

# **TECHNO-ECONOMIC SURVEY OF DOON VALLEY TEA INDUSTRY**



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***July, 1986***

***Tea Board***

***14, Biplabi Trailokya Maharaj Sarani (Brabourne Road),***

***Calcutta-700 001.***

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Published by Shri K. N. Namboodiri, Statistician, Tea Board, 14, Biplabi Trailokya  
Maharaj Sarani ( Brabourne Road ), Calcutta-700 001 and Printed by Sai Printers  
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## Foreword

The report on the Techno-Economic Survey brought out in respect of Doon Valley tea industry is the seventh in the series of such reports published by Tea Board.

In recent years concern has been expressed from various quarters about the deteriorating economic conditions of the Doon Valley tea industry and the need for its revival and sustained improvement has been underlined by many. Tea industry in the Doon Valley is more than hundred years old. Although Doon Valley enjoyed the pride of place as a producer of quality teas in the beginning of the current century, this position has now been relegated to the back in view of substantial reduction in the area under tea as well as the number of tea estates due to various factors like loss of interest in tea plantation, ecological imbalance due to large scale deforestation and subsequent climatic changes, increasing urbanisation and conversion of tea area into residential plots or areas for other commercial activities. Techno-economic survey is an attempt to identify the actual problems and suggest remedial measures. The survey could identify certain basic problems like inadequate availability of land, lack of irrigation facilities, lack of technical know-how, inadequate supply of essential inputs in time etc. A well co-ordinated venture by both the State Govt. and the industry is essential in reviving the Doon Valley tea industry from its present unhappy state of affairs. Such an effort would invariably be directed towards exploring suitable areas for undertaking tea cultivation apart from fostering the growth and economic viability of the existing units.

It is hoped that this report will be of help in framing such a suitable strategy for the development of Doon Valley tea industry.

March, 1986

*R. K. Tripathy*  
CHAIRMAN



## **Introduction**

The tea industry in Doon Valley has been suffering from innumerable problems over several decades. Once placed on a viable economic footing, its present frail economic condition beggars description, with only as few as six tea estates existing in the entire region. The Techno-Economic Survey by Tea Board attempts to sort out the actual problems through on-the-spot investigation. An assessment of the magnitude of the problems as also a few remedial measures are recommended in the report. It will be seen in this report, that the tea industry in the region is faced with problems of non-availability of suitable land for new planting, unfavourable weather and soil conditions, shortage of labour, lack of irrigation facility, absence of managerial skill & technical know-how and various other adversities. But, above all, the main responsible factor is the lack of finance.

While this survey was in progress, Chairman, Tea Board had a meeting with the survey team in Dehra Dun, alongwith with the District Authorities and local representatives of tea industry. There was detailed discussion regarding the various problems. Different suggestions were also made by them for possible improvement of the situation. Important observations on these outcomes have also been incorporated in the various chapters of this report. Considerable difficulty was encountered by the survey team in identifying the existing tea units since there was no representative tea association in the region. It was only with the kind and active help of the District Authorities, this task was made possible to whom I express my heartfelt thanks.

I must also put on record the services rendered by the survey team and also the garden managers for their valuable co-operation in the successful completion of the survey.

March, 1986

*K. N. Namboodiri*  
**Statistician**





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**PART - I**  
**General**



## CHAPTER I

### Doon Valley Tea Industry general background

1.1. Surrounded on the East by the Ganges and on the West by the Jamuna, Doon Valley is the most picturesque valley at the foot of the Himalayas. The valley has a temperate climate almost throughout the year with the maximum and minimum temperatures at  $36.6^{\circ}\text{C}$  and  $5.2^{\circ}\text{C}$  respectively. The average annual rainfall varies from 177.8 cms to 228.6 cms. The district of Dehra Doon comprises an area of 3,088 sq. kms. and is divided into two tehsils viz., Dehra Doon and Chakrata. Nearly 34% of the total area of the district is at an elevation of less than 2,500 ft. while 46% is between 2,500 ft. and 5,000ft. and the rest of the area is at an elevation of above 5,000 ft. The principal rivers flowing through the districts are Bindal, Asan, Tonse, Song and Jamuna. Of these, the rivers Bindal and Tonse reportedly remain dry for most part of the year. The chief agricultural crops in this region are reported to be paddy, wheat, jowar, gram, potato, sugarcane and tea.

#### History of tea cultivation :

1.2. U. P. is reported to be the first state in India where the East India Co. had started tea cultivation in 1838- even before the introduction of tea plantation in Darjeeling (by Dr. Campbell in 1839). First experimented on the hills, tea cultivation was subsequently extended down to the valleys. It was a time when the tea industry in Dehra Doon and its adjoining hilly areas flourished much and acquired commercial importance. According to available information two nurseries had initially been set up at Kumaun and in 1863 there were reportedly as much as 73 tea estates in U. P. At that time the quality of tea produced in this region was reported to be much better than Assam teas. While the British entrepreneurs started the plantation more than 100 years ago, with changing hands of ownership the prosperity of the tea industry in this region came to a halt and the health of the industry started deteriorating. Such erosion in viability was found to be more conspicuous in case of gardens under private ownership than in the case of limit-

ed liability holdings. Many of the owners have switched over to other occupations and a good number of estates has passed hands and a sizeable portion of the tea area has been diverted to other crops. It was also reported that over the years the climatic conditions in Dehra Doon have undergone substantial changes and today the climatic conditions are not much congenial for the healthy growth of tea bushes. This dismal picture of the tea industry in Dehra Doon is the result of owning the plantation by persons lacking in adequate education, experience, aptitude and motivation. When a survey of the tea growing regions in H. P. was undertaken it was observed that while the tea areas in H. P. were fragmented into innumerable units, these units were somehow maintained by adopting indigenous manufacturing process of hand rolling and pan firing, such processing of green leaf could not find any place in the plains of Dehra Doon and with the fragmentation of holdings the units became unremunerative. As per official records there has been a reduction in number of tea estates in U. P. from 45 in 1951 to 31 in 1982. Similarly, there has also been a substantial reduction in area under tea from 2605 hectares in 1951 to 1,804 hectares in 1982. The production of tea was as much as about 1 m. kgs. in 1951 but in the 1980's this has been found to be reduced to nearly half of what was produced in 1951. Similarly, according to records available with the Tea Board there are 22 tea estates in the plains of Dehra Doon. When the Techno Economic Survey was undertaken it was reported to the survey team that some nine gardens could be identified as functioning, others were either "abandoned", "taken over" or "gone in to merger" or "might be functioning as depleted units". The survey team made a perusal of the revenue records and made further enquiries at other sources and finally it was found that six gardens were functioning in the Doon Valley. The survey team, however could not make an exact assessment of the actual number of tea units still functioning due to the different versions presented to them by different sources. But it came to the conclusion that there might be some more small units than the six estates reported by functioning. A number of factors contribute to the gradual decline in the total area under tea in this region during the course of the years. Besides loss of interest for tea plantation and subsequently abandoning it, acquisition of tea area by different authorities was also referred to as responsible for the reduction in cropping area. Apart from this, land ceiling act was reported to be wrongly applied on many occasions and land available for growing

tea with planters has been acquired. Increasing urbanisation has boosted up land values which induced the conversion of tea area into residential plots or for other commercial activities. Horticulture in replacement of tea is being practised which is considered more remunerative. It was also reported that ecological balance has been upset due to deforestation. Weather conditions are said to have changed resulting in scarcity of water in the early cropping months.

