Techno - Economic Survey
of
Darjeeling Tea Industry

Tea Board Of India
14, B. T. M. Sarani, Kolkata - 700 001

Rupees. Thirty Only.

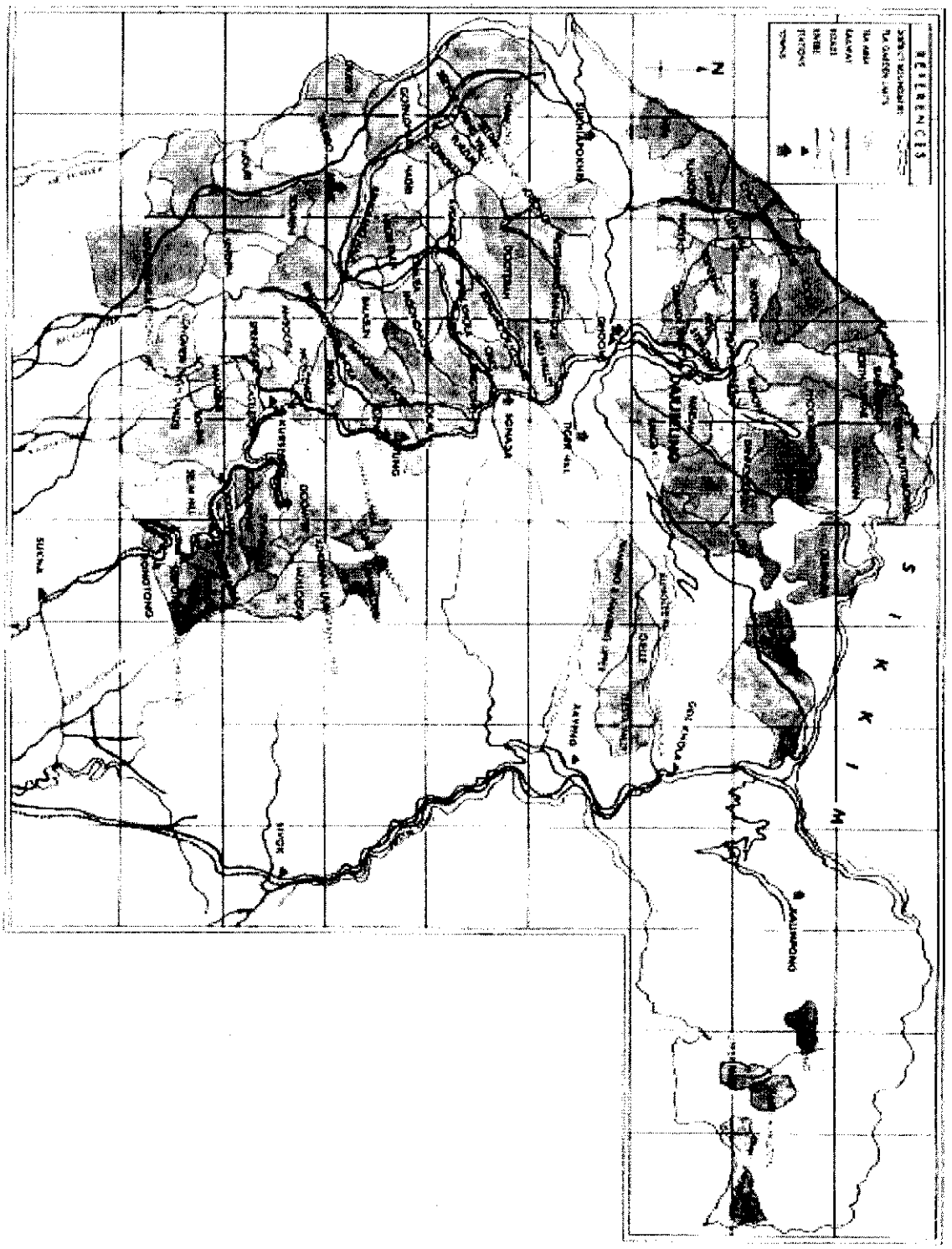
Date: September, 2001

Tea Board
14, Biplabi Trailokya Maharaj Sarani,
(Brabourne Road)
Kolkata - 700 001

Published by : Tea Board, 14, B. T. M. Sarani, Kolkata - 700 001

Printed by : ***Aurovil Print House, Ichapur,***
Kamardanga, Howrah - 711 104
Mobile : 98300 49362

TEA MAP OF DARJEELING



The Survey Team

Research Officer (Economics)
Sanjoy Kumar Mitra

Senior Investigator
A. Rajan

Investigators
Chandrachur Dasgupta.
Ranajit Pal
Dilip Kumar Mukherjee
Nitish Malakar.

Foreword

Darjeeling tea has been our national pride for well over a century. A mere mention of the name 'Darjeeling tea' embodies a perception of uniqueness and supremacy of quality for tea connoisseurs all over the world.

The majority of the bushes that constitute the Darjeeling hill's tea plantations are now fairly old, culminating in low yields. Coupled with this, low labour productivity and high input cost has pushed up the overall cost of production too high to withstand the depressed prices in the present market.

Studies to look into the various problems of the Darjeeling tea industry have been undertaken in the past by various bodies. Tea Board initiated this techno economic survey to ensure an in-depth investigation upto the garden level and to bring out some specific problems into sharper focus. Chapter-wise analysis has been made on each of the various aspects with supporting databases and recommendations. The growth and prospects of the Darjeeling tea industry requires a coordinated approach by the industry, the Government and the Tea Board. I am sure this report will be quite useful and it will elicit awareness about the need for a concerted effort for improvement.

I convey my sincere thanks to all who have rendered help and guidance in accomplishing the task.

Kolkata.
September, 2001

N. K. Das
Chairman

Introduction

Tea Board has been conducting Techno Economic Surveys of tea industry in various regions ever since the Estimates Committee of the Lok Sabha in its report (1971-72) stressed upon conducting such surveys on regular basis. The present report is in the wake of the fifteenth in the series of Techno Economic Surveys conducted by the Tea Board.

T.E. Survey of Darjeeling tea industry was undertaken twice, once in 1973 by NCAER (National Council of Applied Economic Research), New Delhi and thereafter by T.M. & M.C. (Tea Manufacturing and Marketing Consultants), Calcutta in the year 1979. The present survey was launched by Tea Board to look into the various problems of the tea industry that merited indepth analysis for long. The field investigation was done during October - November 1998 by the Techno Economic Cell of Tea Board based on a suitably selected sample of gardens.

Darjeeling tea industry has long been plagued by the problems like over age of bushes, low productivity and declining profitability. Uprooting and replanting of the old bushes needs priority to sustain the long-term viability of the tea economy. Apart from the problems like topsoil erosion, lack of adequate plough back of finance also stands as the most deterrent factor. However, there is a lot of enthusiastic effort from many planters to switch over to bio organic tea to help foster an eco-friendly image tea supported by global demand.

Based on a detailed study, the findings have been presented chapter-wise with a large number of database supports wherever necessary. Possible recommendations to sort out the problems have also been provided in the respective areas.

All efforts have been made to make the revelations suited to the needs of the industry and the concerned interests.

I must place on record the valuable suggestions and guidance given by the Director of Tea Development, the Controller of Licensing and the Director (Research) of Tea Board that have enriched the publication. My sincere thanks to the Secretary, Darjeeling Planters' Association, Darjeeling, the garden managers and the Assistant Director of Tea Development, Tea Board, Siliguri without whose whole hearted co-operation the task could not have been successfully completed.

Lastly, my sincere thanks to the Research Officer (Economics) and the T.E.Survey team of Tea Board for their commendable services rendered.

M. PARAMANANTHAM
STATISTICIAN

September 2001.

Contents

Page No.

1. Part - I - General.

Chapter-I- Background of the Tea Industry; 1-2

Chapter-II-Area profile, and Designing of the Survey 3-7

2. Part - II - Analysis of Data.

Chapter- I- Distribution of Sample Estates 8-9

Chapter-II- Mode of Utilisation of Grant Area 10-12

Chapter-III- Progress of Extension, Replanting & Replacement 13-14

Chapter-IV- Field Practice and Cultural Operation 15-20

Chapter-V- Tea Machinery & Manufacturing of Tea 21-22

Chapter-VI- Labour 23-25

Chapter-VII- Marketing 26-27

Chapter-VIII-Cost of Production 28-30

Chapter-IX- Finance & Profitability 31-32

3. PART-III - Summary of Recommendations 33-34

PART - I - GENERAL

CHAPTER - I

BACKGROUND OF DARJEELING TEA INDUSTRY

GEOPHYSICAL POSITION

Situated in the North of the State of West Bengal, Darjeeling district comprises Darjeeling Sadar and three subdivisions, viz. (i) Siliguri (ii) Kurseong and (iii) Kalimpong. The district has two distinct topographical features. Darjeeling Sadar, Kurseong and Kalimpong occupy the hilly tracts of the district and Siliguri at the foothills has plain stretches of land. Tea plantations over the hilly tracts of the district are popularly known as Darjeeling plantations, which are within the ambit of the present survey.

The district Darjeeling lies between 26°31' and 27°13' North latitude and between 87°59'and 88°53' East longitude. The shape of the district is triangular surrounded on the East by Bhutan, on the North by Sikkim and on the West by Nepal. The North-western boundary commences from a height of 12,000 feet with Nepal.

THE RIVER SYSTEM

Teesta, the most important river of Darjeeling rises in North Sikkim and flows through the district till it reaches Sevok. During the rains it creates havoc and destruction and is often called the "The River of sorrow" in North Bengal. Other rivers of significance are Rungeet, Balasun, Mahanadi and Mechi. Mahanadi has its source near Mahalderam, east of Kurseong. Balasun takes its source near Lepchajagat in the Ghoom-Simana ridge of west of Kurseong. Mechi has its source from the western hill areas.

