Chapter 2

IMPACT OF TEA GARDENS

2.1 ABOUT TEA GARDENS

The tea gardens of the dooars of the Jalpaiguri district have through years contributed to the growth of a number of small towns which are now developing into urban areas of larger size. Even the district town of Jalpaiguri has benefited in one or the other, from tea plantation. Although early planters of the Dooars area happen to be the Bengali upper middle class stationed in the Jalpaiguri town, the growth of these families as planters has transformed the character of the Jalpaiguri town. Non-Bengali businessmen from other states are now owners of a large number of tea gardens here and some of the head offices have now moved to Calcutta.

Leaving aside Jalpaiguri, most of the present towns, some important roads and even the Coronation Bridge on the river Teesta were built by the tea companies. The village we study, measuring a change in interval of fourteen years, is located near Hamiltonganj, a country township developed by the tea interests of the locality. A nearby higher secondary school was set up by the trade unions of tea companies. Although trade unions took the initiative the funds were provided by the gardens. Our object is to see whether, and if so to what extent the existence of tea gardens has been instrumental in

transforming the activities of the village.

The area falls within the Kalchini block of the Jalpaiguri district of West Bengal. The reference year of the data collected for the original survey is 1979-80. The population we selected consists of 128 households who veer around a central point. It is found that a segment of villagers who live in what has been regarded by the authorities of Census operations of 1981 as Uttar Latabari and another segment of population of Dakshin Latabari have combined into the selected village population. A resurvey of a large fraction of these households was made later. The data collected through this resurvey relate to the year 1993-94.

The resurvey was made for 30 households selected on the basis of stratified sampling. The total amount of population in the original population was 647 with the resultant family size as 5.05. The corresponding figures of the sample were 187 and 6.23.

2.2 DEATH RATE AS AN INDICATOR OF HEALTH CARE

To begin with, we present the distribution of the population by age and sex at two different points. Within a span of fourteen years there has been some decline in the health

Table 1

Distribution of the Population (1979-80) by Age and Sex

Age group	Male	Female	Total	P.C.
- 5	43	45	88	13.6
5 - 15	113	82	195	30.2
15 - 60	195	161	356	55.0
Above 60	6	2	8	1.2
Total	357	290	647	100.0

Table 2

Distribution of the Sample Population (1993-94) by Age and Sex

Age group	Male	Female	Total	P.C.
- 5	12	9	21	11.2
5 - 15	23	22	45	24.1
16 - 60	58	49	107	57.2
Above 60	12	2	14	7.5
Total	105	82	187	100.0

Table 3

Core Demographic Data about Original and Sample Populations

Population	Births during last 5 yrs.	Deaths last 5 yrs.	Population 5 yrs.ago	Annual rate of births	Annual rate of deaths	Annual rate of growth
Original 1979-80	89	40	598	2.96	1.30	1.66
Sample 1993-94	21	14	180	2.32	1.54	0.78

Table 4

Other Demographic Data

Items	Original Population	Sample Population
Number of couples	124	35
Number of Families or households	128	30
Number of couples per family	0.97	1.70
Family size	5.05	6.23

Table 5

Female-Male Ratio by Age-groups

Age groups	Female-Male Ratio in	
	Original population	Sample population
- 5	1.04	0.75
5 - 15	0.73	0.96
15 - 60	0.83	0.84
Above 60	0.33	0.16
Total	0.81	0.78

status of the people, as evidenced by the increase in the mortality or death rate of people. But the poor people here have now succeeded to reduce the rate of their births. The rate of growth of population has declined mainly as a result of increase in the rate of deaths. If the rate of deaths would have remained constant, the annual rate of growth of population might have been a little over 1 per cent.

In this analysis we have not taken into account the effect of sampling fluctuations or any question on the tenability of comparing small populations for studying demographic features. That the rate of growth of population after fourteen years has been lower is also exhibited by the corresponding figures of persons aged upto 5. The figure for the new population is lower.

It might appear that in the original population the female capacity to fight death is not perceptible, in the new sample women do not seem so helpless at least till they are 60. Since we do not see in the table the movement through time of the same cohort, we cannot support the view that more women rather than men perished through time in the old population. What might be seen apparently can be supported only on the supposition that persons entering the age-group had the same female male ratio as that of the earlier age-group. In other words, if the successive addition to a population maintain a stability in Female male ratio then the suspicion that women's fight against death was relatively less supported than the fight of their counterpart gathers substance.

The education status of the people at two different points of time exhibits indeed significant difference. It is possible that this clear enhancement of human capital has contributed to reduction of death-rate of women. From tables 6, 7 and 8 it is clear that but for the helplessness of some agricultural labourers the death rate would not have increased

at all.

In Table 3 we have seen the picture of the original population and of a sample of that population after fourteen years. We have separated the families of permanent tea garden workers from the original as well as subsequent sample

Table 6

Birth-rates and Death-rates in Two Points of Time in Families of Permanent Tea Garden Workers

Annual rate of	1979-80	1993-94
Births	2.3	1.6
Deaths	1.4	1.1

population. The annual rates of births and deaths were computed and are shown in table 6.