1.3 Available information shows that apart from Doon Valley, tea is cultivated in some parts in Kumaun division such as Chirapani and Berinag. The economic condition of the tea estates in these regions was reported to be poor.

1.4 The tea industry in Dehra Doon is more than 100 years old. Bushes are of the chinese variety. The vacancy ratio was found to be around 50 : 50. Cultural practices do not adequately favour healthy growth of the crop. Application of inputs has been reported to be very much limited. There is lack of technical know-how, absence of R & D facilities, shortage of funds, want of artificial irrigation and non-availability of planting materials.

1.5 The industry manufactures mainly green tea which is marketed at Amritsar. Some quantities of black tea are also sent to Calcutta for auctions. The machinery and equipment in the factory were found to be fairly old. Black teas produced in this region are reported to be of inferior quality and fail to compete with the good teas offered at Calcutta auction and hence their price realisation has been considerably lower.

1.6 In order to revive the tea industry in Doon Valley certain basic facilities are required. These are sufficient availability of land, provision of artificial irrigation, setting up of a nursery, imparting the technical know-how and timely and adequate supply of essential inputs. There is also need for creating an awareness of the Board's financial assistance schemes among the tea growers in the Doon Valley. The region also faces shortages of labour in view of the fact that the present conditions of the tea industry in this region are not in a position to attract sufficient labour. There is also need for facilitating the marketing of teas produced in the Doon Valley. The role of the State Govt. in all these matters needs hardly to be emphasised.

## **CHAPTER II**

### **Doon Valley Tea Industry/Some Salient Features.**

Some salient feature of the Doon Valley tea industry are :-

2.1 Bushes in the region are mainly of China type. They had already crossed hundred years of age and therefore are not in the economic age group.

2.2 New plantings had not been carried out in the region for years together. On the hills, tea plantation was about to be abandoned for unsuitability of soil. New plantings could not be carried out in the Valley mainly because of non-availability of suitable land and also because of the high cost involved. The PH value of the soil (minus logarithm of Hydrogen-ion concentration) is as high as 6.7 indicating high alkaline base in the composition.

2.3 Untimely and unevenly distributed rainfall had multiplied the problems. Irrigation had not been practised for many years to supplement the requirements of water by the tea plants.

2.4 Application of fertilisers was reported to be much inadequate and was not based on proper technical knowhow. Managerial skill was also lacking and the norms of application did not have any scientific basis.

2.5 Other field & cultural practices like application of weedicides, pesticides etc. were also found to be not upto the mark.

2.6 Labour employed were mostly unskilled. A number of other organised industries had flourished in the region. Various Organisations of national importance had been established within the State. All these had opened more lucrative avenues to the labourers. The diversion of labour to other occupations has given rise to shortage of labour in the tea gardens.

2.7 A major portion of the total production of tea was found to be in the form of green tea. Formerly, most of these green teas were exported to Afghanistan. But deterioration in quality led to unremunerative price realisation which caused the stoppage of export nearly 7 to 8 years back. Green teas of this region are now mostly auctioned at Amritsar and consumed in Kashmir.



2.8 Black teas produced in U. P. are of inferior quality and fail to compete with the good teas offered at the Calcutta auction and hence their price-realisation has been considerably lower.

2.9 The greatest constraint has been reported to be finance. As a countrywide general phenomenon, the finances of tea companies were seen to be plagued by fall in the profitability prevailing during the late Sixties till end Seventies. Among others, Doon Valley tea industry was also hard hit by this economic phenomenon over the years. While the other tea growing regions could tide over this depression to some extent it was not possible for Doon Valley because of its emaciated industrial infrastructure. As a result, the funds for investment eventually dried up.

## **CHAPTER III**

### **SURVEY DESIGN**

**3.1** The Techno-Economic Cell of the Tea Board was entrusted with the task of conducting the survey in Doon Valley to assess the existing condition of the tea industry and to evaluate the magnitude of the problems currently being faced by the industry in this region. The Statistician along with one of the Investigators had made a preliminary visit to Doon Valley a few months before the start of the actual field work. The purpose was to have a first hand knowledge of the tea industry in that region by discussion with the concerned State Govt. Officials and also with the tea interests so as to provide necessary guidelines to the Investigators in their actual field work. Discussions were held with the Revenue Officials of the State Govt. as well as with the tea interests. The survey was originally designed to cover 18 tea estates in the Doon Valley and the number of estates were taken from the official records available with the Board. A copy of the questionnaire along with the date of visit of the Investigators was sent to the individual tea estates well in advance. However discussions with the Revenue Officials and the tea interests indicated that the existing tea units functioning were much less than the recorded figure of the Tea Board.

**3.2** A team of 3 Investigators visited Dehra Doon after a few months to collect the data from the tea estates. Since there was no representative association of tea producers in this region, the district authorities were approached and the Investigators collected data from six functioning estates.

**3.3** In the process of the survey, the Investigators met and had discussions with the District Magistrate, Addl. District Magistrate, Sub-divisional Magistrate, Dist. Revenue Officer, Dist. Agricultural Officer, Map Publication Directorate (Survey of India) and others.

3.4 Relevant information and data were collected by paying visit to the individual tea estates and on the basis of personal enquiries with the Managers. At a later stage, the Research officer ( Economics ) visited Dehra Doon to supervise the survey. The investigators encountered a lot of difficulties in collecting data and information as most of the estates were lacking proper maintenance of records. The amount of quantitative information supplied by them were found to be limited. The foregoing analysis and discussions are based on the available materials that could be collected with the best efforts of the investigators.



**PART - II**  
**Analysis of Data**



## CHAPTER I

### FIELD PRACTICES

1.1 It has been mentioned earlier that the effective total number of tea estates functioning in Doon Valley was six. There was no information as to the existence of any more units and hence for all practical purposes it may be considered that only six tea estates were existing in Doon Valley region which will henceforth be designated as A, B, C, D, E, & F.

Table—1  
Year of commencement of production,  
Year of present ownership and type of ownership.

| Estate | Year of commencement of production. | Year of present ownership. | Type of ownership. |
|--------|-------------------------------------|----------------------------|--------------------|
| A      | 1863                                | 1863                       | Public Ltd.        |
| B      | 1881                                | 1881                       | Public Ltd.        |
| C      | N. A.                               | 1959                       | Proprietary.       |
| D      | N. A.                               | 1906                       | Proprietary.       |
| E      | 1878                                | 1981                       | On lease.          |
| F      | 1860                                | 1960                       | Partnership.       |

1.2 In the case of four of the existing estates, the year of commencement of production was reported to be more than hundred years ago. For lack of proper maintenance of records, the exact year of commencement of production could not be ascertained with respect to estates C and D but they were reported to be more than hundred years of age.

