

CHAPTER - III

LANDUSE IN TEA GARDEN

Introduction

The concept of 'landuse' is often considered a relatively stable subject, related mainly to the use to which the land in a certain region at a certain time is put (Vink, 1975). There are several general definitions of land uses, the earliest of which was given in connection with the first land utilization survey of Britain from 1931 onwards. It started quite simply that the object of survey was to discover for what purpose the surface of the country is used' (Stamp, 1948). According to Vink "the use of the land is the result of a continuous field of tension created between available resources and human needs and act by human efforts. Thus, by landuse it is implied that it is mankind adaptation of the land surface and mass need of different magnitude for space for different use (Northern, 1979).

The pattern of Landuse in the tea gardens is quite interesting. A brief resume is given here about the land utilization pattern since independence.

Recently the pattern of land utilization has become of paramount importance in tea gardens before and after 1955 in order to look at the changes brought about by the Government in the total areas of the tea gardens. The date of registered was declared to be 15th April 1955 (Ghosh T.K. 1987). As we saw earlier with effect from that date all the previous leases issued in Form 'C' were rendered void and the gardens were to take out a new lease in form 1 for thirty years and pending issue of a long term lease a garden could take summary settlement from year to year.

It was found that the decision taken in the part under section 6(3) of the West Bengal Estate Acquisition Act in the majority of cases were to liberal in allowing the garden to retain 'khet' lands and forest lands, and the Government laid down the following general guidelines for the determination of the retainable lands of tea garden.

Land utilization mainly deals with the problem related to the society and the region as a whole rather than a private farmer. Landuse is mainly related to the optimum use of the limited land between the alternative major types of landuse. In rural area major types of land use is as follows.

1. Agricultural lands (a) irrigated lands (b) non-irrigated lands (c) dry farming areas (d) grazing areas.

2. Forest lands or village, (a) orchards (b) Culturable or recreational land use. Land utilization is also related to "conversion of land from one major use to another general use"(Nanabati, 1957). In Poland under the direction of J. Kostrowicki (1968), Department of Geography, Polish Academy of Sciences developed a new pattern of land utilization based on agricultural typology, agricultural regionalisation and planning or programming agricultural development (Rostrowicki, 1968).

3.1. SIZE AND THE SHAPE OF TEA GARDEN IN THE STUDY ARE

Recently the pattern of land utilization has become a vital role in tea plantation. The empirical study revealed the pattern of utilization of the tea garden land during 1955. There is a tendency to think that this is some short of an optimum relationship between once the land under tea and the tea land under other uses in respect of particular tea garden.

The sizes of gardens in each P.S. have been classified on the basis of their mean (\bar{x}) and standard deviation (sd).

Where below $(\bar{X} - 1sd) = \text{very small}$
 $\bar{X} - (1sd \text{ to } \bar{X}) = \text{Small}$
 $\bar{X} \text{ to } (\bar{X} + 1sd) = \text{Medium}$
 $(\bar{X} + 1sd.) \text{ to } (\bar{X} + 2sd) = \text{Large}$
 above $(\bar{X} + 2sd) = \text{Very large.}$

In Nagrakata P.S. there are 15 tea gardens. According to their sizes these gardens have been classified into 5 categories.

Table 3.1. Size of the tea gardens in Nagrakata P.S.

1	2	3	4
Category	Size of the Tea garden in hecter	No of Tea Garden	Percentage to total of the P.S.
1. Very small	< 500	2	13.33
2. Small	500 - 600	1	6.67
3. Medium	600 - 700	2	13.33
4. Large	700 - 800	6	40.00
5. Very large	> 800	4	26.67
Total		15	100.00

From table 3.1 it is seen that Dharanipur is the smallest garden in this area, and has an area of 466.0 hectares. It is also found that there are 4 very large tea gardens in Nagrakata P.S.