PHYSIOGRAPHY AND SOIL

The hill areas of Darjeeling district consist of the unaltered sedimentary rocks confined to the hills on the south and different grades of metamorphic rocks over the rest of the area. The mountains are made of folded rocks piled one over another by a series of north-south horizontal compressions movements and tangential thrusts.

In the hills there are three kinds of soil: white, red and black. The white is often found among the large rocks and is suitable for dry crops (Sukhakhat) owing to its rich vegetable mould. The greater portion of the hill areas lies on the Darjeeling gneiss, which most often gives stiff red clay. Generally, the soil throughout the district is deficient in lime. Tea is grown along the gentler slopes and terraced surfaces.

HISTORY OF DARJEELING TEA INDUSTRY

Tea gardens in Darjeeling owe their existence to Dr. Campbell who pioneered the experimental growth of tea in the hill during 1839-41 by planting a few seeds from China stock around his bungalow, which is now known as Beechwood. With the success of his early experimentation, the suitability of the soil and climate of Darjeeling for the cultivation of tea, as an industrial enterprise was firmly established. The Government offered land on very favourable terms and private entrepreneurs jumped into the foray.

Captain Samler was the first planter of Darjeeling who in 1856 started the Alubari tea garden under the management of Kurseong and Darjeeling Tea Company. This was followed by another garden at the Lebong Spur run by Darjeeling Land Mortgage Bank. In 1859 Dooteriah garden was started by Dr.Brougham at Sonada valley. Between 1860 and 1864 Darjeeling Tea Company expanded

its business by opening four more gardens at Ging, Ambootia, Tukdah and Phoobsering. Lebong Tea Company also started two more gardens at Tukdah and Badamtam. During this period Pandam, Stenthai, Makaibari and Singell tea estates also started functioning. Singell Tea Estate, which is one of the largest gardens in the hills, was planted by Mr.James White.

The development of tea industry soon took rapid progress and by 1866 there were almost forty gardens producing tea. The sacrifice and dedication of the pioneering planters and the courage and hard work of the Gorkha workers who cleared the dense jungles to carve out the beautiful tea pastures, ultimately ushered in a pride of place as the producer of the finest tea in the world.

ROLE OF DARJEELING TEA RESEARCH CENTER (D.T.R.C).

D.T.R.C at Kurseong was established in the year 1977. It has an experimental farm of 21.6 hectares. The role of this research unit is to generate scientific know-how on various aspects of tea cultivation specfic to the Darjeeling Tea District. DTRC deals with Farm management and Agronomy, Plant protection, Physiology, Nursery, Soil, Bio-chemistry etc. It is equipped with a well stocked library, a miniature manufacturing unit and an agro-meteorological observatory. The research center, besides carrying out basic research also renders technical advice to the tea plantations.

ORGANIC TEA

Prolonged use of chemical fertilizers, pesticides, weedicides and other inputs to raise productivity has been affecting the ecology of the tea areas and the environment as a whole. A sustainable agriculture will help fostering an eco-friendly image for tea. It will also be useful in overcoming degeneration of soils, soil erosion, drought and related aspects. Due to these reasons and more particularly, for the high global demand, quite a number of tea estates in Darjeeling have switched over to Organic tea production. The cost of production of organic tea is generally high.

As per available information, seventeen gardens in Darjeeling produce around 400 thousand kg of organic tea annually, which is more than 38% of the total organic tea production in India. Out of the seventeen gardens, only eight are reported to be the members of Indian Bio Organic Tea Association.

DARJEELING CTM VIS-A-VIS TEA BOARD'S ROLE

Due to the unique and complex combination of agro climatic conditions in this geographical area, Darjeeling tea has a distinctive quality and flavour that has won the patronage and recognition of the discerning consumers all over the world. Consequently, the teas produced in this region have long since been known to the trade and the public in India and abroad as "Darjeeling" teas and the same has acquired domestic and international reputation. In order to make the name Darjeeling distinctive and exclusive produce of the district of Darjeeling, Tea Board had long before designed a logo, which consists the word Darjeeling and representation of an Indian woman holding tea leaves, all arranged in a roundel. The logo has been extensively used by the producers, packeteers and exporters of Darjeeling tea under license and authority of Tea Board. Tea Board has applied for the registration of Certification Trade Mark (CTM) of the word Darjeeling with the Registrar of Trade Mark authorities in India as well as of the Darjeeling logo in various international jurisdictions in order to be in a position to bring actions against any possible infringement. The Darjeeling CTM protection process has now been introduced in Tea Board for a consistent and easily verifiable use of the name Darjeeling in relation to tea and the Darjeeling logo as guarantees of Darjeeling teas. Under the process, Licenses are issued by Tea Board to the authorized users for certification Marks of genuine Darjeeling teas. Certificates of origins are issued to all export consignment against verification of actual invoices from the gardens sourcing such teas. The procedure is being extended in the case of overseas markets by eliciting information on annual quantities of Darjeeling teas traded by the authorized users of the logo in order to facilitate tracking of areas for possible infringement.

CHAPTER - II

AREA PROFILE AND DESIGNING OF THE SURVEY

AREA, PRODUCTION AND PRODUCTIVITY

As per the primary information available with Tea Board there are altogether 85 tea estates in Darjeeling covering an area of 17830 hectares producing around 10.25 Million kg tea which accounts for 16.88% of tea area and 5.29% of tea production in West Bengal and 4.80% of tea area and 1.53% of tea production in North India. Average yield rate in Darjeeling worked out to be 575 kg per hectare as against 1835 kg in West Bengal and 1805 kg in North India during the year 1998.

TABLE - 1

AREA, PRODUCTION AND YIELD OF TEA.

Area: in hectare
Production: in Th. Kg.
Yield: Kg / hectare.

Year	Darjeeling			West Bengal			North India		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
1989	20055	12162	606	101000	143168	1418	340204	529571	1557
1990	20065	14499	723	101170	149753	1480	341004	545106	1598
1991	20085	13932	694	101922	155216	1523	345182	562926	1631
1992	19309	12355	640	100971	150690	1492	345076	570424	1653
1993	19324	13026	674	100489	162669	1619	324789	581534	1697
1994	19280	11092	575	99967	158825	1589	338200	567955	1679
1995	18932	11298	597	101190	157522	1557	339233	568631	1676
1996	17551	10614	605	102650	164768	1605	343400	598228	1742
1997	17760	10054	566	103008	170158	1652	345702	604697	1749
1998	17830	10253	575	105624	193789	1835	371631	670658	1805
1999*	17968	9294	517	108754	180212	1657	382734	623097	1628
2000*	18109	9814	542	109690	180724	1648	393997	641961	1629

* Estimated, subject to revision.

Yield rate in Darjeeling has been stagnant during the last 10 years (1989 - 98) while area under tea has steadily declined. In comparison, area under tea and production of tea in West Bengal and North India, registered an increase during the same period.

SIZE-WISE DISTRIBUTION OF ESTATES:

Size-wise frequency classification of tea estates in Darjeeling as in Table -2 would indicate that a majority of tea estates are in the size-groups of above 100 to 200 hectares and above 200 to 400 hectares are account for 79% of total number of estates. These two size-groups account for about 77% and 78% of the total tea area and production respectively. There were only 7 estates in the size-group of above 400 hectares, which accounted for18% of total area under tea and the same percentage of total crop. Remaining 11 estates, which belonged to the lowest size-group (above 8.09 to 100 hectares) shared about 4% of total area and only 3% of total production.

TABLE-2

SIZE-WISE DISTRIBUTION OF ESTATES IN DARJEELING IN 1998.

Area: in hectare
Production: in Th..Kg

Size-group (in Hectare)	Total number of tea estates	Total area	Percentage of total area	Production	Percentage to total Production
Above 8.09 to 100	11	793	4.45	344	3.36
Above 100 to 200	32	4656	26.11	2402	23.43
Above 200 to 400	35	9096	51.02	5612	54.73
Above 400	7	3285	18.42	1895	18.48
All Groups	85	17830	100.00	10253	100.00

SIZE-GROUP AND YIELD VARIATION

Among the different size-groups, highest yield at 617 kg per hectare was noticed in respect of the size-group of above 200 to 400 hectares and the rest of the groups showed yield rates between 434 to 571 kg per hectare. The overall yield rate during the year 1998 is 575kg per hectare.

TABLE-3

SIZE-GROUP WISE YIELD PER HECTARE IN 1998

Yield: Kg /Hectare.

Size-group	Yield rate
Above 8.09 to 100	434
Above 100 to 200	516
Above 200 to 400	617
Above 400	577
All Groups	575

AGE COMPOSITION OF BUSHES:

TABLE-4

AGE-GROUP OF BUSHES IN DARJEELING

Age-group	Percentage to total planted area
Below 5 years	4
5 to 10 years	4
11 to 20 years	3
21 to 30 years	5
31 to 40 years	3
41 to 50 years	5
Above 50 years	76
Total	100

Around 76% of the total area under tea contained old bushes (above 50 Years). Young bushes upto 10 years constituted around 8% while matured bushes within the age of 11 to 50 years accounted for about 16% of total tea area in Darjeeling including Kalimpong.

PRIMARY MARKETING OF TEA

About 49% of the total tea produced in Darjeeling and Kalimpong was sold through auction at Calcutta and Siliguri in the year 1998. Out of total auction sales, Calcutta shared as high as 98.56% and Siliguri constituted 1.44% only. Sale through Siliguri auction shows an increasing trend over the last few years. Total quantity of tea sold through auction decreased substantially in 1998.

TABLE-5

QUANTITY OF DARJEELING TEA SOLD AT CALCUTTA AND SILIGURI AUCTIONS.

Quantity (in Th.Kg.)