This state of the birth and deaths of the segment of permanent tea garden workers can now be compared with that for families of agricultural workers as well as of residual population. Tables 7 and 8 summarise the rates of births and deaths at two points of time of the families of agricultural labourers and those of residual population.

Table 7

Birth and Death rates in Two Points of Time in Families of Agricultural Labourers

Annual rate of	1979-80	1993-94
Births	3.2	3.1
Deaths	2.0	6.2

Table 8

Birth and Death Rates in Two Points of Time in Families of Residual Population

Annual rate of	1979-80	1993-94
Births	3.0	2.4
Deaths	1.2	1.2

On going through the three tables for three segments of population we find the permanent tea garden labourers enjoyed throughout the benefit of the lowest rate of death. This is because they receive free medical treatment and free medicine from the company health centres in their tea gardens.

Table 9

New and Old Literacy Rates (Census Definition) in Three Segments of Population

Segment	Literacy Rate (Census Definition)	
	1979-80	1993-94
Permanent Tea Garden Labourers	24.6	47.0
Agricultural Labourers	4.1	0
Residual Population	23.8	70.5
Total	21.3	61.8

A review of the progress in literacy in course of the last fourteen years as seen from tables 9 and 10 supports the hypothesis that the free medical treatment received rather than literacy has a more powerful influence on reduction of

death rates. Even though free medical treatment is more powerful than literacy as factor to bear on death rate, the

Table 10

New and Old Literacy Rates (6 Yrs. or More of education) in Three Segments of Population

Segment	Literacy Rate (Six Years or More of Education	
	1979-80	1993-94
Permanent Tea Garden Labourers	7.0	7.4
Agricultural Labourers	2.0	0
Residual Population	7.3	36.4
Total	6.6	28.1

progress of literacy has been more marked in the residual population. The agricultural labourers enjoy the lowest consumption benefits of literacy.

The residual population being relatively large it is natural that the performance of a few progressive families has heightened their aggregate proportion of literates especially in the sample 14 years later.

2.3 PURE LITERACY

In the original population the literacy rate according to Census definition is highest among the tea garden labourers. Their rate is higher than that of the residual population. The lowest rate of literacy is found among the agricultural labourers.

There is no doubt that the literacy rate in terms of Census definition as well as 6 years or more of education has increased in course of fourteen years. In both ways the progress of literacy is positive among permanent tea garden labourers whereas in the span of fourteen years literacy, of either of the two definitions, vanishes among agricultural labourers.

2.4 EFFICIENCY OF FARMING

The costs and output in agriculture in the farms of permanent tea garden labourers and those of comparable size of the residual population in the original population reveal important difference in the two groups. The farms of tea garden workers used better implements and seeds. A little handicap in respect of these inputs was more than overcome by the farms of the comparable size of the residual population by greater use of mandays. These farms used Rs.93 worth mandays more per acre against a reduction of inputs like implements, seeds or organic manures to the extent of Rs.29 only. So the residual population produced more per acre than the tea garden workers. The picture is presented in table 11.

Table 11

Costs and Output

Total Output

Reference Year 1979-80. Original Population

Description	Average Farm size (acres)	Per Acre Output			Cost (Rs.) per acre on						
		Main	By products	Total	Dep.	Seeds	Organic	Inorganic	Home Lab.	Hired lab.	Total
Farms of Tea workers	3.3	777	169	946	160	41.20	29.70	-	354	81	665.9
Farms of Others	3.9	824	154	978	139	35.00	28.00	-	398	134	734.0

Table 12

Costs and Output

Total Output

Reference Year 1993-94 Sample Population

Description	Average farm size (acres)	Per Acre Output(Rs.)			Cost (Rs.) per acre on						
		Main	By products	Total	Dep.	Seeds	Organic	Inorganic	Home Lab.	Hired lab.	Total
Farms of Tea workers	2.5	4284	173	4457	863.2	135.4	148	14	1783	420	3363.6
Farms of others	5.4	3203	498	3701	558.0	113	84	-	1244	498	2493.0

In the course of 14 years tea workers have strengthened their position through improvement of their wages in the tea gardens. Some of their children have become able-bodied. They have used more of all important inputs and in respect of productivity their farms are superior. There is little doubt that tea workers have emerged as a special class of the original population.

2.5 OWNERSHIP OF ANIMALS

The permanent tea workers of the village can be compared with agricultural labourers and productive operators of marginal or sub-marginal farmers. Farmers who have relatively larger holdings within the prescribed ceiling enjoy the advantage that is at any rate beyond the reach of tea workers or marginal or sub-marginal farmers or agricultural labourers. In this section we compare the animal wealth of tea workers' farm and that of residual farms both in 1979-80 and 1993-94. The relevant data are presented in tables 13 and 14.

