condition is a problem for many of the employees. Some of them are finding it difficult to adjust with the same. Field workers especially women are facing problems such as lack of resting sheds, toilet and drinking water facilities in the plantations.

Adequate education facility is not available in plantations. In many estates the employees are unable to educate their children properly by giving convenient upper primary, high school and higher education facilities. Due to insufficient income to families some adolescents are also forced to work in the field to support their families. To a certain extent this will hinter their education and development opportunities.

Most of the employees coming under different category such as field workers, field supervisors/officers, factory workers, factory supervisors/

officers and others, consider wage increase as a must to improve occupational and sociological conditions. All most all the employees are meeting their day to day expenditures only with the salary and they are not able to save for future. They also suggest to increase the salary and overtime amount (But in reality compared to other states, plantation workers salary in Kerala is high. Except one or two plantation companies, who are facing crisis and loss, workers are getting their salary according to the Plantation Act (1951) regularly).

Almost all the plantation companies are now facing financial problems due to high cost of production, low price realisation, free import and high tax rate. RBT is now facing financial problems very seriously and so its estate workers do not get salary and not paying provident fund properly. They get a weekly amount only for buying necessary items. These estate employees are not satisfied with the plantation work.

Tea plantations have not shown much improvement in the quality and productivity. The major reasons are poor maintenance of plantations, use of outmoded machineries, over aged plants, improper execution of different steps of manufacturing such as withering and fermentation.

Regarding the occupational and sociological conditions in the tea plantations, 49 per cent of the employees do not expect any change in the present situations prevailing. Only 19 per cent expect better occupational and sociological conditions, but 32 per cent foresee that the occupational and sociological conditions in the near future will be worse from the present situation.

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Chapter VI

SUMMARY OF FINDINGS AND RECOMMENDATIONS

6.1 Major findings of the study

6.1.1 Historical aspects

Historically tea plantation industry played an important role in the colonial activities of the Western Countries. It has become one of the powerful commodities having commercial value. Indeed, the prime objective of colonisation was to cultivate tea. This was particularly so in the case of India under the colonial period of the British. In India tea plantations are concentrated in South India and North East India and these plantations were developed during the British period. After independence, the interest of the British went to African countries and the Indian plantations began to suffer. Until 1886 China had been the largest producer of tea in the World. Since then India has been the largest producer in the world. Tea plantation industry is a synthesis of agriculture and industry. Most of the small planters cannot afford a factory in their estates. Thus, tea plantation industry is subjected to large economies of scale. As a result, historically, tea plantation industry is relatively a big business.

6.1.2 Growth performance of Kerala tea

1. The performance of the Indian tea plantation industry is not impressive with an average annual percentage output growth of 2.43 per annum during the period 1950 to 2000. The estimated growth rates for Kerala,

Karnataka and Tamil Nadu, were 1.85, 3.48 and 3.41 per cent per annum respectively. Thus among the three states, Kerala stood third in growth performance.

2. An examination of the movement of the variables, area, output and yield showed a structural break around the year 1977. Therefore separate growth rates for the two periods – 1950 to 1977 (Period I) and 1977 to 2000 (Period II) were estimated, employing a kinked exponential model. The period-wise estimates show that there is a significant decline in the rate of growth of tea plantation industry during the second period compared to the first period. This trend is applicable to the estimates for the national level and for the state level, including Kerala. This may, perhaps, be due to the early impact of trade liberalisation which had influenced the already internationally integrated market of tea.

3. For understanding the factors behind the changes in growth rates, the output growth has been decomposed into area effect and yield effect. It is found that, at the national level, 66 per cent of the output growth is accounted by increase in productivity. It is interesting to note that the area effect is negative for Kerala. This shows that whatever output growth has been achieved by Kerala is primarily due to increase in the level of productivity. In the case of Karnataka and Tamil Nadu both yield effect and area effect contributed to the output growth. The period-wise estimates bring out the fact that Karnataka maintained its output growth during the first period by high growth rate in yield