Years	Calcutta Auction	Percentage to total auction	Siliguri auction	Percentage to total auction	Total auction	Percentage to production
1993	.6597	99.74	17	0.26	6614	50.77
1994	6773	99.85	10	0.15	6783	61.15
1995	5689	99.13	50	0.87	5739	50.80
1996	6191	99.10	56	0.90	6247	58.86
1997	5920	99.00	60	1.00	5980	59.48
1998	5138	98.56	75	1.44	5213	48.58
1999	5264	98.76	66.5	1.24	5330	57.35
2000	5244	99.80	10	0.20	5254	53.53

A comparative study on the average price realised by the teas of Darjeeling including Kalimpong, West Bengal and North India indicate that at Calcutta auction the prices of Darjeeling teas are considerably higher than teas of total West Bengal and total North India both inclusive of Darjeeling. On the other hand it is also observed from Table - 6 that Darjeeling teas usually fetched considerably lower prices at Siliguri auction as compared to Calcutta Auction. The Table -6A indicated that Darjeeling teas produced during March-July (1st and 2nd flush) usually fetch better prices than other teas much due to the seasonal effect on quality. Research and Development efforts should therefore be concentrated towards developing clones that can produce the distinct Darjeeling flavour even during the rains. It should also be endeavoured to increase the volume of teas produced during 1st and 2nd Flush by adopting appropriate pruning and cultural practices.

TABLE-6

AVERAGE PRICES OF DARJEELING TEA SOLD AT CALCUTTA AND SILIGURI AUCTIONS.

(Price in Rs / Kg)

Year	Darjeeling teas at		West Bengal teas at		North Indian teas at	
	Calcutta	Siliguri	Calcutta	Siliguri	Calcutta	Siliguri
1994	95.41	37.66	67.62	38.33	50.12	38.19
1995	120.53	43.80	82.22	47.80	56.18	47.72
1996	115.56	45.05	83.52	46.66	59.18	47.73
1997	136.33	73.30	100.53	67.24	80.21	66.95
1998	156.50	72.42	113.15	72.08	88.04	74.66
1999	167.56	74.44	108.77	72.75	88.86	72.56
2000	154.32	57.68	93.29	60.42	81.70	60.20

TABLE - 6A

MONTH-WISE OVERALL PRICE FETCHED BY DARJEELING TEA AT ALL INDIA AUCTION FOR YEARS 1997 TO 1999.

(Rupees per Kg.)

Month	1997	1998	1999
January	70.42	137.25	86.92
February	73.35	119.45	78.44
March	88.09	126.11	95.33
April	213.60	339.88	373.59
May	212.69	201.02	302.07
June	123.84	165.69	246.11
July	207.82	195.48	247.11
August	130.98	139.44	165.12
September	119.99	141.01	148.75
October	125.32	126.27	147.12
November	124.08	117.36	138.09
December	140.29	100.25	139.08
Overall	135.70	155.32	166.43

SURVEY DESIGN AND DISTRIBUTION OF THE SAMPLE

According to Tea Board's official records there were 85 tea estates in Darjeeling including Kalimpong as on 1998. **A sample of 46 representing 54% of total number of tea estates was chosen for the purpose of survey.** The sample was drawn by a statistical method similar to PPSWOR (Probability Proportional to Size without Replacement) sampling with proportional representation in respect of different sizes of holding as also status of ownership. In some cases purposive inclusion of a few sample units was unavoidable in order to ensure representativeness of the sample. The Investigators of the Techno-Economic cell in the Statistics Branch of Tea Board conducted the field survey during October and November 1998. Out of the 46-sample tea estates, **survey could be undertaken only in 41 estates. The remaining 5 estates had to be left out due to various operational difficulties.**

TABLE-7

DISTRIBUTION OF TEA ESTATES BY SIZE-GROUPS AND TYPE OF OWNERSHIP

Size-group (in Hectare)	Ownership				Total	Percentage to total
	Proprietory	Private Limited	Public Limited	Public Sector		
Above 8.09 to 100	1	4	5	1	11	12.94
Above 100 to 200	-	10	18	4	32	37.65
Above 200 to 400	1	10	23	1	35	41.18
Above 400	-	-	6	1	7	8.23
All Groups	2	24	52	7	85	100.00
Percentage to total	2.35	28.23	61.18	8.24	100.00	

The necessary data were collected from the sample gardens based on a pre-designed questionnaire, a copy of which had been sent to the sample estates and their respective companies well in advance so as to give them sufficient time to keep ready the information sought. Subsequently, the Investigators visited the estates for an on the spot study. During the course of survey they had detailed discussion with the garden managers in order to obtain useful supplementary information on the techno-economic condition of the industry. Since the information like mode of disposal of crop, financial management and cost of production were not readily available at the garden level, the same had to be collected from the respective Head Offices and in the process, delay could not be avoided. All effort has been given to reveal the data as informative as possible.

Prior to visiting tea estates the survey team had a meeting with Darjeeling Planters Association at Darjeeling to have an overall idea about the basic problems of Darjeeling tea industry as also to chalk out the modalities of the survey.

PART - II - ANALYSIS OF DATA

CHAPTER - I

DISTRIBUTION OF SAMPLE ESTATES

By and large, the sizes (area under tea) of the sample estates ranged from 53 hectares to 486 hectares. The distribution of sample estates according to size-group and type of ownership is shown in the table below :

TABLE-8

DISTRIBUTION OF SAMPLE ESTATES BY SIZE-GROUP AND TYPES OF OWNERSHIP.

Size-group (in Hectare)	Ownership					Percentage to Total
	Proprietory	Private Ltd.	Public Ltd.	Public Sector	Total	
Above 8.09 to 100	1	-	1	1	3	7.32
Above 100 to 200	-	5	9	2	16	39.02
Above 200 to 400	1	6	11	-	18	43.90
Above 400	-	-	3	1	4	9.76
All Groups	2	11	24	4	41	100.00
Percentage to total	4.88	26.83	58.53	9.76	100.00	

A majority of the sample tea estates in Darjeeling and Kalimpong represented the size-groups of above 100 to 200 hectares (39%) and above 200 to 400 hectares (44%). Of the remaining, 7% gardens were within the size-group of above 8.09 to 100 hectares and 10% within the size of above 400 hectares.

Ownership wise, out of 41 surveyed tea estates, 24 representing 59% were under the ownership of Public Limited Companies. From the remaining, 11 (27%) were under Private Limited companies, 4 (10%) under Public Sector Undertaking and 2 (5%) under Proprietorship.

The size-group of above 200 to 400 hectares accounted for nearly 55% of the total area under tea followed by 25% for the size-group of above 100 to 200 hectares. The size-group of above 400 hectares constituted 18% while the lowest size-group of above 8.09 to 100 hectares registered 2% of total area under tea.

Ownership-wise, around 64% of the total area was shared by Public Limited companies out of rest, Private Limited companies, Public Sector Undertakings and Proprietorship accounted for about 23%, 9% and 4% of the total area under tea respectively.

TABLE-9

DISTRIBUTION OF AREA BY SIZE-GROUP AND TYPE OF OWNERSHIP

(Area in Hectare.)

Size-group (Hectare)	Ownership					Percentage to Total
	Proprietory Limited	Private Limited	Public Sector	Public	Total	
Above 8.09 to 100	94.34	-	53.00	89.93	237.27	2.36
Above 100 to 200	-	724.15	1449.63	300.47	2474.25	24.55
Above 200 to 400	282.57	1635.97	3586.22	-	5504.76	54.63
Above 400	-	-	1399.37	460.71	1860.08	18.46
All Groups	376.91	2360.12	6488.22	851.11	10076.36	100.00
Percentage to grand total	3.74	23.42	64.39	8.45	100.00	

CHAPTER - II

MODE OF UTILISATION OF GRANT AREA

The table shown below will reveal the position relating to utilisation pattern of the total grant area by size-group in Darjeeling including Kalimpong.

TABLE-10

UTILISATION OF TOTAL GRANT AREA BY DIFFERENT SIZE-GROUP.

(Area in Hectare.)

Category of Utilisation	Size-groups (in hectare.)				Total	Percentage to total grant
	Above 8.09 to 100	Above 100 to 200	Above 200 to 400	Above 400		
Area under tea	237.27 (30.97)	2471.25 (44.30)	5504.76 (53.28)	1860.08 (46.46)	10076.36 (48.71)	48.71
Area under nursery	2.00 (0.26)	5.19 (0.09)	18.69 (0.18)	15.50 (0.39)	41.38 (0.20)	0.20
Other areas	526.82 (68.77)	3105.81 (55.61)	4808.46 (46.54)	2127.63 (53.15)	10568.70 (51.09)	51.09
Total grant areas	766.09 (100.00)	5585.25 (100.00)	10331.91 (100.00)	4003.21 (100.00)	20686.46 (100.00)	100.00
Percentage to grant total	3.70	27.00	49.95	19.35	100.00	

(Figures in brackets indicates the percentage to total grant)

Above table indicates that tea was planted in 10,076.36 hectares of land out of the total grant of 20686.46 hectares of the surveyed estates. The overall utilisation of the total grant thus worked out as 48.71% by way of tea cultivation. More than 41 hectares of area were utilised for nursery which however accounted for only 0.20% of the total grant. Altogether 10568.70 hectares within the total grant remained as 'other areas' which includes forest, factory buildings, staff quarters, labour quarters, bunglows, roads, bridges & jhoras, fallow and waste lands. On enquiry it was known that nearly 11% of the 'other areas' could be utilised for extension planting of tea. Therefore, approximately 1200 hectares could be used for extension planting.

TABLE-11

UTILISATION OF GRANT BY SAMPLE ESTATES CLASSIFIED INTO DIFFERENT TYPE OF OWNERSHIP

(Area in Hectare.)