Table 13

Average Ownership of Cattle

1979-80

Description	Per household ownership of			
	Bullocks	Cows	Calves	Buffaloes
Permanent tea workers	1.60	0.80	0.73	0.53
Residual population	2.00	1.00	0.93	0.40

Table 14

Average Ownership of Cattle

1993-94

Description	Per household ownership of			
	Bullocks	Cows	Calves	Buffaloes
Permanent tea workers	1.6	0.60	0.40	0.8
Residual population	2.0	1.20	0.95	0

The position of landless agricultural labourers and that of landless permanent tea workers at two points of time are given in tables 15 and 16. In general, they have not acquired the ability to rear cattle or have not any home labour reserve to look continuously after cattle. Permanent tea workers

Table 15

Ownership of Cattle 1979-80
Landless Tea Workers and Landless Agri Labourers

Description	Per household ownership of			
	Bullocks	Cows	Calves	Buffaloes
Landless Agri. Labourers	0	0.16	0.12	0
Landless Tea Workers	0	0	0	0

Table 16

Ownership of Cattle 1993-94
Landless Tea Workers and Landless Agri Labourers

Description	Per household ownership of			
	Bullocks	Cows	Calves	Buffaloes
Landless Agri. Labourers	0	0	0	0
Landless Tea Workers	0	0	0	0

whether they are landed or landless can never rear cattle if they do not have any labour reserve at home.

2.6 OWNERSHIP OF LAND AND CONSUMER DURABLES

A comparison is being made in this section among the families of permanent tea garden workers and a number of other groups with the help of tables 17 and 18.

The comparison at two points of time reveals an improvement in the values of both lands and other consumer durables. While there has been a big appreciation in the value of lands in the settlement, there has been increase in the number of consumer durables held by the villagers. Under the item others the people hold after a span of fourteen years T.V. sets and a motorcycle.

The tea workers' families compare favourably in the base year in respect of ownership of bicycles. But after fourteen years their position in respect of ownership of bicycles is better only in comparison to all-farms below 2 acres. Their position is even worse than the average village position in this respect. However, it must be added that the average village position in this respect is influenced by the ownership of a very few persons.

The position of the permanent tea workers is considerably superior to agricultural labourers. In sum their position is superior to agricultural labourers and farmers who own less than 2 acres. With the help of a little of interpolation we can say that tea garden workers of this area compare favourable with

farmers having the same amount of landholdings. This may testify to better plight of tea garden workers of the village.

2.7 EMPLOYMENT PATTERN IN TWO COMPARABLE GROUPS

Since the families of permanent tea garden workers and those of farmers with comparable land holdings have lands, it is worthwhile to isolate the feature which distinguish the families of permanent workers. The real point about the permanent tea garden workers is that they have full time employment. As the farmers with comparable landholdings may suffer very perceptibly from want of full employment the better performance of permanent tea garden workers in respect of ownership consumer durables is understandable.

Table 17

Per Household Household Assets (Land and Consumer Durables)

1979-80

Description	Per Household Household assets									
	Land		Bicycle		Radio-set		Watches		Others	
	Amount	Value	No.	Value in Rs.	No.	Value in Rs.	No.	Value	No.	Value
Permanent tea garden workers	3.64	10216	.18	40	-	-	-	-	-	-
Service holders and Permanent wage earners	4.93	9650	-	-	-	-	-	-	-	-
Agri-labourers	0.43	885.7	-	-	-	-	-	-	-	-
Non-Agri.labourers	0.13	375.0	-	-	.12	31.2	.12	27.5	-	-
Farmers upto 1 acre	1.28	2520.7	-	-	-	-	-	-	-	-
1-2 acres	1.94	5038.0	.04	10.4	.04	14.5	-	-	.04	20.8
2-5 acres	3.54	9321.0	.06	29.7	-	-	-	-	-	-
Above 5 acres	10.50	29482.0	-	-	-	-	-	-	-	-
Total	3.42	8381.0	.06	18.0	.02	3.87	.01	1.70	.01	3.87

Table 18

Per Household Household Assets (Land and Consumer Durables)

1993-94

Description	Per Household Household assets									
	Land		Bicycle		Radio-sets		Watches		Others	
	Amount	Value	No.	Value	No.	Value	No.	Value	No.	Value
Permanent tea garden workers	2.29	35803	0.50	508.3	.33	183.0	.33	133.3	.16	35
Service holders and permanent wage earners	.88	12848	0.80	640	.20	130	.40	154	.20	840
Agricultural labourers	.08	1400	.50	425	-	-	-	-	-	-
Farmers upto 1 acre	1.15	13726	0.50	243.7	-	-	-	-	-	-
Upto 2 acres	1.83	34180	0.33	216.6	-	-	-	-	-	-
2-5 acres	3.76	48535	1.25	1068.7	.75	487.5	1.00	231.2	.33	1400
Above 5 acres	10.41	146083	1.16	753.0	.16	100	.83	429.0	.83	6650
Total	3.43	50331	0.76	584.0	.23	143.3	.43	169	.26	1623.6

* Occupations mentioned in this and the previous table refer to occupations of family heads.

Table 19

Employment pattern of Comparable Families (1979-80)

Description	Tea Workers	Comparable Families
No. of employed adults per household	3.4	2.4
P.C.of fully employed adults	39.2	1.3
P.C. of those enjoying 200 days or more	41.1	27.6
P.C. of those enjoying 150 days or more	60.8	60.5

Table 20

Employment Pattern of Comparable Families (1993-94)

Description	Tea Workers	Comparable Families
No. of employed adults per household	3	5
P.C.of fully employed adults	27.3	0
P.C. of adults employed for 200 days or more	33.3	10.0
P.C.of adults employed for 150 days or more	38.9	30.0

This becomes amply clear from tables 19 and 20. At both time points the employment position in the families of permanent tea garden workers enjoy superior employment. This verily supports their superior position in respect of consumer assets.