while in the second period, they concentrated extensive cultivation. As against this, Tamil Nadu extended its area under tea during the first period while improving the productivity during the second period. As observed earlier, in the case of Kerala, yield effect was predominant during both the periods. Thus, each of the three neighbouring state has a unique pattern of growth. The least impressive performance has been that of Kerala. The point of emphasis becomes more explicit when one compares the absolute levels of yield in Kerala in 1950 and in 2000 with the neighbouring states. Kerala, which stood first in productivity compared to Tamil Nadu and Karnataka, with 679 kg. per hectare, in 1950, lost its position to second with an yield level of 1887 kg. per hectare compared to Karnataka (2596 kg. per hectare) and Tamil Nadu (1745 kg per hectare),in 2000. This trend has been observed in the context of a continuous decline in area under tea in Kerala. Thus, going by area the growth performance of Kerala is not commendable.

6.1.3 Findings from primary survey

In order to study the problems of tea plantation industry in Kerala, primary data were collected from selected units of the large tea companies. Usually a company has many estates. Information was collected both from managers and employees.

1. Two varieties of tea plants are found in estates, China tea and Assam tea. The estates under the study are not found to have been introducing new high yielding varieties and this tendency has adversely affected the

productivity. Productivity level is also affected owing to the over aged plants. On an average, the plants in estates under study, are more than 80 years of age. It may be noted that the productivity of tea begins to decline after 30 years of age. Replanting is required for rejuvenating productivity, but none of the estates are found to have been properly engaged in replanting. Thus, the estates are operating at sub-optimal level of productivity.

2. Tea plantation industry is labour intensive. Plucking or harvesting tea leaves is the most important work. In majority of the companies hand plucking is the normal method of harvesting. Quality of raw leaves is high when harvested by hand plucking. But in peak season, due to paucity of labour, most of the companies adopt mechanical harvesting. Hand held manual shears and hand held motorised shears are used for plucking of leaves. Normally, the plucking interval for hand plucking is 7 to 10 days and for shearing, 12 to 16 days. Plucking interval varies due to climatic conditions.

3. All the visited factories are producing only Black tea. There are two types of Black tea – Orthodox and CTC (crush, tear and curl) tea. Out of the thirteen estate factories studied only one factory manufacture Orthodox and CTC tea, ten factories manufacture CTC tea and two factories manufacture Orthodox tea.

4. The factories are established years ago and no technological improvement is effected. The factories are found to be reluctant in diversifying their product range and in venturing into direct marketing. One of the major

reasons for this is absence of professional management. Units that are professionally managed practice product diversification and direct marketing.

5. Primary marketing of tea is mainly done by auction. Seventy seven per cent of the total tea produced in Kerala is coming for auction. Most of the companies are marketing their product through auction. Other primary marketing methods are direct export or forward contract and Ex-garden sale. Besides this companies are also producing and marketing packet teas.

6. (a) The tea companies are facing a crisis. The major problem is high cost of production and low price realisation. The cost of production of tea per kg. is Rs.60/-. Sixty five per cent of the total cost of production is accounted for by labour. In Kerala labour unions are very strong and their influence is visible in the case of wage increase. At the same time auction price is decreasing and it is around Rs. 51 to Rs. 52 per kg. Many tea producers highlighted that they do not get the original price for their product.

(b) Free import of tea also causes problems both in the domestic and international markets. Import of low quality tea has resulted in slashing of price in the market. Cheaper tea has become available in the market and traders mix low quality tea with high quality ones. This reduces the price and demand of Indian tea. The disintegration of the former Soviet Union which accounted for more than half of the total exports of India caused serious problems in our tea exports and it has very much affected Kerala tea because Soviet Union used to be the major market for Kerala tea.

(c) The companies highlighted that the higher tax rate is a major problem for cost increase. According to the companies, tax concession from the part of Government is necessary. Restrictions on import and strict quality control measures will help the industry by reducing the import of cheap tea. They realize the fact that increasing productivity is required for improving the competitiveness. But huge capital investment is required for replantation and mechanization. Since the companies have been running at a loss quite for some time they are not in a position to make only capital investment. In this context, the companies are expecting subsidies for replantation, in-filling etc. Besides this, companies demand government's help to develop more infrastructural facilities in tea plantation areas. Expenditure on transportation and marketing is also high.