1.3 Table—1 would reveal that out of the six tea estates, two (A & B) were managed by public Limited Companies, two (C & D) were under proprietary ownership, one (estate F) was run on partnership basis and the remaining

one (estate E) was run on lease basis. This tea estate was actually owned by a large Public Sector Organisation of national repute but was leased out to the private contractors on a five-year term basis.

1.4 Frequent change in ownership of the estates has been reported to be one of the reasons for the decaying economic condition of the estates in Doon Valley. While this has been the overall picture, the position in respect of the surveyed estates is indicated in table 1. It may be seen that while in respect of estates A, B and D, there had been no change of ownership since their inception, in respect of estate C, E and F there had been change in ownership. Estate E was leased out to the present contractors in 1981.

**Total grant, area under tea and utilisation of the total grant.**

1.5 The following table gives the estatewise total grant (as on 31.12.83), area under tea and percentage utilisation of total grant :

Table—2

**Total grant and area under tea (in hectares).**

| Estates | Total grant<br>(hectares) | Area under<br>tea (hectares) | % of tea area<br>to grant area. |
|---------|---------------------------|------------------------------|---------------------------------|
| A       | 458.62                    | 333.45                       | 72.71                           |
| B       | 315.22                    | 250.34                       | 79.42                           |
| C       | 169.18                    | 136.80                       | 80.86                           |
| D       | 121.40                    | 118.57                       | 97.67                           |
| E       | 42.10                     | 42.00                        | 99.76                           |
| F       | 7.00                      | 6.00                         | 85.71                           |
| Total   | 1,113.52                  | 887.16                       | 79.67                           |



1.6 The existing total grant area in the region was reported to be 1,113.52 hectares. A break-up of this area in respect of individual tea estates is shown in Table-2. It will be seen that a major portion of the total grant was held by the estates A & B which were managed by the Public Limited companies. The rest was covered by other ownerships.

1.7 Table-2 also illustrates that, out of the total grant of 1,113.52 hectares, tea was cultivated in 887.16 hectares of land, indicating an overall 79.67% utilisation of the total grant. The rest of the area which was not under tea plantation was covered by factories, godowns, roads, quarters, orchards, fallow areas and others. No nursery was found to exist in any of the estates.

1.8 Table-2 further indicates that as for the sizes of estates, two were found to be of less than 100 hectares, two were between 100 and 200 hectares and the remaining two were more than 200 hectares. It can be readily observed from the table that nearly 66% of the total tea area was covered by Public limited companies, 29% by Proprietary ownership and 5% jointly by Partnership and lease contract ownership.

1.9 Utilisation of total grant by tea plantation was found to be highest in respect of estate E (99.76%) followed by estate D (97.67%), F (85.71%), C (80.86%), B (79.42%) and A (72.71%). Hence, the utilisation of grant area was seen to be lower in estates with higher sized grants and higher with lower sized grants.

1.10 It was observed, in general, that no new planting, replacement, replanting or infilling had been carried out over decades. Two estates, in particular, reported that no new planting could be undertaken for the last 50 years. The main reasons for this were reported to lack of finance and want of irrigation facilities.

1.11 The decrease in area under tea in Doon Valley has been reported to be partly due to acquisition of tea land by Government and partly due to sale and conversion of such areas into residential complexes. Horticulture and sugarcane cultivation were also reported to have been practised in many areas because of the higher profitability of these agricultural products. It may be pointed out that while there is a stipulation in the Tea Act that prior permission

of Tea Board is required to undertake tea cultivation in virgin soil there is no corresponding provision to check the diversion of tea lands to other agricultural crops. The survey team therefore felt that necessary provision in the Tea Act may be incorporated to the effect that undue diversion of tea lands is restricted.

1.12 It was reported to the Survey team that land available within the grant for extension planting will be only of the order of 8% of the total grant. It was therefore felt that some adjoining areas like Khalsi, Vikasnagar, Chakrata, Kowlagarh and the Southern stretch of Hardwar Road may also be surveyed so as to assess their suitability for undertaking tea cultivation. However, in order to sort out the problem of adequate availability of land both within the estates and other areas, the State govt may undertake a fresh survey of all tea estates where extension/new plantings could be undertaken.

1.13 The following table gives the estate wise quantity of green leaf plucked during the period from 1979 to 1983.

Table— 3  
Green leaf plucked

(in thousand kgs.)

| Estate | Green leaf plucked. |       |       |       |       |
|--------|---------------------|-------|-------|-------|-------|
|        | 1979                | 1980  | 1981  | 1982  | 1983  |
| A      | 823                 | 656   | 707   | 543   | 520   |
| B      | 620                 | 433   | 549   | 586   | 510   |
| C      | 292                 | 257   | 302   | 307   | 417   |
| D      | 245                 | 238   | 324   | 332   | 407   |
| E      | N.A                 | 40    | 75    | 126   | 144   |
| F      | 18                  | 7     | 84    | 63    | 38    |
| TOTAL  | 1,998               | 1,631 | 2,041 | 1,957 | 2,036 |

1.14 It may be seen from the above table that overall production of green leaf by the tea estates in the Doon Valley did not register any growth over a period of 5 years particularly estates A and B which covered 66% of the total existing tea area in Doon Valley having shown a decreasing trend in the production of green leaf.

1.15 The following table gives the estate-wise production of made tea during 1979 to 1983 according to different categories viz., black tea and green tea.

Table- 4  
Production of Made Tea

( In Th. kgs. )

| Production of made tea   |      |     |     |      |     |     |      |     |     |      |     |     |      |     |     |
|--|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| Estate   | 1979 |     |     | 1980 |     |     | 1981 |     |     | 1982 |     |     | 1983 |     |     |
|  | B    | G   | T   | B    | G   | T   | B    | G   | T   | B    | G   | T   | B    | G   | T   |
| A  | NA   | NA  | 214 | NA   | NA  | 166 | NA   | NA  | 177 | NA   | NA  | 152 | NA   | NA  | 153 |
| B  | 53   | 107 | 160 | 73   | 36  | 109 | 72   | 77  | 149 | 37   | 68  | 155 | 76   | 64  | 140 |
| C  | —    | —   | —   | —    | —   | —   | —    | —   | —   | —    | —   | —   | —    | —   | —   |
| D  | 1    | 127 | 128 | 7    | 114 | 121 | 2    | 157 | 159 | 1    | 152 | 153 | 2    | 198 | 200 |
| E  | NA   | NA  | NA  | —    | 10  | 10  | 1    | 18  | 19  | —    | 33  | 33  | —    | 37  | 37  |
| F  | NA   | NA  | 4   | NA   | NA  | 2   | NA   | NA  | 22  | NA   | NA  | 16  | NA   | NA  | 9   |
| Total  | 506  |     |     | 408  |     |     | 526  |     |     | 509  |     |     | 539  |     |     |
| B—Black tea.                      G—Green tea.                      T—Total. |      |     |     |      |     |     |      |     |     |      |     |     |      |     |     |

1.16 It may be seen from table 4 that total production of made tea had also been somewhat stagnant during the period from 1979 to 1983 registering only a marginal increase. Estate 'D' registered a maximum increase of 56% while all others did not show any increase.