2.8 DIFFERENCES IN INCOMES

We examine in this section the relative position of tea workers and non-tea workers in respect of incomes earned. We make this comparison both for the old population and the sample population after an interval of fourteen years.

Table 21

Measures of Income Distributions of Tea Workers and Non-tea Workers

Measures of income distribution	1979-80		1993-94	
	Tea workers	Non-tea workers	Tea workers	Non-tea workers
$\bar{x}$	2612	1279	8662	4346
σ_n	512	613	423	3053
σ_{n-1}	526	614	457	3075
n	18	320	7	72

In the first instance we compare the incomes of tea workers and non-tea workers. Workers in both groups include here female workers also. Despite the great difference in the number of values in the comparable distributions, it stands to reason that differences in the means are due to real differences in the occupations concerned. Since there is a large inequality in the

Table 22

Measures of Income Distributions of Male Tea Workers and Male Non-tea workers

Measures of income distribution (in Rs.)	1979-80		1993-94	
	Male tea workers	Male Non-tea workers	Male tea workers	Male non-tea workers
$\bar{x}$	2660	1301	8662	4929
σ_n	545	643	423	3204
σ_{n-1}	564	645	457	3234
n	15	194	7	54

income distribution of agricultural productive workers and since this distribution is dominated by the low income earners, the result testifies to the fact that tea workers earn more than a very large number of agricultural productive workers.

We notice the same phenomenon in table 22 also where we exclude from both sets female workers. In point of fact, there is no female among tea workers in both tables 21 and 22. But we have a difference in table 22. This difference, though small, may have far reaching implication for the future. From table 21, we find that tea-non-tea mean income ratio is 1.99. This ratio declines to 1.76 in table 22. This relative decline in the mean income ratio took place inspite of wage hike in the organised tea sector and inspite of the fact the agricultural productive activity is still dominated by the single crop. The decline was caused both by some increase in productivity in the

single crop without much addition to inputs and some gradual hike in prices of the agricultural crop.

Table 23

Measures of Income Distributions of Casual Tea workers and Casual Non-tea workers

Measures of income distribution (in Rs.)	1979-80		1993-94	
	Casual tea workers	Casual non-tea workers	Casual tea workers	Casual non-tea workers
$\bar{x}$	1630	1193	4316	3294
σ_n	486	398	1797	1630
σ_{n-1}	503	399	1941	1672
n	15	191	7	20

Table 24

Measures of Income Distributions of Male Casual Tea Workers and Male Casual Non-tea Workers

Measures of income distribution (in Rs.)	1979-80		1993-94	
	Male casual tea workers	Male casual non-tea workers	Male casual tea workers	Male casual non-tea workers
$\bar{x}$	1566	1240	5461	3533
σ_n	594	404	1280	1490
σ_{n-1}	635	405	1478	1538
n	8	138	4	16

Table 25

Measures of Income Distributions of Female Casual Tea Workers and Female Casual Non-tea Workers

Measures of income distribution (in Rs.)	1979-80		1993-94	
	Female Casual tea workers	Female Casual non-tea workers	Female Casual tea workers	Female Casual non-tea workers
$\bar{x}$	1682	1068	2790	2239
σ_n	310	354	1128	1807
σ_{n-1}	335	357	1382	2087
n	7	53	3	4

In the second instance, we compare the incomes of casual tea workers and casual non-tea workers. All the three categories of casual tea workers, viz., casual tea workers, male casual tea workers and female casual tea workers have mean incomes higher than their counterparts, viz., casual non-tea workers, male casual non-tea workers and female casual non-tea workers.

Compared to what we find in the preceding paragraph the ratio of mean incomes of male casual tea workers and male casual non-tea workers has increased in the course of fourteen years. This is because the casual workers, in general, are not influenced either by the hike in price of the single crop or by the type of productivity that increased in the case of the traditional paddy of the monsoon season.

On the other hand the ratio of the mean incomes of female casual tea workers and female casual non-tea workers has declined from 1.57 to 1.25. This means that relative income of female casual non-tea workers has increased to some extent. This may provide good portents for high demand for labour in case truly integrated development planning at the local levels gathers momentum in future.

Table 26

Measures of Income Distributions of Male Permanent Tea Garden Workers and Non-tea Workers of Families Owning 2 Acres or Less

Measures of income distribution (in Rs.)	1979-80		1993-94	
	Male tea workers in the group	Male non-tea workers in the group	Male tea workers in the group	Male non-tea workers in the group
$\bar{x}$	2370	1158	8580	3321
σn	Does not arise	385	449	2026
$\sigma n-1$	Does not arise	588	502	2065
n	1	94	5	27

In the final instance of this section we compare the incomes of male permanent tea garden workers and non-tea workers belonging to families owning 2 acres and less. The relevant data tabulated in table 26 releases a trend in interval of fourteen years which is in sharp contrast to what we notice in previous paragraphs. Here tea non-tea mean income ratio surges up from 2.05 in 1979-80 to 2.58 in 1993-94.