7. The companies have been providing basic facilities to the employees like housing, water supply, sanitation, health, education, etc. The managers are of opinion that it is difficult to provide such facilities in future in the context of declining profitability. Many companies are not in a position even to pay the Provident Fund to the employees.

8. Both female and male are employed in tea plantation industry. There is no significant difference in the proportion of male and female employment between the Southern district of Idukki and the Northern district of Wayanad.

9. The age distribution of employees shows that majority of employees are in the age group of above 30 years. The proportion of employees above the age of 30 in Idukki is much higher than that of Wayanad. There exists association between age and the employment levels in the two areas (Idukki and Wayanad).

10. Salary is the main income of the employees. More than 75 per cent of the employees depend only on plantation job for their income. Since plantations are located in remote rural areas opportunities for engaging in other economic activities are very limited. Recently, due to the severe financial problems some of the companies are not able to pay the salary in time and due to this the employees are finding it very difficult to meet their day to day expenditure.

11. In tea plantations the minimum wage rate is fixed according to the Plantation Labour Act 1951. According to this Act, the present wage rate for field workers (including pluckers) is Rs. 77.26 per day. Standard output for pluckers is 16 kg. per day. In addition to it pluckers get productivity incentives, (for first 10 kg. 44 ps./kg., Second 10 kg., 47 ps./kg. and third 10 kg., 50 ps./kg.). The wage rate for factory workers is Rs. 79.26 per day for eight hours. Factory workers are paid double charge for overtime work. Male and female workers are getting equal wage.

12. All employees are found to be not satisfied with the present wage rate, which is not sufficient to meet their living expenditure. In plantation

life they have to purchase all items from outside sources. Main expenditure of the employees is on food and 40 to 50 per cent of the salary is spent for the same. Almost 80 per cent of the respondents have the opinion that since the food items are very costly they are not able to meet other requirements in sufficient manner. Though employees get medical and education (primary education only) facility, many of the employees have additional expenditure for the same. Other unavoidable expenditures are on electricity, kerosene, firewood, and visit to other places like native place, holy places etc.

13. Fifty six per cent of the total respondents have borrowed money from outside sources. Since the employees find it difficult to borrow money from proper sources like banks co-operatives etc., they are borrowing either from friends and relatives or from private banks with very high interest rate.

14. The socio-economic conditions of employees in tea plantations are not satisfactory. Even though the provision for basic facilities such as housing, drinking water, sanitation, recreation and travelling are mandatory, in some of the tea plantations its implementation is not properly executed.

15. Ninety one per cent of the employees are living in company quarters. It is observed that the inside facilities of the quarters are very limited. They are one room quarter with varandha and kitchen.

16. All employees get medical facility either through company's own dispensary or hospital or by reimbursing the bill. Most of the estates have primary education facility either provided by the company or by the

Government. But higher education and technical education facilities are not available.

17. It has been found that there exists association between the level of education of the employees in the two areas (Idukki and Wayanad). It may be noted that in both the districts majority of the employees are having level of education below 10^{th} standard. However, the tea plantation employees in Idukki have relatively higher education than Wayanad.

18. According to the survey 19 per cent of the total respondents are having physical problems due to adverse climatic conditions. Though protective clothes are provided by the company, due to the financial problems many of them are not providing it in proper time. Field workers have to face attacks from snakes and leeches. Factory workers mainly face problems arising due to dust.

19. Since plantations are very vast and situated in remote areas conveyance is a major problem. Good roads are provided in all estates. But bus services, auto and taxi facilities are very limited and costly. Lack of communication facility is another problem. According to the employees, life in tea plantations is monotonous and some of them feel they have no opportunity to mingle with other people in different walks of life. Job opportunities other than plantation work are very limited.

20. Shopping facility is not available in the estate. So to purchase necessary items employees have to go out of the estate and it is costly and time consuming.

21. The workers are found to be not fully satisfied with their working conditions. The estate workers especially women are suffering from adverse working environment, such as long journey to work place, absence of resting places, latrine facilities, lack of drinking water, etc. Since the plantations are very vast they have to walk long distance to reach the work place.

