CHAPTER V: METHODOLOGY, DATA COLLECTION AND DESCRIPTION OF DATA

This chapter is devoted to the discussion on methodology and details of data collection. There has been a growing concern over declining profitability in tea plantations since the beginning of the present decade. However, no data are available on estate-level profitability of tea plantations in India. I focused on West Bengal plantations and collected data from 30 estates in the Dooars and Terai regions producing CTC tea. Data were collected with the help of a detailed questionnaire involving information on ownership, agro-climatic factors, production, cost of production and revenue generation. Further, collection of primary data was supplemented by collection of secondary data from Kolkata and Siliguri auctions.

This chapter has four sections. Section 1 discusses the methodology of data collection. Section 2 talks about the process of data collection. Section 3 describes the details of data collected after classifying those into few broad heads. Section 4 talks about the data collected with regards to case studies of smallholders and BLFs.

5.1 Methodology

In 2006, West Bengal had 293 registered tea estates in the tea growing districts of Jalpaiguri, Darjeeling and Uttar Dinajpur. The entire tea growing region can be classified into three segments namely Darjeeling hills, Terai and the Dooars. Darjeeling hills are in Darjeeling district. Terai comprises parts of Darjeeling and Uttar Dinajpur district. Dooars is located in Jalpaiguri district. The number of registered tea estates in Darjeeling hills, Terai and Dooars are 76, 46 and 171 respectively.

Tea estates located in Darjeeling hills mainly produce orthodox tea; they also produce green tea to a lesser extent. Tea estates in Terai and Dooars produce mainly CTC tea. Some green tea is also produced in these areas. The fieldwork for this thesis was conducted only in CTC tea producing estates. Estates in Darjeeling hills, which produce mostly orthodox tea, were kept outside the scope of the study since production process of orthodox tea is different from that of CTC tea. Of the 293 registered estates, CTC tea was produced in 217 estates (46 tea estates in Terai and 171 estates in the Dooars). Of these,
at the time of the survey, 17 estates (4 in Terai and 13 in Dooars) were closed and rest 200 CTC-producing estates were operational. From these estates a 15 per cent stratified random sample was drawn (sample size equals 30). The sample comprised 8 estates located in Terai and 22 estates located in the Dooars.

In each region, estates were assigned serial numbers and arranged in descending order with respect to the area under tea. The estates were divided into three strata – large estates (estates having an area of 400 hectare or more), medium estates (having an area between 200 to 400 hectare) and small estates (having an area of 200 hectare or less).

Among the sample estates in Terai, two estates were in the large size-category, four in the medium size-category and two in the small size-category. Names of the eight Terai estates, which are part of the selected sample, are given in Appendix I.

In Dooars, estates belonging to large category are more common. The sample drawn reflected this. Out of twenty-two sample estates, thirteen were large, seven were in the medium size-category and two were in the small size-category. Names of the twenty-two Dooars estates, which are part of the sample, are also given in Appendix I.

A survey schedule was prepared with an objective of collecting primary data relating various aspects of cost of production and revenue generation along with other important parameters relating to production of tea (Appendix II). Data were collected at two levels. Cultivation and production data were collected from the estates and data related to administrative cost and sales were collected from the head-offices of these tea estates. These data were entered in a spreadsheet with respect to each estate and then a master-sheet involving all the estates and basic parameters were prepared such that inter-estate comparison and analysis became possible. This was followed by the analysis of data by using simple economic and statistical methods. For general analysis, secondary data and information from different sources were used along with the primary data. Data were collected as per the survey schedule with respect to 30 estates.
5.2 Collection of data

Data collection process started in the first week of April 2006 and continued up to February 2007. The fieldwork was first done in Terai and then in the Dooars. Getting data, particularly financial data, from tea estates were difficult as managements were apprehensive about giving these data to an outsider. It usually needed a lot of persuasion to make the management part with the data. There were few cases of refusal also. It took about seven days to collect data from a single estate. Collection of data from head offices took, on an average, another two days.

Data were collected from various records as available in the estate office and as communicated by the persons belonging to estate management. As far as possible, I verified the authenticity of data provided by the management by examining relevant supportive documents. For example, regarding purchases of store, I tried to look at the corresponding bills/challans. Statutory returns and reports, as periodically submitted by the estates to various government authorities, were also used to test data reliability and consistency. Regarding welfare facilities, I talked to workers and office-bearers of the operating unions to verify the claims made by the estate management.

To supplement information on revenue generation, I visited and collected auction data from the Kolkata and Siliguri auction centres. Auction related data provided the summary of tea sales (volume, value and average price) in a year with respect to each tea estate registered at the respective auction centre. These were very useful in plugging gaps in primary data collection. I also tried to collect yearly production figures for the period from 1991-92 to 2004-05 for all tea estates in West Bengal from various sources.