The reason is that even though some of these farmers have received the benefits of subsidies or minikits during 1993-94. Such subsidised minikits have been evaluated at market price in our calculations. They are also under handicap that majority of them have no bullocks and ploughs. The old system of mutual exchange of labour and bullock-drawn ploughs is long out of vogue. They have to pay high price for the services of bullock-drawn ploughs. Over and above, the most of the farmers of this group of this locality are not efficient farmers. Because often they run for cash incomes as labourers and cannot work out the farm operations in time. So the result is that their cost per unit output is the highest among the farm sizes. All this has happened because this area remains one of the most depressed areas in the whole of the state of West Bengal and there is complete lack of infrastructural facilities here. In addition during the reference year the village suffered havoc as a result of floods caused by speedy release of water from the hydel reservoir of Chukha in Bhutan. These marginal and submarginal farms were the special victims of this havoc.

2.9 PRODUCTIVE USE OF AGRICULTURAL LAND

The main point about agriculture in the locality is that this area is devoid of any irrigation facility. As irrigation has some primary over other infrastructural facilities input markets or input producing local activities, network of marketing of outputs at fair price, such infrastructural facilities have

been slow to emerge. Even without irrigation such infrastructural facilities which might have been created largely through the government initiative could have offered, but actually did not offer big scope for diversifying and heightening outputs and incomes of this local level rural economy.

As it stands the area is left to be rainfed. For the moment we leave the scope of irrigation as completely closed. The area is a part of the upper dooars. Even though rainfall is generally good, it is not uniform throughout the agricultural year. As a result of the two surveys we notice that farmers themselves have made some farm planning on the basis of the local agro-climatic characteristics, especially rainfall pattern. When the HYV paddy was available to villagers they tried it in the main season, viz., the monsoon season. But soon it became apparent that distribution of rainfall in the monsoon season was uneven. On the other hand rainfall in the needed months was subject to less uncertainty in the pre-monsoon season. So the farmers shifted the activity of raising HYV paddy from the monsoon season to the pre-monsoon season. In fact, from the sample of 1993-94 it is clear that the acreage of HYV paddy increased but that traditional pre-monsoon paddy declined.

The farmers, as unassisted they are by commodity specific marketing network, are impressed by the easy marketability of paddy. So in interval of fourteen years paddy dominate over jute and maize. For the winter season wheat dominate now over other crops. The importance of barley and mustard declined.

The inferior barley with low status and low market value is gradually yielding to wheat. The farmers have also understood that local wind power and occasional rainfall militate against the natural growth of mustard plants.

They yet are unaware that such traditional commercial crops like varieties sweet gourd, green as well as dried chillies could be produced in winter season with whatever winter rain or moisture the area receives. Ripe gourds and dried chillies can be stored. This means that even some extension on behalf of the government so necessary for agricultural producers is not being offered by any agency of the state of West Bengal.

As for actual change in agricultural production, we present the relevant data in tables 27 and 28. The main indicator that is being used for comparison over the two points of time is paddy equivalent per acre. All paddy crops are added in kilos and with this sum is added the total values of all other crops divided by the price per kilo of the traditional variety of monsoon paddy. These two tables show that agricultural production

Table 27

Paddy Equivalents and Quantities of Organic Manures and Inorganic Fertilisers 1979-80

Farm size in acres	Net cultivable acres	Paddy equivalents in kilos	Organic in kilos	Inorganic in kilos
- 2	56.20	698	330	-
2 - 5	156.25	402	180	0.11
Above 5	123.99	944	160	0.21
Total	336.44	664	200	0.13

per acre has increased. The increase is brought about not by any perceptible increase in reproducible capital. The increase may have been brought about by improvement in the land endowment through successive cultivation.

Table 28

Paddy Equivalents and Quantities of Organic Manures and Inorganic Fertilizers

1993-94

Farm size in acres	Net cultivable acres	Paddy equivalents in kilos	Organic in kilos	Inorganic in kilos
- 2	15.74	692	316	1.28
2 - 5	20.69	825	399	-
Above 5	51.16	630	165	-
Total	87.59	703	282	0.28

In the course of the preceding paragraphs we have often calculated agricultural incomes to find the total annual incomes of various kinds of earners. In calculating the agricultural incomes we have deducted all costs (except interest on capital) from total output. In terms of this definition we see from table 29 that the agricultural income per acre of the lowest farm size is not the highest, eyen though main output or total output per acre of this group is the highest among all farm sizes, as can be seen from tables 30 and 31.

Table 29

Agricultural Income Per Acre

Farm size (Acres)	Agricultural income in Rs. per acre	
	1979-80	1993-94
- 2	230	1294
2 - 5	241	1639
Above 5	278	1072
Total	255	1245

Table 30

Output and Costs on Inputs : Total Product of All Crops

1979-80

Farm size (in Acres)	Group total of Operational holdings (Acres)	No.of farms	Per acre output in Rs.			Per acre cost in Rs. on								
			Main output	By product	Total	Annual cost on fixed capital*	Seeds	Organic manure	Inorganic fertilizers	Insecticide	Irrigation	Home labour	Hired labour	Total
- 2	56.20	35	808	166	974	174	42	33	0	0	0	467	28	744
2- 5	156.25	47	688	152	840	138	36	18	0.32	0	0	343	63	599
Above 5	123.99	15	704	142	846	110	33	16	0.58	0	0	284	124	568
Total	366.44	97	714	150	867	133	36	20	0.36	0	0	342	80	612

* including hiring charges paid by non-owners of fixed capital.