1.17 The table below gives the figures of estatewise yield of made tea per hectare over the period from 1979 to 1983.

Table - 5  
Yield per Hectare

| Estate  | Yield per Hect. (in kgs.) |      |       |       |       |
|---------|---------------------------|------|-------|-------|-------|
|         | 1979                      | 1980 | 1981  | 1982  | 1983  |
| A       | 498                       | 498  | 531   | 456   | 459   |
| B       | 640                       | 437  | 594   | 618   | 560   |
| C       | —                         | —    | —     | —     | —     |
| D       | 500                       | 474  | 621   | 601   | 784   |
| E       | NA                        | 241  | 459   | 788   | 889   |
| F       | 737                       | 298  | 3,607 | 2,638 | 1,564 |
| OVERALL | 537                       | 460  | 593   | 574   | 607   |

1.18 Table No. 5 reveals that while there had been only a marginal improvement in the yield rates of Doon Valley Tea Estates, the improvement in the case of estates D, E and F was found to be substantial. This indicates that improvement in the yield rate mostly came from the smaller sized tea gardens.

1.19 Vacancy ratio of the tea gardens surveyed indicated that this ranged from 10% to 50%. The number of bushes per hect. and percentage of vacancy are indicated in the following table

Table— 6

## No. of bushes per hectare and percentage of vacancy

| Estates | No. of bushes per<br>hect. | % of<br>vacancy |
|---------|----------------------------|-----------------|
| A       | 6,670                      | 15 to 20%       |
| B       | 5,469                      | 18%             |
| C       | 6,000                      | 20%             |
| D       | 6,000                      | 10%             |
| E       | 5,000                      | 15%             |
| F       | 5,000                      | 50%             |
| OVERALL | 5,690                      | 10 to 50%       |

The average number of bushes per hectare was found to be the highest in the case of estate 'A' followed by estates 'C', 'D', 'E', and 'F'.

1.20 The average spacing in respect of all the estates was found to be 4' x 4'.

1.21 The age of the bushes in all the surveyed estates was reported to be more than 70 years. The bushes were reported to be of the China type and in view of this they had a long bearing age. Taking into account the fact that most of the bushes have crossed their economic age group and also due to the fact that vacancy ratios are fairly large, the survey team felt it necessary that the gardens should urgently take steps for undertaking replantation as well as rejuvenation and infilling programmes.

## CHAPTER II

## CULTURAL PRACTICES

## Fertiliser :

2.1 Use of chemical fertilisers was reported to be either absent or sporadic. During 1983 some amount of fertilisers in the form urea, SOA, Super Phosphate and MOP were used by a few estates. The main reasons for lack of regular application of fertilisers were reported to be paucity of funds, lack of technical knowledge and irregular rain-fall.

## Irrigation :

2.2 The amount of rainfall in existing tea gardens of Doon Valley was recorded as slightly below 100" per year on an average. It was not well distributed, as reported by the estates. While the requirement of rainfall should not be less than 100" per year, Doon Valley was supposed to be exposed to shortage of water. To augment the problem, the supply of water through artificial irrigation was also absent in the entire region. State Govt. should look into the matter and may make arrangements for supply of water to the tea estates.

Rainfall

Table-7

| Estate | Rainfall ( in inches ) |        |        |
|--------|------------------------|--------|--------|
|        | 1981                   | 1982   | 1983   |
| A      | 73.65                  | 81.57  | 91.45  |
| B      | 78.63                  | 109.85 | 114.85 |
| C      | N.A                    | N.A    | N.A    |
| D      | N.A                    | N.A    | N.A    |
| E      | N.A                    | N.A    | 80.00  |
| F      | N.A                    | N.A    | 90.00  |

### **Weed, plant disease and pest control :**

2.3 About weed control, it was brought to the attention of the survey team that most of the gardens were affected by weeds like *Mikaria passifcora* and some other local weeds like Pudina, Batak Bale, Bichu ghas etc. Weeds were found to be controlled only by sickling in 2 to 3 rounds a year. Chemical control was not found in any of the estates. The reasons for non-adoption of chemical weed control were reported to be due to shortage of funds, lack of equipment, lack of proper knowledge about the norms of application, etc.

2.4 No incidence of pest or plant disease was reported in any of the estates.

### **Pruning :**

2.5 Pruning is an important activity of the tea estates in respect of cultural operations which relate to rejuvenation, revitalisation and inducing healthy growth. For this purpose, bushes are treated with identifiable pruning cycle. In Doon Valley, such treatment of the bushes was not found except in a few cases where light skiffing was practised. This was felt to be aimed at getting early crop at the onset of rainy season. Moreover, uneven rainfall coupled with the absence of any artificial irrigation seemed to have negated the worth of calculated pruning in the region.

### **Other inputs :**

2.6 Secondly, other inputs like manures, machinery etc. were also reported to have fallen far short of their actual requirements. Available funds were also too meagre to withstand the loss of crop. Adequate R & D and technical know-how were not available with the tea industry in Doon Valley. Proper treatment of the bushes in the form of pruning was required particularly because all the bushes attained the age of more than 70 years. It was felt that the State Govt. Research Organisations and Tea Board should join hands to render necessary guidance and assistance to the tea industry of Doon Valley.

### **Plucking :**

2.7 As regards plucking standards, 3-leaves and a bud and more coarse pluckings were found to dominate. It was reported that owing to weak economic

condition of the gardens and shortage of skilled labour, plucking of two leaves and a bud which determines the quality of the tea could not be adhered to. The Survey team observed that during April to June, 10 day rounds were common which varied between 11 to 12 day during July to September and 12 to 14 days during October to December.

**Shade trees :**

2.8 Tea estates in Doon Valley appeared to have sufficient number of shade trees, the prominent varieties being sesame, Siras, Albezzia, Silver oaks, Lebbek etc.



## **CHAPTER—III**

### **Factory Operation**

3.1 Out of the Six estates surveyed, all were found to have factories of their own, except estate C whose green leaves were processed in estate D's factory. A general impression of the overall factory conditions was that for only estates A & B the factories were more or less equipped and had machinery to manufacture CTC Teas. All the other estates were reported to have illconditioned and outmoded machinery.

Machinery to process CTC teas was nowhere found except in estates A & B.

#### **Withering :**

3.2 Arrangements for withering were found to be unsatisfactory with almost all the factories in so far as space, condition and shades were concerned. Of the six gardens surveyed, only one garden reportedly had controlled system of withering with trough. Floor-withering was seen to be a common practice.