Category of Utilisation	Size-groups				Total	Percentage to total grant
	Proprietory	Private Limited	Public Limited	Public Sector		
Area under tea	376.91 (56.25)	2360.12 (47.14)	6488.22 (48.54)	851.11 (51.80)	10076.36 (48.71)	48.71
Area under nursery	1.00 (0.15)	7.32 (0.15)	22.06 (0.16)	11.00 (0.67)	41.38 (0.20)	0.20
Other areas	292.20 (43.60)	2638.96 (52.71)	6856.62 (51.30)	781.11 (47.53)	10568.72 (51.09)	51.09
Total grant	670.11(100.00)	5006.13(100.00)	13366.90(100.00)	1643.32(100.00)	20686.46(100.00)	100.00
Percentage to grant total	3.24	24.20	64.62	7.94	100.00	

(Figures in brackets are the percentage to total grant)

On the basis of ownership, Public Limited companies accounted for 65% of the total grant in the sample followed by 24% by Private Limited companies. The proportion of area under nursery in terms of percentage to total grant is maximum (0.67%) in the case of Public Sector undertakings while other ownerships constituted 0.15% to 0.16% each. Proprietory ownerships utilised maximum (56%) of total grant in tea cultivation followed by Public Sector undertakings (52%). Public Limited and Private Limited companies utilised 49% and 47% of total grant respectively.

TABLE-12

AVERAGE SIZE OF THE ESTATES, AVERAGE GRANT AREA AND AVERAGE AREA OTHER THAN TEA CLASSIFIED AMONG DIFFERENT SIZE-GROUPS.

(Area in Hectare.)

Size-groups (in hect.)	Number of estates	Total area under tea	Average area under tea per estate	Total area under grant	Average area under Grant per estate	Average area other than tea area (average grant area minus average area under tea)	Percentage of tea area to total grant area
Above 8.09 to 100	3	237.27	79.09	766.09	255.36	176.27	30.97
Above 100 to 200	16	2474.25	154.64	5585.25	349.08	194.44	44.30
Above 200 to 400	18	5504.76	305.82	10331.91	574.00	268.18	53.28
Above 400	4	1860.08	465.02	4003.21	1000.80	535.78	46.46
Total	41	10076.36	245.77	20686.46	504.55	258.78	48.71

Table-12 provides the size-group-wise quantification of average area under grant per estate vis-à-vis the average area under tea per estate. It is observed that the average grant area per estate was 504.55 hectares while the average non-tea area per estate was 258.78 hectares which comprised about 51% of the total grant. Tea was cultivated in an average area of 245.77 hectares per estate constituting 49% of the total grant. The average area under tea and the average non-tea area bore a ratio of 1:1.05. Such ratio was 1:2.23 for the size-group of above 8.09 to 100 hectares, 1:1.26 for above 100 to 200 hectares, 1:0.88 for above 200 to 400 hectares. Therefore the utilisation of grant area for tea cultivation by the size-group of above 200 to 400 hectares is the highest among all other size-groups.

TABLE-13

AVERAGE SIZE OF AN ESTATE, AVERAGE GRANT AREA AND AVERAGE NON-TEA AREA ACCORDING TO OWNERSHIP

(Area in Hectare.)

Status of Ownership	Number of estates	Total area under tea	Average area under tea per estate	Total area under grant	Average area under grant per estate	Average area other than tea area	Percentage of tea area to total grant area
Proprietory	2	376.91	188.46	670.11	335.06	146.60	56.24
Private Ltd.	11	2360.12	214.56	5006.13	455.10	240.54	47.14
Public Ltd.	24	6488.22	270.34	13366.90	556.95	286.61	48.54
Public Sector	4	851.11	212.78	1643.32	410.83	198.05	51.79
Overall	41	10076.36	245.77	20686.46	504.55	258.78	48.71

According to ownership, **the average area other than tea area per estate was 286.61 hectares for Public Limited companies followed by 240.54 hectares for Private Limited companies, 198.05 hectares for Public Sector Undertakings and 146.60 hectares for Proprietory concern. Hence it appears that the estates under the ownerships of Public Limited companies and Private Limited companies have larger areas not under tea cultivation.**

TABLE-14

LAND SUITABLE FOR EXTENSION OF TEA BY SIZE-GROUPS

(Area in Hectare.)

Size groups (in hect.)	Number of estates	Average grant area per estate	Land suitable for extension per estate	Total area suitable for extension	Percentage of land suitable for extension to total grant area per estate
Above 8.09 to 100	3	255.36	57.64	173	22.57
Above 100 to 200	16	349.08	31.03	496	8.89
Above 200 to 400	18	574.00	25.56	460	4.45
Above 400	4	1000.80	15.13	61	1.51
All Groups	41	504.55	29.02	1190	5.75

The above table shows that **on the average, land suitable for extension per estate was around 6% of total grant. Availability of suitable land for extension is found to be maximum (about 57.64 hectares per estate) for the size groups 8.09 to 50 hectares. It has also been observed land suitable for extension per estate was lesser with the increase in size.**

TABLE-15

LAND SUITABLE FOR EXTENSION OF TEA AREA BY OWNERSHIP

(Area in Hectare.)

Status of Ownership	Number of estates	Average grant area per estate	Land suitable for extension per estate	Total area suitable for extension	Percentage of land suitable for extension to total grant area per estate
Proprietory	2	335.06	7.09	14	2.12
Private Limited	11	455.10	27.72	305	6.09
Public Limited	24	556.95	35.87	861	6.44
Public Sector	4	410.83	2.50	10	0.61
Overall	41	504.55	29.02	1190	5.75

Ownership-wise analysis revealed that **estates under Public Limited companies had the maximum proportion of land (that is, 35.87 hectares per estate) suitable for extension followed by estates under Private Limited companies (27.72 hectares per estate). The rests were 7.09 hectares and 2.50 hectares per estate under Proprietory concerns and Public Sector Undertakings respectively. The survey, therefore, recommends that units under Public Limited companies and Private Limited companies may go in for extension planting by identifying suitable land within the grant.**

CHAPTER - III

PROGRESS OF EXTENSION, REPLANTING AND REPLACEMENT:

An analysis has been made in respect of performance of extension planting, replanting and replacement planting by the sample estates during 1995-97 by size-group.

TABLE-16

EXTENSION, REPLANTING AND REPLACEMENT CARRIED OUT DURING 1995 - 97 (BY SIZE GROUPS)

(Area in Hectare.)

Size-group (in hect.)	Extension				Replanting			Replacement			
	Number of estates	Area extended in last 3 years	Percentage to total planted area	Percentage to area suitable for extension	Number of estates	Area replanted in last 3 years	Percentage to total planted area	Number of Estates	Area replaced in last 3 years	Percentage to total planted area	Percentage to area auitable for extentsion
Above 8.09 to 100	1	53.00	22.34	30.65	-	-	-	-	-	-	-
Above 100 to 200	3	21.25	0.86	4.28	1	4.00	0.16	1	6.20	0.25	1.25
Above 200 to 400	2	10.30	0.19	2.24	7	86.32	1.57	1	10.52	0.19	2.29
Above 400	-	-	-	-	1	4.00	0.22	-	-	-	-
All Groups	6	84.55	0.84	7.11	9	94.32	0.94	2	16.72	0.17	1.41

It was observed from the above table that **out of 41 surveyed tea estates only 6 estates carried out extension planting during the last three years covering an area of 84.55 hectares which accounted for only 7% of the overall area suitable for extension. Extension has not been taken up by the estates above 400 hectares. The percentage of area extended during such period over the total existing area suitable for extension was found to be maximum 30.65% for the size-group of above 8.09 to 100 hectares. Such percentage was found to decrease with the increase in size-group. The above analysis indicated that resource mobilisation in regard to extension planting was greater in respect of lower size-groups.**

The progress of replanting activity in Darjeeling including Kalimpong was not commensurate with the old age of the existing bushes. It was found that while there was about 77% of the total planted area having bushes above 50 years, replanting operation was carried out only in 0.94% of such area during 1995-97. Only 2 tea estates out of the 41 surveyed estates under took replacement during the same period covering 0.17% of total planted area.

The survey recommends that an integrated development scheme be set up for Darjeeling tea industry in order to boost up long-term developmental activities like extension, replacement and replanting. The scheme may include financial assistances on easier terms commensurate with high cost of production.

TABLE - 16 (A)

EXTENSION, REPLANTING AND REPLACEMENT CARRIED OUT DURING 1995 - 97 BY OWNERSHIP-WISE

(Area in hectare)

Owner-ship	Extension				Replanting			Replacement			
	Number of estates	Area extended in last 3 years	Percentage to total planted area	Percentage to area suitable for extension	Number of estates	Area replanted in last 3 years	Percentage to total planted area	Number of estates	Area replaced in last 3 years	Percentage to total planted area	Percentage to area suitable for extension
Proprietory	-	-	-	-	-	-	-	-	-	-	-
Private Ltd.	-	-	-	-	4	44.66	1.89	1	6.20	0.26	2.03
Public Ltd.	5	82.05	1.26	9.53	5	49.66	0.77	1	10.52	0.16	1.22
Public Sector	1	2.50	0.29	2.90	-	-	-	-	-	-	-
Overall	6	84.55	0.84	7.11	9	94.32	0.94	2	16.72	0.17	1.41

Above table indicates that only **6(six) tea estates had undertaken extension planting during the last three years. 5 of them were under Public Limited Companies and the remaining one was under the ownership of Public Sector undertaking. Estates under Public Limited Companies have done extension planting at about 10% area of land suitable and available for extension with them. As for replanting and replacement planting, only the estates under Private Limited and Public limited Companies had carried out such activities constituted altogether 0.94% and 0.17% of the total area under tea respectively.**

CHAPTER - IV

FIELD PRACTICE AND CULTURAL OPERATION:

AGE COMPOSITION OF BUSHES:

Table -17 below reflects the age composition of bushes according to size classification of the sample estates. **It was observed that only 23% of the total planted area had bushes upto 50 years of age and the remaining 77% of the planted area had plants over 50 years. The analysis indicates that since there is comparatively a larger share of over-aged bushes in the estates, immediate steps need to be taken for uprooting and replanting without depending merely on the tenacity of such age-old bushes.** It is therefore suggested that the estates may avail of Tea Board's Plantation Development Scheme for financial assistance extended in the form of long-term loan and subsidy.