Table 31

Output and Costs on Inputs : Total Products of All Crops

1993-94

Farm size (in acres)	Group total of operational holdings (acres)	No. of farms	Per acre output in Rs.			Per acre cost in Rs. on								
			Main output	By products	Total	Annual cost on fixed cap.*	Seeds	Organic manure	Inorganic fertilizer	Insecticides	Irrigation	Home labour	Hired labour	Total
- 2	15.74	13	4245	545	4790	839	147	172	9	0	0	2171	157	3496
2- 5	20.69	06	3919	490	4409	674	119	133	0	0	0	1254	590	2770
Above 5	51.16	06	2904	566	3470	466	96	55	0	0	0	984	973	2398
Total	87.59	25	3385	545	3929	582	111	94	2	0	0	1264	631	2684

* including hiring charges paid by non-owners of fixed capital.

Table 32

Output and Costs on Inputs : Pre-Monsoon HYV Paddy

1979-80

Farm size (in acres)		No.of farms	Per acre output in Rs.			Per acre cost in Rs. on								
			Main output	By products	Total	Annual cost of fixed capital*	Seeds	Organic manure	Inorganic fertilizers	Insecticides	Irrigation	Home labour	Hired labour	Total
- 2	0.66	01	818	60	878	88	36	91	-	-	-	400	-	615
2- 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Above 5	3.00	03	695	45	740	60	40	30	8.7	-	-	228	249	616
Total	3.66	04	717	48	765	65	39	41	7.1	-	-	259	204	616

* including hiring charges paid by non-owners of fixex capital.

Table 33

Output and Costs on Inputs : Pre-Monsoon HYV Paddy

1993-94

Farm size(in acres)	Total area covered in acres	No.of farms	Per acre output in Rs.			Per acre cost in Rs. on								
			Main output	By product	Total	Annual costs on fixed capital*	Seeds	Organic manure	Inorganic manure	Insecticides	Irrigation	Home labour	Hired labour	Total
- 2	6.44	07	3106	182	3288	372	127	303	22	-	-	1648	93	2565
2- 5	1.83	02	3902	230	4132	425	135	246	-	-	-	1467	-	2273
Above 5	1.66	02	4418	138	4556	206	131	300	-	-	-	1380	720	2737
Total	9.94	11	3471	185	3656	354	129	292	14	-	-	1569	181	2539

*including hiring charges paid by non-owners of fixed capital.

Table 34

Agricultural Income from Pre-monsoon HYV Paddy

Farm size (Acres)	Agricultural Income in Rs. (Total output minus total costs)		Agricultural Income in Rs. (Main output minus total costs)	
	1979-80	1993-94	1979-80	1993-94
- 2	263	723	203	541
2 - 5	-	1859	-	1629
Above 5	124	1819	79	1681
Total	149	1117	101	932

Table 34 A

Education and Performance of HYV Paddy Farms

1993-94

Years of Education of the main operator	No.of farms	Total area acres given to the crop	Total of opera-tional hol-dings	Ave-rage farm size	Per acre output in Rs.	Per acre output in Kilos	Agricultural income from the crop
Upto 6 yrs.	3	2.52	21.86	7.28	759	717	218
More than 6 years	8	7.41	14.30	1.78	186	179	65

In the beginning of this section we made the point that the farmers shifted the activity of raising HYV paddy from the monsoon season to the pre-monsoon season in order to get the benefit of greater certainty of rainwater. We see from table 33

that both main output and total output (adding byproducts) of the crop varies directly with the size during 1993-94. It can be seen from table 34 that larger farms have also more agricultural income per acre.

The question naturally arises if these better results of the relatively larger farms depended in any way on their enhanced literacy. But table 34 shows that years of education per se have not contributed to increase in production. On the other hand size of farms which is indicative of higher total family income and therefore of higher family resources did contribute to the increase in production. Resources and application of natural intelligence may, therefore, in the primary stage be better substitutes of increased literacy. To this extent if the state initiate and aid multifarious infrastructural activities then such network of infrastructures will go a long way to support the increased productivity of all farms including the marginal and the submarginal ones.

With low input regimes both in the original and the new surveys it is not normal to expect good results from analysis of linear or Cobb-Douglas production functions. This is more so, because when inputs used are not numerous, limitations on returns on one or two inputs may influence the productivities measured by such functions.

From the data of the table, 35-37 we find that, from both types of production functions fitted to the data of 1993-94, seeds

and mandays of labour employed are found to be productive. With one of the coefficients as significant we may treat the whole function as significant. So both linear and Cobb-Douglas productions may be treated as significant. The statements

Table 35

Linear Production Function

Variable	1993-94 Co-efficient	T with D.F.=20	1979-80 Co-efficient	T with D.F.=97
Dependent Variable	-197.54	-0.4423	109.62	1.3618
VAD	- 0.04852	-0.1113	0.4033	1.5458
VAS	9.5698	1.4024	0.6337	0.7455
VOR	- 0.3173	-0.1935	0.6292	0.8230
VAM	1.4238	3.4032	1.3519	8.1597

R^2 = 0.5114311 R^2 = 0.8532567

VAD = annual cost on fixed capital per acre; VAS = cost on seeds per acre; VOR = cost on organic manure per capital; VAM = cost on mandays per acre.