#### **Fermenting :**

3.3 Fermenting was done mainly on the floor. Except for one factory which possessed a humidifier, the arrangements for controlling temperature and humidity were found to be absent in all the other factories. Since green tea was a major produce of the region-which does not require fermenting, most of the factories had fermenting arrangement in a smaller scale. This was also not found satisfactory.

#### **Machinery :**

3.4 For estate A, the existing machinery such as roller, CTC machine, Sorter etc. were found to be in fair condition. Two new sets of rollers were required by them immediately for their CTC machine. Dryers were reported to be in a bad condition. The existing machinery for estate B were reportedly in more or less fair condition.

All other estates possessed machinery with poor condition. In particular, estate E's factory which produced green teas only, appeared to be in a poor condition. Renovation of the factory and requirement of additional machinery were reportedly needed by all of them.

3.5 Except for the large two gardens, none of the gardens appeared to have their own vehicle for transporting their produce and other inputs. Green leaves were transported to the factory mainly by manual labour and on bullock carts.

3.6 Most of the factories used firewood as fuel. Only one large garden reportedly adopted coal firing by purchasing coal from the local market at a high price. Only one garden reportedly used T.D. oil as fuel. On enquiry it was observed that all the gardens had intentions to switch over to coal firing if proper funds were available.

#### Manufacture of tea by different methods :

3.7 The table below gives the figures for estatewise proportions of Orthodox, CTC and green teas manufactured during 1983.

Table—8

#### Proportions of the quantity of tea by different methods of manufacture during 1983.

| ( in percentages ) |          |       |        |       |
|--------------------|----------|-------|--------|-------|
| Estates            | Orthodox | CTC   | Green  | Total |
| A                  | Nil      | 43.81 | 56.19  | 100   |
| B                  | Nil      | 54.22 | 45.78  | 100   |
| C                  | Nil      | Nil   | Nil    | Nil   |
| D                  | 1.05     | Nil   | 98.95  | 100   |
| E                  | Nil      | Nil   | 100.00 | 100   |
| F                  | 5.00     | Nil   | 95.00  | 100   |
| Overall            | 0.46     | 26.47 | 73.07  | 100   |

3.8 A perusal to table 8 reveals that the proportion of green teas produced in Doon Valley worked out to be around 73.07% of the total quantity produced in 1983, followed by 26.47% for CTC teas and 0.46% for Orthodox teas. Estate A produced more green teas (56.19%) than CTC teas (43.81%) in 1983, while estate B produced more CTC teas (54.22%) than green teas (45.78%) in the same year. In 1983, a major share (98.95%) of estate D's produce was in the form of green teas, the remaining portion (1.05%) being Orthodox teas. Estate E produced all its teas in the form of green teas. Estate F produced a major proportion (95%) of green teas, the rest (5%) being in the form of Orthodox teas.

3.9 All the factories covered under the Survey reportedly used gunny bags as a mode of packing their final product. Use of a better method of packing could not be introduced because of the paucity of funds. Packing in gunny bags obviously caused deflavoursing and hence deterioration of quality.

3.10 All the six estates, used to draw power from the grid. And none of them had arrangement for generating power from own source. It was reported by the estates that failure in supply by the grid affected the quality of tea.

3.11 Considering the poor shape of the factory conditions in the region, it may be suggested that Tea Board's Tea Machinery & Hire Purchase Scheme may be utilised for improvement in the condition of the existing factories. Taking into account the poor economic and technical viability of the gardens in Doon Valley, it is felt that the gardens may be encouraged to come forward to avail themselves of the Boards schemes. In order to motivate the gardens, it is recommended that the rate of interest levied under the H. P. Scheme may be lowered in order to provide sufficient incentive for the gardens.

## CHAPTER—IV

## MARKETING

## Disposal of crop

4.1 Adequate data on marketing and disposal pattern of tea were not available with most of the estates. On the basis of available information, it was observed that nearly 21% of the total quantity sold were ex-garden, 21% through Calcutta auction and 58% through Amritsar Auction.

Table— 9  
Disposal Pattern of Crop During 1983.

| Estate  | Ex-factory/<br>Pvt Sales | Calcutta<br>auction | Amritsar<br>auction | ( In percentages ) |       |
|---------|--------------------------|---------------------|---------------------|--------------------|-------|
|         |                          |                     |                     | Others             | Total |
| A       | 59                       | 41                  | —                   | —                  | 100   |
| B       | 12                       | 29                  | 59                  | —                  | 100   |
| C       | —                        | —                   | —                   | —                  | —     |
| D       | —                        | —                   | 100                 | —                  | 100   |
| E       | N.A                      | N.A                 | N.A                 | N.A                | N.A   |
| F       | N.A                      | N.A                 | N.A                 | N.A                | N.A   |
| Overall | 21                       | 21                  | 58                  | —                  | 100   |

N.A—Not Available

4.2 It may be revealed from table-9 that while the figures for estates E and F were not available, disposal of tea through ex-garden sales seemed to be highest (59%) for estate A, which did not send any tea to Amritsar auction. Estate D appeared to have sent all their teas for sale to Amritsar auction. Estates A and B sent respectively 41% and 29% of their total sales to Calcutta auction. It was however observed that except estates A and B, none of the estates sent their teas to Calcutta auction.

**Price realisation :**

4.3 Available information relating to price-realisation during 1983 by different tea estates are given in the table below.

Table—10  
Price realisation during 1983.

| ( in Rs/Kgs ) |                           |                     |                     |        |       |
|---------------|---------------------------|---------------------|---------------------|--------|-------|
| Estates       | Ex-factory/<br>Pvt. sales | Calcutta<br>auction | Amritsar<br>auction | Others | Total |
| A             | 13.28                     | 10.13               | —                   | —      | 11.98 |
| B             | 13.34                     | 11.74               | 13.23               | —      | 12.81 |
| C             | —                         | —                   | —                   | —      | —     |
| D             | —                         | —                   | 13.30               | —      | 13.30 |
| E             | N.A                       | N.A                 | N.A                 | N.A    | N.A   |
| F             | N.A                       | N.A                 | N.A                 | N.A    | N.A   |
| Overall       | 13.30                     | 10.78               | 13.28               | —      | 12.76 |

4.4 Data for prices in respect of estates E and F were not available. The general trend which appears from the above data is that the price realisation from Calcutta auction was lowest ( Rs. 10.78 ) among all other channels of disposal. Ex-factory/Private Sales fetched an overall price of Rs. 13.30 while Amritsar auction an average price of Rs. 13.28. The overall price-realisation from all the channels worked out as Rs. 12.76.

4.5 Marketing of tea in Doon Valley was felt to be constrained by paucity of funds, inadequate manpower, incompetent agency and lack of proper expertise in market intelligence. It may be suggested that Amritsar auction authorities should show suitable guideline for effective modalities so that the industry can push through its sales at proper time and place for a better price-realisation.

## CHAPTER—V

### Cost of production :

5.1 Regarding cost of production, adequate data were not available with respect to some of the estates surveyed. The analysis of cost of production is based on the statements of profit and loss account given by only three estates.