TABLE-17

AGE-COMPOSITION OF BUSHES WITH PROPORTION OF PLANTED AREA BY SIZE-GROUPS

(Figures in percentage)

Size-group (in hect.)	Upto 5 years	Above 5 to 10 years	Above 10 to 30 years	Above 30 to 50 years	Above 50 to 70 years years	Above 70 to 100 years	Above 100 years	Total
Above 8.09 to 100	25.96	5.47	3.09	11.99	24.44	-	29.05	100.00
Above 100 to 200	1.66	1.48	4.35	1.97	2.50	35.02	53.02	100.00
Above 200 to 400	4.71	3.59	7.73	12.47	10.79	25.52	35.19	100.00
Above 400	1.21	6.56	12.97	2.56	0.99	12.83	62.88	100.00
Overall	3.95	3.60	7.63	8.23	7.48	25.11	44.00	100.00

Ownership-wise composition of age of bushes is shown below in Table-18.

TABLE-18

AGE-COMPOSITION OF BUSHES WITH PROPORTION OF PLANTED AREA BY OWNERSHIPS

(Figures in percentage)

Status of Ownership	Upto 5 years	Above 5 to 10 years	Above 10 to 30 years	Above 30 to 50 years	Above 50 to 70 years	Above 70 to 100 years	Above 100 years	Total
Proprietory	1.30	1.65	-	7.55	15.39	-	74.11	100.00
Private Limited	3.41	2.76	9.39	15.86	11.03	35.96	21.59	100.00
Public Limited	4.70	3.91	6.81	6.82	6.99	27.11	43.66	100.00
Public Sector	1.17	4.17	12.92	2.29	-	-	79.45	100.00
Overall	3.95	3.60	7.63	8.23	7.48	25.11	44.00	100.00

It is observed on the whole that around 23% of planted area contained bushes upto the age of 50 years. As much as 44% of the planted area contained bushes above 100 years. The share of planted area having more than 100-year-old bushes was 79% for Public Sector estates and 74% for Proprietory ownerships. It is therefore imperative that the estates under such ownership should immediate launch uprooting / replanting programme.

BUSH POPULATION AND VACANCY RATIO

The table below indicates the average number of bushes per hectare, estimated maximum number of possible bushes per hectare and corresponding vacancy ratio classified according to size-groups.

TABEL-19

BUSH POPULATION AND PERCENTAGE OF VACANCY BY SIZE-GROUPS

Size-group (in hectare)	Average number of existing bushes per hectare of planted area	Estimated maximum number of busheds per hectare based on spacing adopted	Percentage of vacancy
Above 8.09 to 100	7511	11870	36.72
Above 100 to 200	6800	8945	23.98
Above 200 to 400	7717	8921	13.50
Above 400	7267	7967	8.79
All groups	7412	8649	14.30

The above table reveals that **the average number of existing bushes per hectare of planted area was 7412 while the estimated maximum possible number of bushes per hectare based on the existing spacing worked out as 8649. Therefore the overall percentage of vacancy is estimated at 14.30%. The estates within the size-group of above 8.09 to 100 hectares registered the maximum of vacancy (37%) followed by the estates within size-group above 100 to 200 hectares (23.98%) and other groups exhibiting from 9% to 13%.** As infilling might not be advisable considering the overage of the bushes, it is suggested that the estates within size of 100 to 400 hectares having vacancy may undertake uprooting / replanting on priority basis. Estates with smaller size may go in for infilling to reduce the vacancy and to augment the yield rate.

TABLE-20

BUSH POPULATION AND PERCENTAGE OF VACANCY BY OWNERSHIP

Status of Ownership	Average number of existing bushes per hectare of planted area	Estimated maximum number of bushes per hectare based on spacing adopted	Percentage of vacancy
Proprietory	5404	6774	20.22
Private Limited	6746	8527	20.89
Public Limited	7848	9112	13.87
Public Sector	6752	8895	24.09
Overall	7412	8649	14.30

The above analysis was also performed on the basis of ownership status. **The estates under Public Sector Undertaking showed the highest percentage of vacancy at 24.09% whereas estates of Public Limited companies registered lowest at 13.87%.** The survey therefore recommends that infilling may be given priority for the estates under Public Sector Undertaking. However, uprooting / replanting should be preferred in those sector which contain more than 80% bushes over 70 years.

STANDARD OF PLUCKING

An analysis of the standard of plucking has been made based on data furnished by the sample estates based on size-group as well as ownership.

TABLE-21

STANDARD OF PLUCKING AND AVERAGE YIELD OF GREEN LEAF PER BUSH BY SIZE-GROUP

Size-group (in hectare)	Average bush per hectare	Plucking of green leaves (kg./hectare.)					Average yield of green leaves per bush	Average yield of made tea in kg./hectare
		Upto two leaves & a bud	Three leaves bud	Above three & a bud	Others	Total		
Above 8.09 to 100	7511	287	452	52	20	811	0.11	116
Above 100 to 200	6800	1515	548	111	132	2306	0.34	497
Above 200 to 400	7717	1910	903	311	148	3272	0.42	750
Above 400	7267	1418	372	154	31	1975	0.27	420
Over all	7412	1684	707	227	119	2737	0.37	612

(Figures in brackets indicate the percentage to total quantum plucked)

On an overall basis, yield rate of made tea in Darjeeling including Kalimpong was estimated as 612 kg/hectare. Finer plucking upto two leaves and a bud accounted for nearly 62% of the total green leaf whereas three leaves and a bud shared 26%. The rest were said to be coarser plucking. The size-group above 400 hectares maintained the largest proportion of finer plucking (72%) followed by the size-group above 100 to 200 hectares (66%). The size-groups of above 200 to 400 hectares and above 8.09 to 100 hectares maintained nearly 58% and 35% finer plucking respectively.

TABLE-22

STANDARD OF PLUCKING AND AVERAGE YIELD OF GREEN LEAF PER BUSH BY OWNERSHIP

Status of Ownership	Average bush per hectare	Plucking of green leaves (kg./hectare.)					Average yield of green leaves per bush	Average yield of made tea in Kg./Hectare
		Upto two leaves & a bud	Three leaves & a bud	Above three leaves & a bud	Others	Total		
Proprietory	5404	533 (63.20)	311 (36.80)	- (-)	- (-)	844 (100.00)	0.16	177
Private Limited	6746	2118 (60.33)	1110 (31.65)	159 (4.52)	123 (3.50)	3510 (100.00)	0.52	767
Public Limited	7848	1685 (62.88)	614 (22.86)	259 (9.62)	130 (4.84)	2688 (100.00)	0.34	614
Public Sector	6752	1003 (53.73)	514 (27.58)	272 (14.60)	76 (4.09)	1865 (100.00)	0.28	357
Over all	7412	1684 (61.53)	707 (25.83)	227 (8.29)	119 (4.35)	2737 (100.00)	0.37	612

(Figures in brackets indicate the percentage to total quantum plucked)

Proportion of finer plucking did not have much variation with the type of ownership. Public Sector Estates however, were found to adopt relatively higher percentage of coarser plucking (three and a bud and higher) interfering with quality of the produce.

Yield rate of made tea for the Proprietory estates was the lowest (177 Kg/Hectare) among all ownerships whereas the overall yield rate was found to be 612 kg/hectare. Low yield rate for the Proprietory estates was attributed to as much as 74% of total bushes being above the age of 100 years. For similar reasons the yield rate of made tea for the estates under Public Sector Undertaking was also found to be too low at 357 kg/hectare. Hence the survey felt that such low yielding estates should lay due stress for uprooting and replanting programme immediately or rejuvenation and infilling operation to fill in vacancies together with adoption of proper plucking round and pruning cycle schedules in order to improve the yield rate.

SPACINGS

In general, wider spacings like 4' x 6', 4' x 5', 4' x 4', 4' x 3' were found prevalent for the sectors with bushes above 50 years of age. Spacing like 3 ½' x 2 ½' x 2 ½', 3 ½' x 2' x 2', 3' x 2' x 2', 4' x 2', 3' x 2', 2 ½' x 2 ½' etc., were adopted for the young and matured teas under various age groups of bushes below 50 years.

The survey felt that rejuvenation and consolidation with inter row planting would be needed in the sections having wider spacing for augmentation of the bush density and productivity of tea.

IRRIGATION

The average rainfall in the district of Darjeeling including Kalimpong was 344 cms. during 1995, 278 cms during 1996 and 274 cms during 1997. Rainfall in the district is sporadic and

not evenly distributed. Majority of the surveyed estates did not have artificial irrigation facility, which largely affected the production during draught seasons. The survey suggests that the estates not having artificial irrigation may avail of "Plantation Development Scheme" run by Tea Board with a view to acquiring irrigation equipment to utilise any sort of perennial or non-perennial source of water other than rainfall available within the vicinity of the estates for irrigation.

APPLICATION OF FERTILIZERS

A majority of the surveyed tea estates (75%) used chemical fertilizers with varying proportions of which the most common were Super Phosphate, Rock Phosphate, SOA., MOP., etc., A few surveyed gardens (22%) have started using exclusively organic manure like Cowdung, Oil-cakes, Neem-cake etc., in suitable proportions for last couple of years. 17% of the surveyed garden were using both chemical and organic manure. For the last few years, quite a number of tea estates in Darjeeling started production of chemical free tea to cater to the increasing demand from health conscious consumers around the world. In this process, tea is produced without using any chemical input either on the bush or in the soil. There is a growing realisation among the health conscious consumers about the possibilities of cumulative toxic effects of the chemical being used during the course of cultivation of tea. The concept of organic tea culture has come up in order to avoid such hazard. Organic agriculture is always eco-friendly and quality oriented agricultural method. Today, all over India, there are quite a few tea gardens, which are high yielding under efficient organic management with excellent results. Dr.R.Steiner who was the pioneer of organic agriculture adopted such method of cultivation in the year 1924. In that respect organic tea cultivation started only around 15 years ago. It is proved that with the increase in use of fertilizers there has been a phenomenal increase in the use of pesticides because of increase of pest and disease outbreaks. A stage has been reached where we cannot stop use of fertilizers and pesticides and at the same time there is no sign of further increase in the productivity and production. Unless this trend is reversed, the sustainability of production will be in stake. Therefore, it is unavoidable that **organic farming has to be taken up not only to prevent contamination of food but also to restore health and productivity to the soil.**

WEEDS, PESTS AND DISEASES

Growth of wide variety of weeds was prevalent in all the surveyed estates. Incidence of pest attack by Red Spider, Red Borer, CaterPillar, Helopelties, Thrips, Greenfly was very common. Incidence of attack by the common diseases like Blister Blight, Black Spot, Poria, Black Root Rot, etc. was reported.