22. Due to insufficient income in some of the families adolescents are forced to work in the field to support their families. For field work adolescent wage rate is Rs. 59.72 per day plus productivity incentive. To a certain extent this hinders their education.

6.2 Recommendations of the study

6.2.1 Analysis of growth performance shows that in Kerala growth in area is not commendable. But considering the importance of tea plantation industry and its contributions to the economy it is important to expand tea area by utilising the uncultivated fallow lands owned by tea companies which are suitable to cultivate tea. It is also important to promote the small growers by providing Government support to develop the area as well as productivity.

6.2.2 Productivity level of tea is affected by the existence of over aged plants. In order to increase the productivity level tea companies could take

proper measures for replantation of the over aged plants. Since tea industry is facing crisis and companies are not able to invest for replantation. So Governmental help is required for the same.

6.2.3 Most of the factories are using age old machineries. No technological improvements are taking place in this industry. It is very important to take proper measures by tea companies to introduce advanced technologies to improve quality of the manufactured tea. With this tea companies could make variety of products through research and development activities.

6.2.4 After the introduction of free import policy low quality tea from other countries are being imported and re-exported either directly or mixing up with the Indian tea with the Indian brand name. This reduces demand and price of Indian tea in foreign markets. Restrictions on import and implementation of strict quality control measures from the part of Government are required to reduce the import of cheap tea.

6.2.5 Since tea plantation industry is an agro-based industry it has to pay agricultural as well as industrial taxes which will increase the cost of production. Considering the situation of high cost of production and low price realisation faced by the industry Government could help the tea companies by reducing the tax burdon.

6.2.6 Tea companies are providing basic facilities to the employees according to the Plantation Labour Act 1951. But now most of the companies are facing crisis and find difficult to provide it properly. In this regard Government could help the companies to develop more infrastructural facilities

in plantation area. Facilities like roads, health services, drinking water supply, transportation etc. may be properly provided to the employees by Local Self Government Institutions.

6.2.7 In most of the estates primary education facility is either provided by the company or by the Government, but higher and technical education facilities are not available. In this regard it is very important to make more education facilities by the companies and Government to improve the quality of life.

6.2.8 Employees are facing problems due to climate, dust in factory etc. Here Government may properly supervise the execution of proper security and environment protective measures by the companies.

6.2.9 Since it is costly and time consuming to the employees to purchase necessary items by going out of the estate, if commodities are made available to the employees at subsidised rates inside the estate it will be very convenient to them.

6.2.10 Since most of the field workers in tea plantations are women companies could provide them necessary facilities such as resting sheds, latrines, drinking water etc. in the plucking areas.

6.3 Conclusion

The tea plantation industry in Kerala has been encouraged for its contribution to economic growth, employment and foreign exchange earning. Theoretically, the contribution of cash crops to output growth can be explained

in terms of three propositions: 1) improved factor utilisation, both in the short run and in the long run, 2) short run investible surplus meeting the necessary condition for maximum long run growth, and 3) through linkage effects of production and consumption. In the case of tea plantation industry in Kerala, efficient factor utilisation is found only in the short run. Inefficiency in long term factor utilisation is evident from the existence of vintage technology, absence of product diversification and non-existence of professional management. For attaining long run growth, capital investments out of short run surplus have to be taken place. But the tea plantations in Kerala seem to have failed to plough back the short run profits for capital investments. The contribution of tea to the economic growth in Kerala is remarkable in terms of its backward and forward linkages.

At the macro level the tea plantation industry has been facing adverse impacts of globalisation and trade liberalisation. The price has declined sharply and the industry is facing a crisis. If there is any solution to this problem that is to improve the competitiveness of the industry - competitiveness in production of raw leaf and in manufacturing of tea. Productivity in plantations has to be increased by new plantation, replantation, new varieties, scientific harvesting, mechanised pruning etc,. Productivity in manufacturing can be increased by improving quality, product diversification, technological advancement, etc. Companies have to adopt professional management system for making the units competitive. In the liberalised regime of world trade, paramount importance has to be given to the marketing of tea.