5.3 Description of data

Information collected through the survey schedule may be categorized into following eight broad heads.
5.3.1 Identity

Under this head, information was collected regarding address of estates, registration number issued by the Tea Board, year of first production, name and tenure of the present manager (Annexure 2, page 1). Ownership details like type of ownership, names of the owners, address, other occupations and details of other tea estates owned were also collected (Annexure 2, pages 2 & 3). There are mainly three categories of ownership—Private Limited (proprietary), Public Limited (listed company) and public sector undertaking. Information was also collected with respect to other aspects of ownership like composition of Board of Directors, and whether the company owns other plantations and other business interests of the owners. Horizontal and vertical integrations also influence the overall performance of the company. Information were also collected about the managerial details including the tenure of the present manager.

5.3.2 Area, production and revenue

Data were collected on total area of the plantation, area planted with tea bushes and the extent of replantation during the period from 1991-92 and 2005-06 (Annexure 2, page 6). The difference between the total area of the estate and the area under tea bushes shows the extent of area utilised for other purposes like factory and administration, housing, roads and other infrastructure.¹

Data on production of tea were collected for the period from 1991-92 to 2005-06 (Annexure 2, page 7). These data were separately collected for different types of tea.

Data on sale of different types of tea, through auctions and through private channels of marketing, were collected for 1991-92 to 2005-06 (Annexure 2, pages 30-32). For 2004-05, I collected detailed monthly data on sales through different channels (Annexure 2, pages 33-34).

¹ In some estates, a part of the land may have remain fallow because of its unsuitability either for planting tea bushes or for any other reasons making those unsuitable for planting tea bushes.
5.3.3 Climatic data

Data were collected on profile of rainfall, humidity and temperature for the year 2004-05 (Annexure 2, page 4).

The pattern of variation in the temperature was very similar in the sample estates. In winter, minimum temperature remained at around 9°C whereas the maximum temperature touched about 25°C. In summer, maximum temperature reached about 35°C whereas the minimum temperature was about 21°C.

Monthly rainfall figures were collected from almost all the sample estates. In general, the rainfall is higher in the Dooars than in the Terai. In both the regions, most of the rainfall occurs during the five months of June, July, August, September and October. Month of December remains dry for almost all estates. Estates receive very little rain during the months of January and February (remains dry for quite a number of estates).

Rainfall, both the aggregate amount and its spread over the year, are extremely important for the productivity of tea bushes. Tea bushes can not withstand long spell of dry weather. As a result, quantum of rainfall after the dry winter spell becomes crucial for the survival of the bush and productivity in the coming peak season.²

Only one estate was able to provide data on humidity. For this estate average relative humidity was about 80 per cent.

5.3.4 Bush-age and vacancy profile

Age of the tea bush is an important determinant of productivity. The productivity of a tea bush is highest between the age of 20 and 50 years. The productivity starts to decline after the age of 50 years. A tea bush attains its prime productivity period at about twenty

² Irrigation can provide some protection against prolonged dry spells. Irrigation facilities, however, are not available in all parts of the estates. Also, substantial costs are involved in irrigation, particularly when it is provided using diesel engines.
years of age and maintains so till about fifty years (TRA, 1998). After that decreasing returns start to operate. So ideally a tea bush should not continue beyond the age of fifty years (ITA, 1983). Therefore, old aged tea bushes have to be replaced with new bushes. However, because of economic and managerial reasons, many estates have sub-optimal age profile of bushes (Karmakar & Banerjee, 2005). In my survey, I collected data on age-group profile of tea bushes (distribution of tea bushes into different age groups like less than five, between 5 and 10, between 10 to 30 etc). The entire plantation area of an estate is generally divided into number of sections. Data related to total number of bushes and their distributions over various age-groups in each section were collected for all sample estates (Annexure 2, page 5).

Another important aspect of bush management is the extent of vacancy. Vacancy refers to the percentage gap between the optimal bush density and the actual bush density. A higher vacancy, which means that inadequate numbers of bushes are planted in an area, results in lower productivity per hectare. Vacancy can be reduced by planting more bushes, a process known as in-filling.

In the survey, estates were asked to report vacancies in different sections of the estate. This was used to estimate the extent of vacancy in the estate as a whole. It may be noted that the optimal bush density depends on the varieties of bushes planted in a section as well as on various aspects of farming practices adopted in different estates. I have not used any normative optimal bush density to calculate vacancy but have directly used the extent of vacancy as reported by the estates.

Replantation of old bushes with new ones and in-filling to reduce the vacancy are essential for maintaining overall productivity of the estate. These activities require sizable capital investment and long-term planning.

5.3.5 Structure of workforce and labour deployment

The workers in an estate (excluding the managerial workforce) can be categorised into monthly-paid workers, daily-paid permanent workers, and daily-paid temporary workers. Names of daily-paid permanent workers are recorded in the muster-roll and these workers
are entitled to be paid on every day (except on holiday) that they report for work. On the other hand, daily-paid temporary workers are paid only for the days that the estate actually employs them. Temporary daily-rated workers are mainly employed during the peak plucking season (months of June, July, August and September). Temporary labourers are primarily drawn from the households of the dependents of permanent labourers and are also, mostly, resident within the plantation. In other words, these members of the households of the permanent workers form a reserve which the estate can use as and when required. In addition, in many plantations, plucking of leaves, particularly in the peak season, is also done under piece-rated contracts where the workers are paid by the volume of leaves they pluck. Plucking under such contracts is commonly referred to as cash plucking. In general, permanent and temporary daily-rated workers work on holidays on such contracts. In general, the agreements between the association of tea producers and tea workers unions do not allow plucking under such piece-rated contracts. Several estates, however, get small amounts of plucking done through such contracts.