The surveyed estates in general were found to adopt plant protection measures on the basis of scientific norms recommended by TRA.

A few surveyed estates have been producing Bio-Organic tea recently for last couple of years by using green material and cattle manure as also planting green crop wherever possible to attain fixation of atmospheric Nitrogen. Topographically around 50% of the planted areas in Darjeeling are sloppy. Hence chemical control of weed in general was not recommended by TRA to combat topsoil erosion. Only judicious application of herbicides is recommended by them in cases where herbicidal treatment to control weeds is almost unavoidable.

PRUNING CYCLE

It was observed that **a sizeable number of surveyed tea estates adopted 4 to 5-year pruning cycles while others practiced three-year cycles. One or two of the sample estates adopted 6/ 7-year-pruning cycle depending upon the stand and health of the bushes.**

PLUCKING ROUND

The plucking round adopted by the estates varied over different seasons. In general well-calculated rounds were followed based on rainfall, age of the bushes and market situations. Usually, **during March to May, the estates maintained 4 to 8 day rounds. During June to August the plucking rounds varied between 6 to 8 days and during September to November there were 8 to 10 rounds.**

The survey recommends that TRA's scientific research and development may lay greater emphasis on Darjeeling teas for qualitative upgradation, minimization of gestation period in case new plantings as well as growth in production.

CHAPTER - V

TEA MACHINERY AND MANUFACTURING OF TEA:

FACTORY OPERATION

Most of the surveyed tea estates had factories of their own to process the green leaf. Out of the 36 surveyed estates having factories, all produced Orthodox tea. ~~except one producing CTC exclusively. One produced both CTC and Orthodox and~~ 6 estates produced Orthodox as well as Green tea. The machinery and equipment in most of the surveyed estates were in fairly good condition. However in a few cases replacement of old and obsolete machinery with modernized units was felt necessary with a view to reducing cost of production, to increase recovery percentage and qualitative up-gradation of the made tea. **Due to shortage of grid supply stand by generators were used by the surveyed factories.**

The Table-23 shown below explains the comparative position regarding production of Orthodox, CTC and Green teas by the sample estates classified under different ownerships.

TABLE-23

MANUFACTURE OF TEAS BY DIFFERENT METHODS

(in percentage)

Status of Ownership	Orthodox	CTC	Green Tea	Total
Properitory	100.00	-	-	100.00
Private Limited	99.78	-	0.22	100.00
Public Limited	71.99	26.18	1.83	100.00
Public Sector	100.00	-	-	100.00
Overall	81.62	17.12	1.26	100.00

As much as 82% of the total produce was in the form of Orthodox, 17% in the form of CTC and rest 1% Green tea. Ownership-wise analysis revealed that entire manufacture of the estates under Proprietory concerns and Public Sector Undertaking was of Orthodox variety while the estates under Public Limited companies produced a small percentage (0.22%) of Green tea besides traditional Orthodox (99.78%).

Withering of leaves was carried out in troughs by all the surveyed tea factories. Majority of them were reported to have fairly controlled Withering system. No specific problem in the process of Withering of green leaves was reported by the sample estates.

Floor fermenting was found to be the common practice. For a few factories, maintenance of fermenting floor was found to be not upto the mark which led to impairing of quality. Some of the surveyed factories did not have the arrangements for controlling humidity and temperature.

A considerable number of factories reported additional requirement of machinery units like Dryer, Roller, Generator set, Stoker, I.D fans Trough, Hot air passer etc., in order to augment the capacity as also to maintain the quality.

`Coal, H.S.D., Firewood, L.D.O and F.O were used as fuel for firing operation. The survey felt that as a stand by arrangement of fuel for tea industry in Darjeeling and Kalimpong, it is necessary to go in for suitable energy plantation programme by identifying appropriate areas within the grant area of Tea Garden.

For bulk packing of made tea plywood chests were commonly used. A few estates had started using Jute bags for packing a little quantity of made tea in addition to Ply wood chest packing. A couple of tea estates are using multi-wall paper sacks to minimise cost of packing. Small quantity of tea was also packed in packets by a number of tea estates which was normally sold as value added tea directly in the market. The survey felt that mechanised devices should be introduced for packing operation in order to reduce time and man power cost. For this purpose the estates willing to upgrade the processing and packaging machinery may take the advantage of Tea Board's "Tea Processing and Packaging Development Scheme" for necessary financial assistance.

The practice of processing green leaves of non Darjeeling origin such as Nepal etc. in the factories located in Darjeeling and passing it off as Darjeeling teas was reportedly creating a danger to the quality image of Darjeeling teas in both domestic and international markets. In order to stop this practice, the matter should be taken up with the State / district administration in collaboration with the Tea Board and the DPA.

CHAPTER - VI

LABOUR

The average number of daily employment of labour in Darjeeling including Kalimpong during the year 1997 was 49783. Out of this 45547 worked in field and 4236 worked in factory. Of the total labour force, 60% was female, 39% male and rest 1% was adolescent. The average labour per hectare works out to 2.80 while the annual output per labour averaged at 202 kg (made tea). These figures compare with the whole West Bengal at 2.37 and 698 kgs and the whole of North India at 2.43 and 719 kgs respectively.

The above is the profile on land-labour-ratio based on average daily employment in the overall tea plantation in Darjeeling and Kalimpong. The same study was also carried out on the basis of average labour on roll obtained from the surveyed tea estates taking into account different size groups as well as ownerships.

TABLE-24

AVERAGE NUMBER OF LABOUR ON ROLL PER HECTARE OF PLANTED AREA AS ON 31.12.1997 AND ESTIMATED AVERAGE OUTPUT OF MADE TEA PER LABOUR BY SIZE-GROUP

Size-group (in Hect.)	Average labour on roll per hectare			Estimated average output of made tea per labour (Kgs.)
	Permanent	Casual	Total	
Above 8.09 to 100	2.45	-	2.45	47
Above 100 to 200	2.25	0.71	2.96	168
Above 200 to 400	2.39	0.96	3.35	224
Above 400	3.15	0.52	3.67	144
Overall	2.50	0.80	3.29	186

The estimated average labour on roll per hectare as on 31.12.97 was 3.29 on an overall basis. The highest average labour on roll per hectare was found to be 3.67 for the size-group of above 400 hectares. Average output per labour worked out to 186 kgs. The Size-group of above 200 to 400 hectares has maximum average labour productivity of 224 kgs whereas the lowest average labour productivity of 47 kgs was noticed for the size-group of above 8.09 to 100 hectares.

While the overall permanent labour per hectare was estimated at 2.50 such rate appeared to be highest at 3.15 for the size-group of above 400 hectare. Casual labourers were engaged by almost all the size-groups during peak seasons. The overall employment of casual labour was estimated at 0.80 per hectare. The highest employment of casual labour (0.96) per hectare was registered by the size group of above 200 to 400 hectares.

The same analysis based on ownership of the sample estates may be shown as per Table-25 below :

TABLE-25

AVERAGE NUMBER OF LABOUR ON ROLL PER HECTARE OF PLANTED AREA AS ON 31.12.1997 AND ESTIMATED AVERAGE OUTPUT OF MADE TEA PER LABOUR BY OWNERSHIP.

Status of Ownership	Average labour on roll per hectare			Estimated average output of made tea per labour (Kgs.)
	Permanent	Casual	Total	
Proprietory	2.01	0.32	2.33	76
Private Ltd.	2.36	0.70	3.06	250
Public Limited	2.46	0.83	3.29	187
Public Sector	3.34	1.02	4.36	82
Overall	2.50	0.80	3.29	186

There was no significant variation in permanent labour employment over the different ownership classifications. Public Sector Undertakings had the highest average permanent labour employment per hectare at 3.34 while such figure on overall basis was 2.50. Casual labour employment per hectare also worked out as highest (1.02) in case of Public Sector Undertaking. The average labour on roll per hectare was highest (4.36) for Public Sector Undertakings. The average output of made tea per labour was found to be maximum (250 kgs.) followed by Public Limited companies (187 kgs). Public Sector Undertakings recorded maximum average labour on roll per hectare at 4.36 while such ownership showed its average productivity of labour to be close to the lowest at only 82 kgs. Out put of made tea per labour was lowest (76 kgs) for the estates under Properitory ownership. The survey recommends that in order to ensure improvement in labour productivity, identification of unproductive job components, minimisation of idle time, optimum utlisation of resources, modernization of equipment and motivational approach are to be adopted and Public Sector factories should attach top priority on it.

Mandays spent on field and factory operations according to size-group and ownership are shown below in terms of percentage in Table-26 and Table-27 respectively. As plucking happens to be the major field operation, mandays spent in plucking and other field operations are shown separately.

TABLE-26

MANDAYS SPENT ON FIELD AND FACTORY OPERATIONS BY SIZE-GROUP.

(in percentage)

Size-group (in Hect.)	Field Operations		Factory operation	Total
	Plucking	Others		
Above 8.09 to 100	77.14	8.58	14.28	100.00
Above 100 to 200	42.68	50.07	7.25	100.00
Above 200 to 400	55.70	37.99	6.31	100.00
Above 400	56.14	40.48	3.38	100.00
Overall	53.02	41.04	5.94	100.00

Above table indicates that **the lower sized tea estates within 8.09 to 100 hectares utilised as much as 77% of the total mandays in plucking operation but minimum mandays (8%) in other field operations such as pruning, weeding, irrigation, fertilizer application etc,. Plucking operation shared lesser mandays ranging from 43% to 56% in respect of other size groups. Utilisation of mandays in factory operation was lowest at 3% for the estates above 400 hectares. The ratio of overall utilization of mandays in field and factory worked out at 94 : 6.** The survey recommends that the estates under the lowest size-group (above 8.09 to 100 hectares) may lay greater emphasis on the essential field operations like irrigation, manuring, pruning, weed control, pest control etc. for maintaining good health of the bushes that would produce better output and minimise cost of production.