In this aspect Government has a very important role in developing a system for strict quality control. Of course certain government support in the form of tax concessions, export promotion etc. may be helpful for rejuvenating the tea plantation industry.

APPENDIX - I

Part I

I.1 Tea – plant characters

The tea plant is an evergreen or semi-evergreen woody shrub, attaining a height of 9.1 meters to 15.2 meters. But in plantations it is never allowed to grow beyond plucking height. Tea plants are pruned back to encourage maximum leaf production. Annual pruning after plucking (and the same operation even after the second year of plucking) is a common practice helping the plant to flush profusely. By pruning the tree is allowed to grow upto a height of about 1 ½ metres. The older leaves are leathery, bright green in colour and 5.30 cm. long. The undersurface of young tender leaves is densily covered with soft hairs that vanish as they age. The leaves of tea plant are alternatively arranged. The fragrance and aroma of the leaves are due to the presence of numerous oil glands. Yellow centered white or pinkish fragrant flowers are born in leaf axils either singly or in groups of 2 to 4 and produce, at maturity, three celled woody capsules, each compartment of which contains a brown seed of about 1.25cm. in diameter (Kochar, 1981; Duta, 1979).

I.2 Tea plant varieties

The four principal varieties of tea plants are *Var. bohea* Pierre (*T. bohea.* L.); *Var. Contoniensis* Pierre (*T. cantoniensis* Lour); *Var. viridis* Pierre (*T. viridis.* L.) and *Var. assamica* Pierre (*T. assamica* Mast.). The

cultivated forms are generally grouped into two types, namely the China tea (*C. sinensis* Var. *sinensis*) and Assam tea (*C. sinensis* Var. *assamica* Mast.). A hybrid variety of *sinensis* X *assamica* is also known to occur, which is cultivated outside China, Japan and Assam (Kochhar, 1981).

I.2.1 China tea

China tea is a slow growing, multistemmed perennial bush, 1.22 to 2.74 metres tall, with relatively narrow, short, dark green leaves 4 cm. to 7 cm. long, with a dull, flat surface, pointing upward. It is capable of withstanding cold winters and has an economic life of at least 100 years. It is a hardy variety of tea. Flowers are born singly (Kochhar, 1981; Kumar et. al., 1997).

I.2.2 Assam tea

This is a fast growing, less hardier, single stemmed tree ranging in height from 6.1 m. to 18.3 m., which has an economic life of 40 years. Compared to China tea the leaves of Assam tea are much larger (15 cm. to 30 cm. Long) held horizontally or pointing slightly downward and pale green with a glossy and bullate upper surface. Flowers are born in clusters of 2 to 4. The crop yield is greater than the Chinese variety.

Another large leaved triploid, var. *macrophylla* Makino. is reported from Japan. It gives a better decoction (Kochhar, 1981).

I.3 Agro climatic conditions

Tea can be grown successfully in nearly all subtropical areas and in the mountainous regions of the tropics. The plant is grown in open field or terraced hill side where rainfall is atleast 150 cm per annum, well distributed throughout the year. An optimum of 21 ° centigrade to 32° centigrade is essential for the vigorous growth of the plant. Tea plants are capable to grow in the plains and in the hills upto an altitude of over 2100 metres (better tea always at a high elevation) (Kochhar, 1981; Dutta, 1979).

The most common propagule of tea plant is seed, sown first in a nursery bed. Seedlings are transplanted into the field when they are about 30 cm. in height. By careful and regular pruning, the plant is kept bushy. Harvesting or plucking is one of the most important operations in the tea industry, involving a lot of labour. The first picking being made when the plants are 3 to 4 years old and are then repeated at regular intervals depending upon the prevailing climatic conditions. Harvesting consists in removing the young tender shoots, i.e., the terminal bud and the 2 to 3 leaves immediately below it, together with the intervening stalk. The finer grades of tea are obtained from the terminal bud and the first two leaves just next to it. The terminal bud with three leaves forms medium tea; and the same with four leaves forms coarse tea. Although tea plant is the same, tea can be of infinite variety due to varying soil and climatic conditions, that varies from year to year and place to place. The main season for tea in India is from April to November.