5.2 It has been found that the cost of production per kg. in 1981 ranged between Rs. 6.04 to Rs. 12.47 among the estates surveyed. In 1982, it ranged between Rs. 7.58 to Rs. 10.68 and between Rs. 9.01 to Rs. 12.46 in 1983. The average cost of production in these three years worked out to be respectively Rs. 9.80, Rs. 9.98 and Rs. 11.06, the average being the combined figure for the estates for which the relevant figures were available. It was generally observed that the cost of production was more in the large-sized gardens than in the smaller ones. On an overall basis, it was also noticed that there was nearly 11% increase in the cost of production in 1983 over 1982, whereas only 2% increase was observed in 1982 over 1981.

Table—11

Share of total cost expended on different items of cost during 1981.

( in percentage )

| Estate  | Items of Cost |         |         |           |         |          |        | Total |
|---------|---------------|---------|---------|-----------|---------|----------|--------|-------|
|         | Field         | Factory | Packing | Transport | Welfare | Interest | Others |       |
| A       | 34            | 34      | 6       | 3         | 17      | 4        | 2      | 100   |
| B       | 40            | 22      | 4       | 2         | 15      | 6        | 11     | 100   |
| C       | —             | —       | —       | —         | —       | —        | —      | —     |
| D       | 54            | 22      | 3       | 4         | 7       | —        | 10     | 100   |
| E       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| F       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| Overall | 41            | 27      | 5       | 3         | 14      | 5        | 7      | 100   |

Table—12

Share of total cost expended on different items of cost during 1982.

( in percentage )

| Estates | Items of Cost |         |         |           |         |          |        | Total |
|---------|---------------|---------|---------|-----------|---------|----------|--------|-------|
|         | Field         | Factory | Packing | Transport | Welfare | Interest | Others |       |
| A       | 43            | 31      | 3       | 1         | 16      | 3        | 3      | 100   |
| B       | 40            | 27      | 2       | —         | 14      | 6        | 11     | 100   |
| C       | —             | —       | —       | —         | —       | —        | —      | —     |
| D       | 50            | 27      | 3       | 3         | 9       | —        | 8      | 100   |
| E       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| F       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| Overall | 39            | 25      | 2       | 1         | 12      | 11       | 10     | 100   |

Table—13

Share of total cost expended on different items of cost during 1983.

( in percentage )

| Estate  | Items of Cost |         |         |           |         |          |        | Total |
|---------|---------------|---------|---------|-----------|---------|----------|--------|-------|
|         | Field         | Factory | Packing | Transport | Welfare | Interest | Others |       |
| A       | 39            | 37      | 2       | 2         | 14      | 3        | 3      | 100   |
| B       | 41            | 31      | 2       | —         | 12      | 5        | 9      | 100   |
| C       | —             | —       | —       | —         | —       | —        | —      | —     |
| D       | 47            | 27      | 1       | 3         | 11      | —        | 11     | 100   |
| E       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| F       | N.A           | N.A     | N.A     | N.A       | N.A     | N.A      | N.A    | N.A   |
| Overall | 43            | 31      | 2       | 2         | 12      | 2        | 8      | 100   |

5.3 A perusal of table 11 would indicate that during 1981, the maximum portion (41%) of the total expenditure was accounted for by field operations, followed by factory expenditure (27%) expenditure on welfare measures to the workers (14%), packing (5%), interests payment (5%) and transport (3%). Other expenditures accounted for 7% of the total. In particular, the share of cost on field practice was found to be the highest with respect to estate D while that in respect of factory and welfare was higher in case of estate A than the other estates.

5.4 During 1982, as table 12 would reveal, the maximum proportion (39%) of the total cost was expended on field practices followed by factory (25%), welfare (12%), interest payment (11%), packing (2%), transport (1%). Other expenditures accounted for (10%) of the total cost. It may be noted that, there was a marked increase in the proportion of interest payment in 1982 over 1981.

5.5 During 1983, as indicated by table 13. expenditure on field practices once again showed a maximum share (43%) followed by factory (31%), welfare (12%), packing, transport and interest payment (2% each), while other expenditures accounted for the remaining 8% of the total cost.



## CHAPTER—VI

### Labour :

6.1 Out of the six gardens surveyed, information on labour was obtained in respect of four only. For estate E, only casual labourers were deployed by the contractor at the time of his requirement, and as such no records of classification of labour were available.

6.2 Labour per hectare was found to range between 0.57 to 0.90 in this region as against the North India figure of 2.23. The proportion of casual labour was found to be more with respect to lower-sized tea estates, while for estates A, no such casual labour on rolls was reported to exist. For estate B, the proportion of casual labour was reported to be 11% of the total labour force in the estate.

6.3 It was reported that establishment of a number of organised industries as well as various organisation of national importance in the region opened up new avenues to the labourers to earn higher wages as compared to the low wage rates in the tea industry. This led to diversion of labour from tea industry to other industries and organisations. This has apparently given rise to considerable shortage of labour in the tea gardens of Doon Valley.

6.4 In the peak seasons, the estate employed casual labour mostly from women-folk to engage them in plucking. Proportion of female workers on roll was found to range between 11% to 79%. It was recorded 79% and 11% respectively for estates A and B while estates D and C recorded these proportions as 52% and 40% respectively.

6.5 Considering permanent and temporary workers together, plucking operation in the field accounted for nearly 68% of the total man days spent during 1983 in field. Other important field operations included pruning (with 15% share of total man days spent in 1983), weed control (14% share) transport (2%) and irrigation (1%).

6.6 Female workers were mainly employed for plucking operations. They were also reportedly engaged partly in weed control and pruning. Male workers were engaged in pruning, manuring, transportation of green leaf etc,

6.7 In factory, the most important operation which consumed maximum (25%) share of total man-days spent was rolling followed by drying (20%), packing (19%), sorting (15%) withering (11%) and fermenting (10%).

6.8 The proportion of male and female workers (carried out on the basis of man-day worked) in the factory was approximately 2:1.

Table—14

**Proportion of expenditure on wages and benefits to labourers.**

( in percentage )

| Items           | 1979 | 1980 | 1981 | 1982 | 1983 | Average |
|-----------------|------|------|------|------|------|---------|
| Basic Wage      | 85   | 80   | 76   | 77   | 78   | 79      |
| D.A.            | 3    | 10   | 11   | 13   | 13   | 10      |
| Food Concession | —    | —    | —    | —    | —    | —       |
| Bonus           | 6    | 4    | 8    | 6    | 6    | 6       |
| Other amenities | 6    | 6    | 5    | 4    | 3    | 5       |
| Total           | 100  | 100  | 100  | 100  | 100  | 100     |

6.9 It may be revealed from table-14, on the basis of the average of five years (1979-83), that basic wage and dearness allowance accounted for nearly 89% of the total wage bill. Bonus accounted for 6% and other amenities for 5% of the total wage bill. It is seen that percentage of total wage bill on account of other amenities (like housing and medical facilities, maternity benefit etc.) has become lower since 1979 (from 6% to 3% in 1983).