TABLE-27

MAN-DAYS SPENT ON FIELD AND FACTORY OPERATIONS BY OWNERSHIP

(in percentage)

Status of Ownership	Field operations		Factory operation	Total
	Plucking	Others		
Proprietory	34.10	61.75	4.15	100.00
Private Limited	46.84	43.53	9.63	100.00
Public Limited	54.60	40.13	5.27	100.00
Public Sector	60.78	35.35	3.87	100.00
Overall	53.02	41.04	5.94	100.00

The above table indicates that the sample tea estates under Public Sector Undertakings utlised maximum about 61% of the total mandays on plucking followed by Public Limited companies (55%), Private Limited companies (47%) and Proprietory concerns (34%). Mandays spent in factory is the highest (10%) by the estates under Private Limited companies. Overall utilisation of man-days in factory operation was 6%. The survey felt that an in-depth Method Study may be undertaken for optimum utilization of resources and to formulate schemes for modernization of factory equipment at various stages.

TABLE-28

DISTRIBUTION OF TOTAL MANDAYS SPENT IN FIELD & FACTORY ACCORDING TO SEX

(in percentage)

Category	Field	Factory	Total
Male	83.30	16.70	100.00
Female	98.20	1.80	100.00
Adolescent	100.00	-	100.00
Overall	93.04	6.96	100.00

As much 98% of the female workforce is engaged in field operation while more than 17% of the total male workers engaged in factory.

The Table-29 below would show the distribution of daily wages and other amenities to labour during the year 1995-96 to 1997-98.

TABLE-29

DISTRIBUTION OF WAGES AND OTHER AMENITIES TO LABOUR DURING 1995-96, 1996-97 AND 1997-98

(in percentage)

Item	Period			Average of 3 financial years
	1995-96	1996-97	1997-98	
Wages and Allowance	72.66	72.09	71.02	71.88
Others (Including bonus)	27.34	27.91	28.98	28.12
Total	100.00	100.00	100.00	100.00

The above table would reveal that Wages and Allowances accounted for nearly 72% of the total wages bill for the surveyed tea estates. Balance 28% was accounted for by bonus and other amenities like subsidized ration, housing, medical facilities and other fringe benefits that were given by the estates in various forms.

CHAPTER - VII

MARKETING

Information collected from the sample estates revealed that on an average 75% of the total sales of made tea was through auctions at Calcutta and Siliguri. The balance was disposed of by Private sales in domestic market, direct export from gardens, trade samples and gift to employees. The following table indicates the comparative position regarding the disposal of crop through auctions as well as other mode of sales during 1995 to 1997.

TABLE-30
PRIMARY MARKETING OF TEA DURING 1995-97

(Figures in percentage)

Year	Sold Through Indian Auctions			* Other mode of sales	Overall
	Calcutta	Siliguri	Total		
1995	45.79	33.26	79.05	20.95	100.00
1996	46.16	34.34	80.50	19.50	100.00
1997	46.04	16.03	62.07	37.93	100.00
Average of 3 years.	46.00	28.66	74.66	25.34	100.00

Note: * indicates disposal by Private Sales (domestic), direct export, trade samples and gift to employees.

The table shown above reveals that out of 75% of the total sales Calcutta Auction shared 46% and Siliguri 29%. Yearwise analysis reveals that in the year 1997 sale through Siliguri auction has decreased by about 18% over 1996. Sale through Calcutta auction remains almost at the same level during the years 1995, 1996 and 1997.

TABLE-31

AVERAGE PRICE REALISED DURING 1995-97

(Figures in Rs. Per Kg.)

Year	Sold Through Indian Auctions			* Other mode of sales	Overall
	Calcutta	Siliguri	Total		
1995	115.61	49.59	94.07	126.53	104.25
1996	112.26	50.14	94.68	122.07	101.92
1997	141.35	70.62	127.71	129.41	122.97
Average of 3 years.	122.02	56.59	101.84	126.50	109.98

Note: * indicates disposal by Private Sales (domestic), direct export, trade samples and gift to employees.

The average price of tea per kg. sold in auction worked out to be Rs.101.84 during the period 1995 - 1997 whereas price realised through non-auction sales registered Rs.126.50 per kg during the same period. There was a dominance of price through non-auction sales over the auction till 1996 after auction prices became higher over private sales.

The overall price realised at Calcutta auctions during 1995 to 1997 averaged to Rs.122.02 per kg while corresponding price fetched at Siliguri auction was Rs.70.62. Despite having significantly better prices at Calcutta and Siliguri auctions, tea sales through auctions declined from 80% to 62% during 1996- 1997.

TABLE-32
PRIMARY MARKETING OF TEA BY OWNERSHIP (1995 - 1997)

(Figures in percentage)

Status of Ownership	Sold Through Indian Auctions			* Other mode of Sales	Overall
	Calcutta	Siliguri	Total		
Proprietory	74.28	-	74.28	25.72	100.00
Private Limited	64.44	0.17	64.61	35.39	100.00
Public Limited	34.51	30.52	65.03	34.97	100.00
Public Sector	91.39	-	91.39	8.61	100.00
Average of 3 years	49.21	21.94	71.15	28.85	100.00

Note: * indicates disposal by Private Sales (domestic), direct export, trade samples and gift to employees.

Table-32 indicates that **the estates under Public Sector Undertaking sold the maximum proportion (91%) of sale through auction while the estates under Private Limited and Public Limited companies showed the minimum at 65%.**

Average price realized by the surveyed estates for various types of ownership are given below:

TABLE-33
OWNERSHIP-WISE AVERAGE PRICE REALISED BY ESTATES (1995 - 1997)

(Figures in Rs. Per Kg.)

Status of Ownership	Sold Through Indian Auctions			* Other mode of sales	Overall
	Calcutta	Siliguri	Total		
Proprietory	191.53	-	191.53	78.88	96.80
Private Limited	91.71	100.87	91.73	95.53	92.84
Public Limited	149.14	56.48	105.65	135.13	115.96
Public Sector	110.68	-	110.68	327.76	138.22
Average of 3 years	122.02	56.59	101.84	126.50	109.98

Note: * indicates disposal by Private Sales (domestic), direct export, trade samples and gift to employees.

The average price of auction sold teas was in general lower than that through non-auction mode for all categories of ownerships. Thus survey felt that qualitative up-gradation of teas is imperative in order to fetch better price in all auction sales as a sizeable quantity is marketed through auction mode.

CHAPTER - VIII

COST OF PRODUCTION

There was considerable difficulty in obtaining the cost data and the Profit and Loss A/c Statements from the tea companies. Even though they were available, in quite a number of cases, the information was so kept that it was difficult to isolate the desired data. On the basis of information obtained from only a few tea estate / companies, an attempt has been made to analyse and highlight different cost components together with a comparison between the cost of production and price realisation.

TABLE - A

COST OF PRODUCTION OF MADE TEA DURING 1995-96, 1996-97 AND 1997-98

Sl. No.	Item of expenditure	1995-96		1996-97		1997-98		Overall	
		Rs./Kg.	Percent-age increase/ decrease relating to previous year	Rs./Kg.	Percent-age increase/ decrease relating to previous year	Rs./Kg.	Percent-age increase/ decrease relating to previous year	Rs./Kg	Percent-age
1.	Establishment at Garden	48.34	-	52.27	8.13	59.45	13.74	53.52	35.70
2.	Cultivation	18.39	-	20.62	12.13	21.07	2.18	20.07	13.39
3.	Manufacturing	16.94	-	19.45	14.82	19.57	0.62	18.69	12.47
4.	Plucking	17.22	-	18.27	6.10	19.97	9.30	18.50	12.34
5.	Freight & transport	3.21	-	3.55	10.59	3.77	6.20	3.52	2.35
6.	Packing	4.42	-	4.92	11.31	4.00	(-)18.70	4.44	2.96
7.	Duties & Taxes	1.45	-	1.46	0.69	2.61	78.77	1.87	1.25
8.	General charges	8.62	-	9.15	6.15	9.32	1.86	9.04	6.03
9.	Head office Expenses	10.53	-	10.71	1.71	12.91	20.63	11.42	7.62
10.	Selling expenses	4.04	-	3.56	(-) 12.00	5.20	46.07	4.30	2.87
11.	Depreciation	3.38	-	4.09	21.01	6.10	49.14	4.56	3.02
	Total	136.54	-	148.05	8.43	163.97	10.73	149.93	100.00

The above analysis reveals that cost of production per kg of made tea increased over the period from 1995-96 to 1997-98. The cost of production per kg of made tea registered a growth of 8.43% during the year 1996-97 over the previous year. Similarly, the growth was 10.73% during the year 1997-98. The unit cost of production during the year 1995-96 was estimated at Rs.136.54, which increased to Rs.148.05 per kg in 1996-97 and further to Rs.163.97 per kg during 1997-98.

It was noticed that there was an increase in almost all cost components. The average expenditure per kg for the period 1995-96 to 1997-98 was found to be highest in respect of Establishment at garden (Rs.53.52) followed by Cultivation (Rs.20.07), Manufacturing (Rs.18.69), Plucking (Rs.18.50), Head office expenses (Rs.11.42). The lowest average expenditure (Rs.1.87) was observed in the case of Duties and Taxes. The expenditure on Freight and Transport worked out to Rs.3.52 per kg.