South India has almost a perennial crop. North Eastern region of India produces premium tea during June and July (Dutta, 1979; Kochhar, 1981; Williams et. al., 1987; Nair, 1984).

Tea bushes require proper irrigation and adequate manuring for increased yeild. Chemical fertilizer like sulphate of ammonia at the rate of 110 kg. per hectare, green manure, cattle manure and leaf compost are very beneficial to them (Dutta, 1979).

I.4 The pests attacking tea plant

The pests attacking tea plant are mainly Red spider mite (normally attackes the upper surface of mature leaves), Scarlet mite (attacks the under surface of leaves), Pink mite (attacks both the surfaces off the leaf), Purple mite (attacks both surfaces of the leaf) and Yellow mite (attacks the very young leaves). The pests are controlled by applying different pesticides and insecticides (Willson and Cifford, 1992; Pillai, 1985).

I.5 Chemistry of tea

Manufactured tea contains 4 per cent to 5 per cent of tannins [a group of polyphenols (aromatic compounds)] which are responsible for colour and strength of the infusion, 3.3 per cent to 4.7 per cent of caffeine which is a stimulant for the heart, a little volatile oil to which the aroma of the tea is due, about 8 per cent of resinous matter which gives the reddish-brown colour to tea infusion, etc. Green tea leaves contain 30 per cent to 18 per cent of tannins but greater portions of them are converted into sugar and gallic acid during the

process of manufacture. Starch is also converted into sugar during the same process. The terminal buds are rich in tannin (28 per cent) and are most valued in the trade and are commonly referred to as golden tips. The smallest leaf is known as 'Orange Pekoe' (28 per cent tannin). 'Peko', is the second leaf (21 per cent tannin); 'Pekoe-souchong' is the third leaf (18 per cent tannin) and 'souchong' is the fourth leaf (14 per cent tannin). Sometimes even the fifth leaves are used for a tea known as 'Congou'. The terminal bud also has high caffeine content (4.0 per cent to 4.5 per cent of the dry matter). Caffeine distribution in tea leaves is as follows: first leaf and bud - 4.7 per cent, second leaf - 4.5 per cent, third leaf - 3.7 per cent, fourth leaf - 3.3 per cent. Caffeine contents are not changed during the process of manufacture (Dutta, 1979; Kochhar, 1981; Pillai, 1985)

Part II

II. 1 Different types of manufactured tea and its processing

After plucking, the fresh tea leaves are lightly packed in baskets to prevent bruising (injury by blow) and heating are immediately send to the processing units. Before starting processing, the quality of the tea leaves will be measured by checking whether coarse leaves are existing among the raw tea leaves. There are mainly five types of manufactured tea namely Black tea, green tea, oolong tea, Brick tea and instant tea (Thomas, 1984). Organic tea is a new invention.

II. 1.1 Black tea

The tea, most of us drink, is black tea. The three types of black tea manufactured are Orthodox, CTC (Crush, Tear and Curl) and Legg-cut (the legg cut manufacture was done during monsoon when withering is difficult and now the method is obsolete). There are mainly five steps in black tea manufacturing. They are 1) Withering 2) Rolling 3) Fermentation 4) Drying and 5) Sifting and grading. Orthodox or traditional and CTC tea manufacturing are similar except in the sphere of rolling (Thomas, 1984; Kochhar, 1981; Dutta, 1979; Dwibedi, 1999)

(i) Withering: The weighed leaves are subjected to withering. The object of withering is to remove the moisture from the green leaf and condition the leaf for further processing. For withering the raw leaves are spread on the trough, then shuffle and level. Withering is done in the withering house with the help of ambient warm air which causes the leaf to lose about half of the moisture in the course of 12 to 18 hours. This makes the leaf flaccid. There are two types of withiering (1) artificial withering by passing hot air through the leaves (when moisture content is very high in the leaves) and (2) natural withering through passing ambient air using fans.