Table 36

Log-Linear Production Function

Variable	1993-94		1979-80	
	Co-efficient	T with D.F.=20	Co-efficient	T with D.F.=97
Dependent Variable	0.5954	0.6589	2.1673	4.0051
VAD	-0.03315	-0.3605	0.1004	1.9858
VAS	0.2687	1.3533	0.1829	2.3912
VOR	0.000242	0.00996	-0.0145	-0.8409
VAM	0.860	4.3098	0.5566	5.8230
	R^2 = 0.4787268		R^2 = 0.8442404	

Table 37

Marginal Products of Inputs (in terms of Table 36)

Variable	Marginal Product	
	1993-94	1979-80
VAD	-0.1697	0.4897
VAS	8.4800	1.6970
VOR	0.0064	-0.4370
VAM	1.5800	1.0250

are also true for the Cobb-Douglas production fitted to the data of 1979-80.

2.10 EXTENT OF USE OF LAND AND LABOUR

The two definitions used for measuring the intensity of use of land are as follows. The first method is the weighted average of the number of days crops are raised on a plot of land. The second method divides the gross cropped area by the net cultivable area.

Table 38

Intensity of Land Use

Farm group (Acres)	Net Cultivable area (Acres)		Intensity of land use (Method I)		Intensity of land use (Method II)	
	1979-80	1993-94	1979-80	1993-94	1979-80	1993-94
Upto 2	56.20	15.74	0.642	0.626	1.458	1.456
2 - 5	156.25	20.69	0.583	0.530	1.253	1.232
Above 5	123.99	51.16	0.580	0.537	1.233	1.148
Total	336.44	87.59	0.590	0.551	1.278	1.224

As this village economy is still tradition-dominated, the traditional monsoon paddy of longer gestation period will render the first method unsuitable both for inter-period comparison as well as for comparison with villages adopting HYV paddy in more than one season. We, therefore, bank on the second method of measurement for the purpose of interpreting the intensity of land use in this village economy.

Even though there has been marginal fall in the intensity of use of land in an interval of fourteen years, there has been no

fall in employment, in agriculture as we see from table 39. Although demand for labour in agriculture could not increase, there has been perceptible increase in employment in tea gardens and even in non-agricultural sector barring employment of service-holders. What we want to stress in this connection is that with satisfying set of infrastructural facilities the intensity of land use by the second method would have risen to 3.5, if we assume widespread adoption of HYV seeds preserving bio-diversity of crops in tact only in state farms with that specific purpose.

The average of mandays of employment enjoyed by employed persons or by employed male or female adults may not be a really meaningful concept for all purposes. Because the variability is indeed great. However the average figures are presented in table 47. After a span of fourteen years this table, like table 39, shows clearly that has been an overall gain in employment.

Yet the tables 40-46 showing the intensity of use of labour bring to surface another face of the use of labour power of the active labour force. In this respect also we find some differences in two points of time. The grim fact is in none of periods at least 64.4% of employed persons cannot all use the whole of 54.7 per cent of their labour power. The position of the earlier period is still worse. In respect of adult females while in 1979-80 87.6% of employed adult females could not all use 54.7 per cent of their labour power, in 1993-94 53.8% of

Table 39

Per Household Employment of Mandays

1993-94

Farm Group (acres)	Per household employment of mandays of respective occupation							
	Permanent tea worker	Casual tea worker	Agriculture	Non-agricultural activities	Wage earnings		Service	Total
					Agriculture	Non-agriculture		
Upto 2	98.41	23.03	76.05	37.15	125.00	37.22	82.03	479.53
2-5	166.43	56.25	197.71	2.43	25.00	15.00	31.45	494.27
Above 5	-	-	369.76	7.27	-	12.66	25.85	455.00
Total	93.33	25.06	159.48	24.50	79.70	28.66	60.83	470.56
								1979-80
Upto 2	45.62	7.56	80.76	27.10	116.61	27.10	88.26	392.97
2-5	67.04	44.30	182.08	7.55	71.37	31.26	25.71	430.31
Above 5	121.66	-	418.86	40.40	4.95	-	57.66	633.62
Total	62.73	20.74	150-17	21.17	65.36	24.27	61.08	434.52

Note : Children excluded.