6.10 In Doon Valley tea estates, the fringe benefits extended to the labourers were found to be in a modest scale. Housing facilities were provided by four estates out of six estates surveyed. But they were not found to be upto the standards as laid down in Plantation labour Act, 1951. Only three estates were reported to provide medical facilities to their workers, which included hospitals and dispensaries. Drinking water was reportedly provided by all the six estates. It was also noted that no educational facilities were provided by any of the estates. Recreational facilities were found to exist nowhere. For estates A & B, the workers were reportedly not interested in such facilities since the town was near where all such facilities were available in plenty.

## CHAPTER—VI

### Finance :

It was reported that all the estates made some profit during 1983. In the year 1981 all the estates closed their a/c. with loss. During 1980 estate A Which had an area of 333.45 hectares (under tea) made some profits.

7.2 Working capital for all the estates were reportedly managed by loan from commercial banks. None of the estates reported its indebtedness standing in the way of normal functioning.

7.3 Except for Tea Machinery and Irrigation equipment Hire Purchase Scheme, which was reported to be known to estate A, no other financial incentive scheme by Tea Board appeared to be within the knowledge of the other estates.

7.4 For the purpose of revitalisation and extension of tea areas in Dehra Dun, it was found to be a prime necessity that State Govt. should come forward with suitable land for Cultivation of tea and make arrangements for supply of water through irrigation system. They should also arrange for supply of inputs to the local estates at the right time. Financial institution as well as Tea Board, may propagata their various financial Schemes which could be suitably utilised by local estates.

7.5 The estates did not show much interest when they were informed of the various financial schemes of the Tea Board viz, Replantation Subsidy Scheme, Plantation Finance Scheme, Tea Machinery and Irrigation Equipment Hire Purchase Scheme and Rejuvenation and Consolidation Subsidy Scheme. They were of the opinion that the quantum of loans granted under such schemes were too inadequate to meet their actual costs and hence they should be enhanced and extended on easier norms.

7.6 Another problem was that Doon Valley tea industry was felt to exist practically in isolation. Unlike Assam and West Bengal in North East India and Tamil Nadu, Kerala and Karnataka in the South India where tea areas are concentrated over adjacent regions, Dehra Dun happened to be remote and isolated from other tea growing regions. Perhaps due to this fact, there seemed to exist a lack of communication with the Govt. and also with Tea Board which had no regional Offices in that area. Contact with the producers of other regions was lesser and as a result, the latest R & D in the industry could hardly reach them. Information through books and periodicals was found to be inadequate so as to make a significant impact on tea industry of this region.

## Summary of findings and recommendations

### CHAPTER—I

#### Field Practice

1. Only six tea estates were found to exist in Doon Valley region. (1.1)
2. For all the estates, the year of commencement of production was reported to be dated back hundred years ago. (1.2)
3. Out of the six tea estates two were managed by Public Limited companies, two were under proprietary ownership, one was run on partnership basis and the remaining was on lease basis. (1.3)
4. Frequent change in ownership of the estates has been reported to be one of the reasons for the decaying economic condition of the estates in Doon Valley. (1.4)
5. The existing total grant area was reported to be 1113.52 hectares. A major portion of the total grant is held by Public Limited Companies. The rest is covered by other ownerships. (1.6)
6. Out of the total grant of 1113.52 hectares, tea is cultivated in 887.16 hectares of land, indicating an overall 79.67% utilisation of the total grant. No nursery was found to exist in any of the estates. (1.7)
7. .... as for the size of the estates, two were found to be of less than 100 hectares, two were between 100 and 200 hectares and the remaining two were more than 200 hectares. Nearly 66% of the total tea area was covered by Public Limited Companies, 29% by proprietary ownership and 5% jointly by partnership and lease contract ownership. (1.8)
8. Utilisation of grant area was seen to be lower in estates with higher sized grants and higher with lower sized grants. (1.9)
9. It was observed, in general that no new planting, replacement, replanting or infilling had been carried out over decades. The main reasons for this were reported to be lack of finance and want of irrigation facilities. (1.10)

10. The decrease in area under tea in Doon Valley has been reported to be partly due to acquisition of tea lands by Government and partly due to sale and conversion of such areas into residential complexes. Horticulture and sugarcane cultivation were also reported to have been practised in many areas because of the higher profitability of these agricultural products. It may be pointed out that while there is a stipulation in the Tea Act that prior permission of Tea Board is required to undertake tea cultivation in virgin soil there is no corresponding provision to check the diversion of tea lands to other agricultural crops. The survey team therefore felt that necessary provision in the Tea Act may be incorporated to the effect that undue diversion of tea lands is restricted. (1.11)
11. It was reported to the survey team that land available within the grant for extension planting will be only of the order of 8% of the total grant. It was therefore felt that some adjoining areas like khalsi, Vikashnagar, Chakra-ta, Kowlagarh and southern stretch of Hardwar Road may also be surveyed so as to assess there suitability for undertaking tea cultivation. However, in order to sort out the problem of adequate availability of land both within the estates and other areas, the State Govt. may undertake a fresh survey of all the estates where extension/new plantings could be undertaken. (1.12)
12. ....Overall production of green leaf by the tea estates in Doon Valley did not register any growth over the period from 1979-1983. (1.14)
13. Total production of made tea had also been somewhat stagnant during the period from 1979 to 1983. (1.16)
14. .... there had been only a marginal improvement in the yield rates (over the period from 1979 to 1983) of Doon Valley tea estates. The improvement in the yield rate mostly came from smaller-sized tea estates. (1.18)
15. Vacancy ratio of the tea gardens surveyed.....ranged from 10% to 50%. The average number of bushes per hectare was estimated to be 5,690. (1.19)
16. The average spacing in respect of all the estates was reported to be 4' x 4'. (1.20)

17. The age of the bushes in all the surveyed estates was reported to be more than 70 years. The bushes were reported to be of China type and in view of this they had a long bearing age. Taking into account the fact that most of the bushes have crossed their economic age group and also due to the fact that vacancy ratios are fairly large the survey team felt it necessary that gardens should urgently take steps for undertaking replantation as well as rejuvenation and infilling programmes. (1.21)

## CHAPTER—II

### Cultural Practices

18. Use of chemical fertiliser was reported to be either absent or sporadic.....  
The main reasons for lack of regular application of fertiliser were reported to be paucity of funds, lack of technical knowledge and irregular rainfall. (2.1)
19. The amount of rainfall in existing tea gardens was recorded as slightly below 100" per year on an average. It was not well distributed, as reported by the estates.....Doon Valley was exposed to shortage of water. To augment the problem, the supply of water through artificial irrigation was also absent in the entire region. State Govt. should look into the matter and may make arrangements for supply of water to the tea estates. (2.2)
20. ....most of the gardens were affected by weeds like Mikania, Passiflora and some other local weeds like Pudina, Batak Bale, Bichu Ghas etc. weeds were found to be controlled by only sickling in 2 to 3 rounds in a year. Chemical control was not found in any of the estates. (2.3)
21. No incidence of pest or plant disease was reported in any of the estates. (2.4)
22. ....In Doon Valley, treatment of bushes with identifiable pruning cycle was not found except in a few cases where only light skiffing was practised. (2.5)
23. Adequate R & D and technical know how were not available with the tea industry in Doon Valley.....It was felt that the State Govt., Research Organisations and Tea Board should join hands to render necessary guidance and assistance to the tea industry in Doon Valley. (2.6)
24. As regards plucking standard, 3 - leaves - and - a - bud and more coarse pluckings were found to dominate.....The survey team observed that during April to June, 10 day rounds were common which varied between 11 to 12 days during July to September and 12 to 14 days during October to December. (2.7)