TABLE - B
PROPORTION OF DIFFERENT ITEM OF EXPENDITURE TO TOTAL COST OF PRODUCTION PER KG OF MADE TEA IN DIFFERENT SIZE GROUP (AVERAGE OF 1995-96 TO 1997-98)

(Figures in percentage)

Sl. No.	Item of Expenditure	Size-group (Hectare)				
		8.09 to 100	Above 100 to 200	Above 200 to 400	Above 400	Overall
1.	Establishment at garden	-	20.08	36.88	38.89	31.95
2.	Cultivation	-	18.02	12.92	12.21	14.39
3.	Manufacturing	-	13.41	13.81	2.03	9.75
4.	Plucking	-	13.04	11.31	18.50	14.29
5.	Freight and Transport	-	2.49	2.58	0.46	1.84
6.	Packing	-	1.94	3.18	2.13	2.42
7.	Duties and Taxes	-	0.20	1.51	0.19	0.63
8.	General charges	-	8.24	6.09	3.47	5.93
9.	Head office expenses	-	16.45	5.48	19.03	13.65
10.	Selling expenses	-	3.72	3.05	0.74	2.50
11.	Depreciation	-	2.41	3.19	2.35	2.65
	Total	-	100.00	100.00	100.00	100.00

On an average, the garden establishment cost shared the maximum proportion (32%) over the total cost followed by cultivation, plucking and Head Office expensed (each 14%). The share of plucking cost and Head Office expenses were highest (18% and 19% respectively) for the maximum size group, while proportion of manufacturing expenses was much higher at 13% for the estates below 200 hectares in comparison to those above 200 hectares (2%).

In order to assess the economic viability of the tea estates in Darjeeling an analysis has been made to study the sale-cost differential on yearwise basis.

TABLE - C
ESTIMATED COST PRICE AND SALE PRICE DURING THE YEAR 1995-96 TO 1997-98

Period	Cost price	Sale price	Sale-cost differential
1995-96	136.54	118.90	(-) 17.64
1996-97	148.05	113.45	(-) 34.60
1997-98	163.97	145.88	(-) 18.09
Overall	149.93	125.36	(-) 24.57

The above **cost of production based on the surveyed estates compares with Rs.122.00, Rs.136.00 and Rs.146.00 per kg for 1995-96, 1996-97 and 1997-98 respectively as indicated as the standard cost of production by the Committee constituted by the R.B.I.'s Standing Committee for co-ordination of Institutional Fund for Tea Industry.**

The sale-cost differential for the period 1995-96 to 1997-98 was found to be dismal. The sale price (average auction price) during the three-year period failed to cover the cost of production, which speaks of the state of poor tea economy in Darjeeling. Improvement of quality standard seems to be of utmost importance to improve the sale-cost differential which would give impetus to the much needed improvement in profitability, attract larger investment and ensure better capacity to beat the cost of capital. Protection of Intellectual Property Rights for genuine Darjeeling tea also seems need of the hour to prevent misuse of its reputation in the quality markets.

Secondly, a strong domestic market base for Darjeeling teas needs to be developed as an alternative market within the country. The survey suggests generic promotion of Darjeeling tea in India through suitable promotional programmes in order to increase domestic consumption of pure Darjeeling teas and also to arouse Consumers' right perception for the finer parameters of the speciality teas.

Considering the weak financial status of the Darjeeling tea industry the State Government may consider suitable concession in the rates of agricultural income Tax and Cess on green leaf as applied to Darjeeling teas. It is also recommended that considering the poor economy, Darjeeling tea should be exempted from payment of Excise Duty.

Improvement of the basic infrastructure like roads, power supply and rural electrification project needs immediate attention by the State Government.

CHAPTER - IX

FINANCE AND PROFITABILITY

Non-availability of sufficient number of Balance sheets and Profit and Loss A/c. despite best efforts was a deterrent factor in compilation of the financial information necessary for the survey. Financial information could be collected from only a limited number of companies. Prima-facie it was observed that nearly 70 to 75% of the respondent tea companies incurred loss during 1996-97 although the situation improved to some extent in the following year. A comprehensive analysis has been carried out based on some standard financial ratios which would reveal certain highlights on the financial performance situation by the tea companies.

The values of the ratio are summarized in the following table: -

FINANCIAL RATIO ANALYSIS

	1995-96	1995-96	1996-97	1997-98
1.	Working capital ratio	0.57	0.40	0.58
2.	Profit after tax as percentage of net worth	5.65%	--	16.50%
3.	Debt-equity ratio.	1.40	1.20	0.51
4.	Debt net worth ratio	0.42	0.40	0.38
5.	Profitability ratio	0.11%	--	0.15%
6.	Return on capital employed	0.14%	--	0.16%
7.	Profit before tax as percentage of sales	4.06%	--	5.82%

Interpretation of the ratios : -

A. Working capital ratio $= \dfrac{\text{Current Asset}}{\text{Current Liability}}$

B. Net worth = Capital + Reserve +Surplus.

C. Debt Equity Ratio $= \dfrac{\text{Secured loan.}}{\text{Paid up share capital.}}$

D. Debt net worth Ratio $= \dfrac{\text{Secured loan}}{\text{Net worth.}}$

E. Profitability Ratio $= \dfrac{\text{Profit before tax + Interest}}{\text{Net worth + Secured Loan.}}$

$$\text{F. Return on capital employed} = \frac{\text{Profit before tax + Interest.}}{\text{Capital employed.}}$$

Where,

Capital employed =Total assets - Current liabilities

G. Retention = Profit after Tax less appropriation plus Depreciation.

Working Capital Ratio (Acid Test Ratio) as an indicator of liquidity strength of the tea companies actually declined from 0.57% during 1995-96 to 0.40% during 1996-97 but increased to 0.58% during 1997-98. Decline in the ratio during 1996-97 explained increasing dominance of current liabilities over current assets. Such decline indicated floundering availability of working capital, which is bound to adversely affect the sustenance and development of tea economy in Darjeeling unless effective/corrective steps are immediately taken to root out the problems.

Profit after tax as a percentage of net worth increased to 16.50% during 1997-98 from 5.65% during 1995-96 against depleting reserves and surpluses. The Darjeeling tea industry suffered serious set back during the year 1996-97 as it failed to generate profit (estimated on the basis of available data). Debacle during 1996-97 might be due to dominance of unproductive expenses depressed market conditions and failure to identify high cost areas. The situation somewhat eased during 1996-97.

Debt equity ratio slided down from 1.40 during the 1995-96 to the level of 0.51 during 1997-98. Such decline against stagnant profitability indicates failure to attract borrowed capital to rejuvenate the industry's growth.

Return on capital employed was estimated at 0.14% during the year 1995-96 which increased marginally to 0.16% during the year 1997-98. Profit before tax as a percentage of net sales showed a similar trend of fluctuation over the three-year period.

PART - III

SUMMARY OF RECOMMENDATIONS.

- Public Limited companies and Private Limited companies may work out necessary programme for extension planting within the grant on a priority basis.

- An integrated development incentive scheme need be developed particularly in the hilly areas like Darjeeling and Kalimpong in order to boost up the long-term developmental activities namely, extension planting and replanting.

- Tea estates may avail of Tea Board's Plantation Development Scheme for financial assistance extended in the form of long-term loan and subsidy.

- Tea estates below and upto 200 hectares may go in for suitable infilling programme in order to reduce the percentage of vacancy and for the growth of yield rate.

- Infilling programme may be given priority for the estates under Public Sector Undertaking and judicious approach will be required in respect of selection of sectors to be infilled as almost 70% of the total planted area under all ownerships contained bushes above 70 years of age.

- Low yielding Estates should lay due stress for uprooting and replanting programme immediately or rejuvenation and infilling operation to fill up vacancies together with adoption of proper plucking round and pruning cycle schedules in order to improve the yield rate in future.

- Rejuvenation and consolidation with inter row planting would be needed in the sections having wider spacing for augmentation of the bush density and productivity of tea.

- Considering the slopy topographical position, chemical control of weed in general is not recommended to combat topsoil erosion for Tea Estates producing Bio-Organic Tea. Only judicious application of herbicides is recommended in cases where it is almost unavoidable.

- Both TRA and D.T.R.C., Kurseong, should get more in touch with the Darjeeling tea industry to inject latest R & D in field and cultural practices for qualitative up-gradation as well as growth of production of prestigious and price worthy Darjeeling tea.

- Mechanised devices should be introduced for packing operation. For this purpose the estates willing to upgrade the processing and packaging machinery may take the advantage of Tea Board's "Tea Processing and Packaging Development Scheme" for necessary financial assistance.

- The practice of processing green leaves of non Darjeeling origin such as Nepal etc. in the factories located in Darjeeling and passing it off as Darjeeling teas was reportedly creating a danger to the quality image of Darjeeling teas in both domestic and international markets. In order to stop this practice, the matter should be taken up with the State / District administration in collaboration with the Tea Board and the DPA.

- In order to ensure substantial enhancement of the labour productivity, identification of unproductive job components, minimisation of idle time, optimum utlisation of resources, modernization of equipment and motivational approach are to be adopted and Public Sector factories should attach top priority on it.

- Tea Estates under the lowest size group (above 8.09 to 100 hectares) may lay greater emphasis on the essential field operations like irrigation, manuering, pruning, weed control, pest control etc. for maintaining good health of the bushes that would produce better output and minimise cost of production.

- An in-depth Method Study may be undertaken for optimum utilization of resources and to formulate schemes for modernization of factory equipment at various stages.

- Qualitative up-gradation of teas may be taken care of in order to fetch better price in all auction sales as a sizable quantity is marketed through auction mode.

- It is suggested that generic promotion of Darjeeling tea in India may be initiated through suitable promotional programmes in order to increase domestic consumption of pure Darjeeling teas and also to arouse Consumers' right perception for the finer parameters of the speciality teas.

- Considering the weak financial status of the Darjeeling tea industry the State Government may consider suitable concession in the rates of agricultural income Tax and Cess on green leaf as applied to Darjeeling teas. It is also recommended that concidering the poor economy, Darjeeling tea should be exampled from payment of Exise Dury.

- Improvement of the basic infrastructure like roads, power supply and rural electrification project needs immediate attention by the State Government.