The activities in a tea plantation may be divided into three segments – cultivation, manufacturing and other services. Of these, cultivation, particularly plucking of leaves, accounts for a large share of labour use. Other activities mainly constitute preparation of field, construction of roads and housing, and provision of other facilities in the estates.

Data on the structure of workforce, labour deployment and cost of hiring labour were collected for the year 2004-05 (Annexure 2, pages 8-10). I collected data on number of workers under each category, number of person-days of daily-rated workers, and the wages paid (including provident fund and other benefits) to the workers. These data were collected separately for male and female workers. Data were collected on a monthly basis so as to be able to analyse seasonality in pattern of labour deployment. I also collected information on the extent of use of labour, in terms of person-days utilised in different activities in each sample estate (Annexure 2, page 11).

Since cash plucking is done through an informal arrangement with local workers, the sample estates did not provide information on the extent of labour deployment under such
contracts. I expect that the extent of labour deployment under such contracts is included in labour deployment through temporary daily-rated contracts.

5.3.6 Cost of production

Cost of production was calculated on the basis of data collected on following broad items (Annexure 2, pages 12-29).

- Cost of material inputs
  - Seed material
  - Fertilisers
  - Plant protection chemicals
  - Irrigation
  - Fuel

- Cost of labour hiring
  - Wage payments
  - Other expenses
    - Maintenance of housing
    - Medical facilities
    - Drinking water and sanitation
    - Food (canteen subsidy, tea)
    - Child care and educational facilities
    - Recreational facilities
    - Firewood
• Subsidised ration
• Protective clothing

• Cost of processing

• Cost of packaging and marketing
  • Storage
  • Packaging
  • Transportation
  • Brokerage

• Other costs
  • Depreciation
  • Maintenance costs
  • Interest

• Taxes
  • Rent paid towards lease value of land
  • Excise duty and cess on excise
  • Corporate tax
  • Central and State sales tax
  • Education and employment surcharge
  • Profession tax
  • Income tax
• Panchayat tax
• Any other taxes
• Insurance
• Supervision and managerial expenses
• Expenses on maintenance of head office

5.3.7 Revenue generation

Tea estates earn revenue primarily by selling the output that is made tea. There are few other sources of earnings also like interest income, selling of old plant and machineries etc but these are not significant. Now tea can be sold in different ways. The most common way is selling it at auctions. Managements can sell it at private markets also. They can go for direct export also. I have collected information on how the sample estates dispose of tea during the period 1991-92 to 2005-06. Almost all estates divided the total sale between auction and private markets. Estates like Bhatkawa, Bhojnarain and Bijoynagar relied more heavily on auction as the primary channel of marketing of tea. Others distributed their output between these two options. Oodlabari also exported directly a part of their output.

5.4 Case-studies of small plantations and bought-leaf factories

Over the last decade, cultivation of tea has been taken up by a number of small plantations owned by private limited companies as well as by peasant households. Unlike traditional plantations, these tea growers do not have processing facilities within the plantation. These tea growers sell tea leaves to stand alone processing facilities, commonly referred to as Bought-leaf Factories, which then manufacture CTC tea for further sale. Some of the relatively large tea growers within this category (though they are considerably smaller than conventional plantations) have allied tea processing factories that are owned by the same family/group but registered as an independent Bought-leaf Factories.
Although this thesis primarily deals with profitability of conventional plantations, I collected information from three selected small-grower estates. These are Adarmuna tea plantation (Darjeeling district), Rupali tea plantation (Jalpaiguri district), Chandni tea plantation (Uttar Dinajpur district). I also collected information from Maya Tea Estate (Uttar Dinajpur district) which started as a small-grower plantation but has expanded to about 196 hectares. I also collected information from three Bought-leaf Factories: Maya Tea Factory (Uttar Dinajpur district), Super Klass Tea Factory (Darjeeling district) and Teesta Tea Factory (Jalpaiguri district). Of these, Maya Tea Factory is an allied Bought-leaf Factory of the Maya Tea Estate. The owners of other two tea factories do not own tea plantations and are exclusively engaged in tea manufacturing.

Data on ownership, area under plantation, production of green leaves, employment, cost of production, details of disposal of green leaves and price realisation were collected from small-grower plantations. Data on production and cost were collected for the year 2004-05. From the Bought-leaf Factories, I collected detailed data on ownership, the amount of green leaf purchased, price paid for green leaf, production of CTC tea, cost of processing and price received for CTC tea.