## CHAPTER—III

### Factory Operation

25. Out of the six estates surveyed, all were found to have factories of their own, except only one. For only two estates the factories were more or less equipped and had machinery to manufacture CTC teas. All the other estates were reported to have ill-conditioned and outmoded machinery. (3.1)
26. Arrangements for withering were found to be unsatisfactory with almost all the factories in so far as space, condition and shed were concerned..... Floor withering was seen to be a common practice. (3.2)
27. Fermenting was done mainly on the floor ..... Most of the factories had fermenting arrangements in a smaller scale. This was also not found satisfactory. (3.3)
28. For only two large estates, the existing machinery such as roller, CTC machine, sorter etc were found to be in a fair condition. All other factories possessed machinery with poor condition. Renovation of the factory and requirement of additional machinery were reportedly needed by all the factories. (3.4)
29. The proportion of green tea produced in Doon Valley worked out to be around 73.07% of the total quantity of made tea produced in 1983. (3.8)
30. All the six estates used to draw power from the grid. None of them had arrangement for generating power from own source. (3.10)
31. Considering the poor shape of the factory conditions in the region, it may be suggested that Tea Board's Tea Machinery & Hire Purchase Scheme may be utilised for improvement in the condition of the existing factories. Taking into account the poor economic and technical viability of the gardens, it is felt that the gardens may be encouraged to come forward to avail themselves of the Boards schemes. In order to motivate the gardens, it is recommended that the rate of interest levied under the H. P. Scheme may be lowered in order to provide sufficient incentive for the gardens. (3.11)

**CHAPTER—IV****Marketing**

32. It was observed that nearly 21% of the total quantity sold were ex-garden, 21% through Calcutta auction and 58% through Amritsar auction. (4.1)
33. The general trend which appears is that the price realisation from Calcutta auction was lowest (Rs. 10.78) among all other channels of disposal..... The overall price realisation during 1983 from all the channels of disposal worked out as Rs. 12.76. (4.4)
34. Marketing of tea in Doon Valley was felt to be constrained by paucity of funds, inadequate manpower, incompetent agency and lack of proper expertise in market intelligence. It may be suggested that Amritsar auction authority should show suitable guidelines for effective modalities so that the industry can push through its sales at proper time and place for a better price-realisation. (4.5)

## **CHAPTER V**

### **Cost of Production**

35. It was generally observed that the cost of production was more in the large sized gardens than in the smaller ones. On an overall basis, it was also noticed that there was nearly 11% increase in the cost of production in 1983 over 1982, whereas only 2% such increase was observed in 1982 over 1981. (5.2)
36. During 1983, expenditure on field practice showed a maximum share (43%) of the total expenditure followed by factory expenditure (31%), welfare expenditure (12%), packing, transport and interest payment (2% each), while other expenditure accounted for the remaining 8% of the total cost. (5.5)

**CHAPTER—VI****Labour :**

37. Labour per hectare was found to range between 0.57 to 0.90 in Doon Valley tea estates against the North India figure of 2.23. The proportion of casual labour was found to be more with respect to lower-sized tea estates. (6.2)
38. It was reported that establishment of a number of organised industries as well as various organisations of national importance in the region opened up new avenues to the labourers to earn higher wages as compared to the low wage rates in the tea industry. This led to diversion of labour from tea industry to other industries and organisations. This has apparently given rise to considerable shortage of labour in the tea estates of Doon Valley. (6.3)
39. Considering permanent and temporary workers together, plucking operation in the field accounted for nearly 68% of the total man-days spent during 1983 in field. Other important field operations included pruning (with 15% share of total man-days spent in 1983), weed control (14% share), transport (2%) and irrigation (1%). (6.5)
40. Female workers were mainly employed in plucking operation. They were also reportedly engaged in pruning, manuring, transportation of green leaf etc. (6.6)
41. The proportion of male and female workers (carried out on the basis of man-days worked) in the factory was approximately 2 : 1. (6.8)

## CHAPTER—VII

### Finance :

42. working capital for all the estates were reportedly managed by loans from commercial banks. None of the estates reported its indebtedness standing in the way of normal functioning. (7.2)
43. For the purpose of revitalisation and extension of tea areas in Dehra Dun, it was found to be a prime necessity that State Govt. should come forward with suitable land for cultivation of tea and make arrangements for supply of water through irrigation system. They should also arrange for supply of inputs to the local estates at the right time. Financial institutions as well as Tea Board may propagate their various financial schemes which could be suitably utilised by local estates. (7.4)
44. The estates did not show much interest when they were informed of the various financial schemes of Tea Board. They were of the opinion that quantum of loans granted under such schemes were too inadequate to meet their actual costs and hence they should be enhanced and extended on easier norms. (7.5)
45. Doon Valley tea industry was felt to exist practically in isolation ..... Perhaps due to this fact there seemed to exist a lack of communication with the Govt. and also with Tea Board which had no regional office in the area. (7.6)

**F O R M — IV**  
( Rule — 8 )

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|---|--|
| 1. Place of Publication                     | Tea Board,<br>14, Brabourne Road, Calcutta-700 001 |
| 2. Periodicity of Publication               | As and when the survey is conducted                |
| 3. Printer's Name                           | Sai Printers                                       |
| (whether citizen of India)                  | Yes  |
| (if foreigner, state the country of origin) |  |
| Address                                     | 20, Kaliash Banerjee Lane,<br>Howrah-711 101       |
| 4. Publisher,s Name                         | Haraprasad Chatterjee                              |
| (whether citizen of India)                  | Yes  |
| (if foreigner, state the country of origin) |  |
| Address                                     | Tea Board,<br>14, Brabourne Road, Calcutta-700 001 |
| 5. Editor,s Name                            | Haraprasad Chatterjee                              |
| (whether citizen of India)                  | Yes  |
| (if foreigner, state the country of origin) |  |
| Address                                     | Tea Board,<br>14, Brabourne Road, Calcutta-700 001 |

6. Name's and address of individual who own the newspaper and partners or shareholders holding more than one per cent of the total capital.

Haraprasad Chatterjee,  
Tea Board,  
14, Brabourne Road, Calcutta-700 001

I, Haraprasad Chatterjee, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-  
Haraprasad Chatterjee

Calcutta :  
June, 1986.