(ii) Rolling: The withered, sufficiently flaccid leaves, are passed through the rolling machine. The primary object of rolling is to crush the leaves in to small sizes. Rolling imparts twists to the leaves and releases the enzymes. Major

chemical changes are taking place in this process, and fermentation begins here.

After a brief conditioning roll, the leaf is passed through a machine (CTC machine) comprising two steel cylinders or roller with fine tooth like ridges. The cylinders with only marginal clearance move in opposite directions at speeds of 70 rpm. and 700 rpm. respectively. This causes accelerated, intensive fermentaiton.

(iii) Fermentation: Fermentation is the enzymatic oxidation reaction by which the texture and nature of the leaves are changed. Sifted leaves are then spread on the floor of the fermentation room where the temperature is maintained at more or less 27°C for 3 or 4 hours. During fermentation the flavour and colour develop. For proper and maximum fermentation the mass of rolled leaves is placed in a cool and humid atmosphere.

(iv) Firing/drying: This take place usually in two stages - the first one at 93°C and the second one at 82°C. This process arrests fermentation and reduces the moisture content to 2 to 3 per cent thus ensuring better keeping quality and by this process the quality of tea further improves.

(v) Sorting or grading: Sorting is to remove fibre from the bulk tea and separate the tea particles into various shapes and sizes relevant to trade requirements. Through this sorting or grading using sieves, uniform sizes of leaf, brokens, dust etc. are obtained.

II.1.2 Green tea

Green tea is largely produced and used in China and Japan. Fermentation is the principal process of manufacture of black tea. In this regard green tea is the opposite of black tea. The foremost precaution taken in green tea manufacture is to destroy the enzymes as soon as possible after the plucking of leaves. During the plucking operation, the tea pickers often wear shade hats to prevent premature withering of the leaves. Green tea tastes bitter but its use is on the increase because it is definitely known to lower cholesterol level and prevent heart attacks. The tannin and caffeine content in green tea is higher than those in black tea (Dutta, 1979; Kochhar, 1981).

II.1.3 Oolong tea

This is a partially fermented product prepared almost entirely in Taiwan from a special form of China tea, 'Chesima'. It is consumed mainly in America. It is intermediate between green and black tea, having the flavour of the former but the colour of the latter. The characteristic flavour of oolong tea is due to the special variety of tea grown in Taiwan and also to the climatic and soil conditions (Kochhar, 1981).

II.1.4 Brick tea

This is prepared from the waste left out after the preparation of black and green teas. It may consist of leaf, stalks, and even twigs or mainly coarse inferior tea dust. The bulk is softened with steam and then compressed into

blocks or bricks. Brick tea is mainly made in China to be exported to Central Asia. It is mostly consumed in Tibet (Kochhar, 1981).

II.1.5 Instant tea

Instant tea (powdered tea) is soluble in water but like black tea, requires fermentation. The development of instant tea can be traced back to 1885. The process of the production of instant tea consists of the following operations. Selection of raw materials, extraction, aroma stripping, cream processing, concentration and drying (Willson and Cifford, 1992; Hill, 1979; Dwibedi, 1999).

II.1.6 Organic tea

In the case of organic tea cultivation and manufacture, no chemicals are being used. Only bio-fertilisers are used during cultivation. No pesticides are also being used. It is completely an environment friendly tea.

II.2 Caffeine and decaffeinisation process

Caffeine is a plant alkaloid. It is a central stimulant but excess amount is harmful to human health. The tea 'flushes' (young shoots) contain 3 per cent to 4.5 per cent caffeine. The caffeine content of tea leaf can be removed by chemical methods. But it is not a common practice during the manufacture of black tea. The process of decaffeinisation is as follows.

Caffeine is removed from tea by treating it with organic solvents like methylene chloride, ethyl acetate, super critical carbondioxide etc. The caffeine

is soluble in these solvents. The tea is treated with these solvents to dissolve the caffeine content. The dissolved caffeine and the solvent are removed from the tea by specific chemical treatment. The dissolved caffeine is then recovered from the solvent for commercial purpose and the solvent is purified for re-use (Willson and Cifford, 1992; Sabins and Daniel, 1990; Daniel, 1991).