Table 40

Intensity of Use of Employed Persons

1979-80

Percentage of adult employed persons	Intensity of use / in percentage /
0.022	0.136 or less
0.207	0.273 or less
0.490	0.410 or less
0.671	0.547 or less
0.796	0.684 or less
0.869	0.821 or less
1.000	1.000 or less

Table 41

Intensity of Use of Adult Males

1979-80

Percentage of adult employed males	Intensity of use / in percentage /
0.014	0.136 or less
0.105	0.273 "
0.363	0.410 "
0.569	0.547 "
0.732	0.684 "
0.822	0.821 "
1.000	1.000 "

Table 42

Intensity of Use of Adult Females

1979-80

Percentage of adult employed females	Intensity of use [in percentage]
0.038	0.136 or less
0.409	0.273 "
0.742	0.410 "
0.876	0.547 "
0.923	0.684 "
0.961	0.821 "
1.000	1.000 "

Table 43

Intensity of Use of Children

1979-80

Percentage of employed children	Intensity of use [in percentage]
0.125	0.136 or less
0.350	0.273 "
0.550	0.410 "
0.625	0.547 "
0.650	0.684 "
0.650	0.821 "
1.000	1.000

Table 44

Intensity of Use of Employed Persons

1993-94

Percentage of adult employed persons	Intensity of use (in percentage)
0.065	0.136 or less
0.328	0.273 "
0.565	0.410 "
0.644	0.547 "
0.710	0.684 "
0.763	0.821 "
1.000	1.000 "

Table 45

Intensity of Use of Employed Males

1993-94

Percentage of adult employed males	Intensity of Use (in percentage)
0.063	0.136 or less
0.301	0.273 "
0.571	0.410 "
0.666	0.547 "
0.730	0.684 "
0.793	0.821 "
1.000	1.000 "

Table 46

Intensity of Use of Employed Females

1993-94

Percentage of adult employed females	Intensity of use (in percentage)
0.076	0.136 or less
0.384	0.273 "
0.538	0.410 "
0.538	0.547 "
0.615	0.684 "
0.615	0.821 "
1.000	1.000

Table 47

Mandays of Employment per household in Two Points of Time (Deduced from raw series)

	1979-80				1993-94			
	Mean	σ_n	σ_{n-1}	n	Mean	σ_n	σ_{n-1}	n
Adult employed persons	177.13	95.18	95.34	314	185.75	116.0	117.0	76
Adult employed males	202.36	92.40	92.60	209	176.11	108.9	109.8	63
Adult employed females	131.22	72.5	72.90	105	192.60	143.1	150.1	13
Employed children	200.20	133.5	135.2	40	223.5	141.5	200.1	02
Total	178.73	100.5	100.6	354	186.71	116.71	117.5	78

Note : The category of employed persons excludes children, as in the case of table 39. Persons upto 14 years of age have been counted as children.

employed adult females could not all use 54.7 per cent of their labour power. In other words, while in 1979-80 12.4 per cent of employed adult females could decisively use more than 54.7 per cent of their labour power, the corresponding percentage of employed adult females is 46.2 in 1993-94. In case we seek to hold that a person may be treated as holding good employment when the person uses at least 54.7 per cent of his or her labour power, then in the percentage of employed adult females who are in good employment is respectively 12.4 and 46.2 in 1979-80 and 1993-94. While the improvement in respect of use of labour power of employed adult females is rather pronounced in respect of percentage, the percentage of employed adult males in respect of use of labour power declined. Only 43.1 per cent of employed adult males were in good employment or succeeded to use more than 54.7 per cent of their labour power in 1979-80. But in 1993-94 this percentage of employed adult males fell to 33.3. This is real barometer. The employment position cannot improve without improvement in the employment position of employed adult males. The relative increase in intensity of employment of employed adult females may be in effect result of distribution of poverty among women at the initiative of crafty employers.

We wanted to deflate various values of 1993-94 at the prices of 1979-80. But in practice we find that the general price index number of the village as a whole is not suitable for different economic groups. The challenge of the rise in price levels has not been dealt with equally by different groups.

The persons who are dominantly agricultural producers and the persons who are dominantly service holders of the public or organised sectors have got obviously unequal compensations against price rises. Similarly agricultural labourers elsewhere in West Bengal may have succeeded to increase their daily wage in proportion to rise in price level. But this compensation is not that effective in their life in this village as employment could not increase for want of infrastructure.

As use is made in table 48 of a general price index number prepared for the purpose to get the per capita consumption expenditure of 1993-94 at the prices of 1979-80. We find that

Table 48

Consumption Expenditure Per Capita

(at 1979-80 prices)

Items of expenditure	Per capita expenditure in Rs.	
	1979-80	1993-94
Food-stuff	560.70	575.31
Non-food-stuff	101.80	103.10
Medicine	8.99	9.73
Schooling	4.56	44.57
Smoking	52.23	8.28
Housing	61.47	70.04
Total	789.75	811.03

some advantage in income has accrued to the villagers on average (advantages of some prevailing on average over the disadvantages any of the rest) is reflected in the higher per capita consumption expenditure in 1993-94. We have also seen that 5.8 per cent increase has occurred in per acre paddy equivalents, a concept that is free of the effect of variation in prices between the two periods. So despite some reduction in the employment opportunities of adult males, some rise in income may have mitigated their miseries.

2.11 THE IMPACT

We have found in the course of our analysis in this Chapter that some members of the labour force of the village found work as permanent workers in tea gardens. Viewed against the performance of comparable families with the same amount land holdings, the families of tea garden workers enjoy better health care, literacy and fuller employment of labour power.

A second impact is that the tea town of Hamiltonganj has provided some sort of undeveloped marketing network for jute and paddy.

The analysis has time and again shown that the operators react to any opportunity that come on their way and do not fail to make some tiny innovation to match a new eventuality.

The lesson is thus clear. A determined bid of development planning by ushering in superior set of infrastructural arrangement in stages has no rival.