II.3 A special note on Darjeeling tea

Darjeeling tea is considered to be the world's best quality tea for its very aggreable taste and flavour. Darjeeling situated in the extreme north of the West Bengal, have an elevation of 7000 ft. It is surrounded by lower hills and vallies of Himalayas. Darjeeling tea fetches the highest price in the world. All Darjeelings (darjeeling teas) tend to be pale in liquor, the best have a delicate, muscatel - like flavour. The causes for this special flavour are climatic conditions, high altitude etc (Sukarchakia, 1999; Pandey, 1988).

II.4 Grading of manufactured tea

The manufactured tea is graded as leaf tea and dust tea. Based on the appearance and size of the tea it is classified into many types. Different grades of the three types of black tea such as Orthodox, CTC and green tea are given in table II.1. In each estates or gardens it has its own nomenclature but the universally accepted names are given here (Tea Board and UPASI, 1999).

Table II.1 Grading of manufactured tea

A. Orthodox tea

Kind of Tea	Grade	Nomenclature
Whole Leaf	FP	Flowery Pekoe
	FTGFOP	Fine Tippy Golden Flowery
	TGFOP	Orange Pekoe
	TGFOP 1	Tippy Golden Flowery Orange
	GFOP	Pekoe
	FOP	Tippy Golden Flowery Orange
	OP	Pekoe One
		Golden Flowery Orange Pekoe
		Flowery Orange Pekoe
		Orange Pekoe
Brokens	BOP 1	Broken Orange Pekoe one
	GFBOP	Golden Flowery Broken Orange
	BPS	Pekoe
	GBOP	Broken Pekoe Souchong
	FBOP	Golden Broken Orange Pekoe
	BOP	Flowery Broken Orange Pekoe
		Broken Orange Pekoe
Fannings	GOF	Golden Orange Fannings
	FOF	Flowery Orange Fannings
	BOPF	Broken Orange Pekoe Fannings
Dust	OPD	Orange Pekoe Dust
	OCD	Orange Churamani Dust
	BOPD	Broken Orange Pekoe Dust
	BOPFD	Broken Orange Pekoe Fine Dust
	FD	Fine Dust
	D.A	Dust – A
	Spl. Dust	Special Dust
	G. Dust	Golden Dust

B. CTC tea

Kind of Tea	Grade	Nomenclature
Brokens	PEK	Pekoe
	BP	Broken Pekoe
	BOP	Broken Orange Pekoe
	BPS	Broken Pekoe Souchong
	BP	Broken Pekoe One
	BP 1	Flowery Pekoe
	FP	
Fannings	OF	Orange Fannings
	PF	Pekoe Fannings
	PF 1	Pekoe Fannings One
	BOPF	Broken Orange Pekoe Fannings
Dust	PD	Pekoe Dust
	D	Dust
	CD	Churamani Dust
	PD 1	Pekoe Dust One
	D 1	Dust One
	RD	Red Dust
	FD	Fine Dust
	SFD	Super Fine Dust
	RD 1	Red Dust One
	GD	Golden Dust
	SRD	Super Red Dust

C. Green tea

Kind of Tea	Grade	Nomenclature
Whole Leaf	YH	Young Hyson
	FYH	Fine Young Hyson
Broken	GP	Gun Powder
	H	Hyson
	FH	Fine Hyson
Fannings	SOUMEE	Soumee
Dust	DUST	Dust

II.5 Blending of tea

The meeting point between what the tea leaf plucked from the bush has to offer, and what is expected for a cup of tea by the consumer is known as blending. It is facilitated by the expert tea blender - taster. Based on strength and flavours, blends are classified as premium, popular and economy while premium blends are high priced with strong flavour and medium strengths, the economy blends are low priced with high strengths (Thomas, 1984).

II.6 Tea tasting

Tea tasting is an important function which decides the quality of the tea and its price. The experienced tea taster effectively examines the tea by senses of smell, sight, touch and taste, to enable it to buy effectively at the auction. The tea taster evaluates the dry leaf, the infused leaf (liquid extracted) and the liquor (Thomas, 1984; Dwibedi, 1999).

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