The sizes of tea gardens is very important because it is highly related with tea area, production and yield as well as the population also. Comparing the sizes of the tea gardens it is revealed that the Chengmari tea garden covers the largest area (1851.30 hect) and a large portion of it is occupied by river. Whereas Dharanipur covers only 466 hect. So there is a wide difference in sizes between the largest and the smallest tea gardens. From the categorisation of gardens on the basis of area it is clear that most of the gardens are large and are located in the interfluvium of Jaldhaka - Diana rivers and on an upper fan zone. The area of tea gardens is becoming large towards the south. Moreover, all the gardens are irregular in shape and most of them are extended near lower fan zone from the upper fan zone except one or two.

The Banarhat P.S. has 25 tea gardens and the size of the gardens is very irregular. The sizes of the tea gardens of Banarhat P.S. have been classified on the basis of their mean and standard deviation.

Table 3. 2. Sizes of the Tea Gardens in Banarhat P.S.

1	2	3	4
Category	Size of the Tea garden in hecter	No of Tea Garden	Percentage to total of the P.S.
1. Very small	< 600	8	33.33
2. Small	600 - 700	2	8.33
3. Medium	700 - 800	5	20.84
4. Large	800 - 900	2	8.33
5. Very large	> 900	7	29.17
Total		15	100.00

From table 3.2 it is seen that most of the tea gardens of Banarhat P.S. are very small. There are eight gardens in this category and share 33.3% of the total tea gardens of the P.S. Surendranagar is the smallest tea garden of Banarhat P.S. The Palasbari tea garden, Redpark tea garden, Rheabari Laxikanta, Kalabari are also lying in this category. It is also noticed that most of the tea gardens in this category are under Bengali concern in the past. From the categorisation on the tea gardens on the basis of area it is clear that about 29.17 percent of total tea gardens are in the category of very large. The percentages of tea gardens in small and

large category are 8.33 each. The number of medium sizes tea gardens is 5. More over in Banarhat P.S. shape and size of the tea gardens is very significant. Most of them are square or rectangular in shape.

3.2. AREA UNDER TEA

All gardens of Nagrakata P.S. use 50 to 60% lands for tea cultivation. The fig. 3.1. reveals that only Nagrakata T.G. shares high percentage of total area under tea cultivation. The Carron T.G., Chengmari, Gathia and Jiti have 50% land under tea cultivation. But Dharanipara Jaldhaka, Altadanga and Karti T.G. have less than 50% of land under tea cultivation. Perhaps it is due to undulating lands with boulders, forest cover and land under gully erosions :

In Banarhat P.S. most of the gardens have 60% - 80% land under tea cultivation. Except Lakshmikanta T. G., all other gardens are adjoining to each other. It is lying above 100 mt in elevation and has loamy soil and without forest cover. This garden is poorly used for tea cultivation. The Lakshmikanta T.G. had been collapsed by devastating flood of 1968 (Ghorai and Jana 1989). This garden re-opened on 1977 but proper management could not take for its growing condition as well as thick alluvial soil covered the whole garden. Acidity is much more in the soils of the garden, that's why re-planting could not be possible very rapidly. So the maximum land of the garden is not used for tea cultivation. Only 18.87% of the total area are under tea.

It is interesting to note that though most of the gardens of Nagrakata P.S. are lying on the undulating part (300mt and above sea level). The land use for tea cultivation in this P.S. less than Banarhat P.S. (Fig. 3.2 and Fig. 3.3).

3.3 GROWTH OF TEA AREA IN DIFFERENT DECADES

The figure 3.2 reveals that most of the T.Gs. of Nagrakata P.S. in 1950 were in between 400 and 800 hectares in size. But a significant change was noticed in 1960. After that the area of Tea gardens had been decreased. But due to the Forest Land Protection act the lease portion of tea garden have been transferred to te palantation by the garden authority. Another cause of decreasing land is the devastating flood of 1968, Alluvial soil covered many te gardens of the Nagrakata P.S. and decreased. The tea area. In the year 1980 and onwards the tea areas had been increased.

In case of Banarhat P.S. the total area and the area under tea in 1950 were not very large (Fig. 3.3.). The total area and area under tea in most tea gardens in Banarhat P.S. are much larger than Nagrakata P.S. On the other hand most of the

TEA AND NON TEA AREA OF THE STUDIED TEA GARDEN

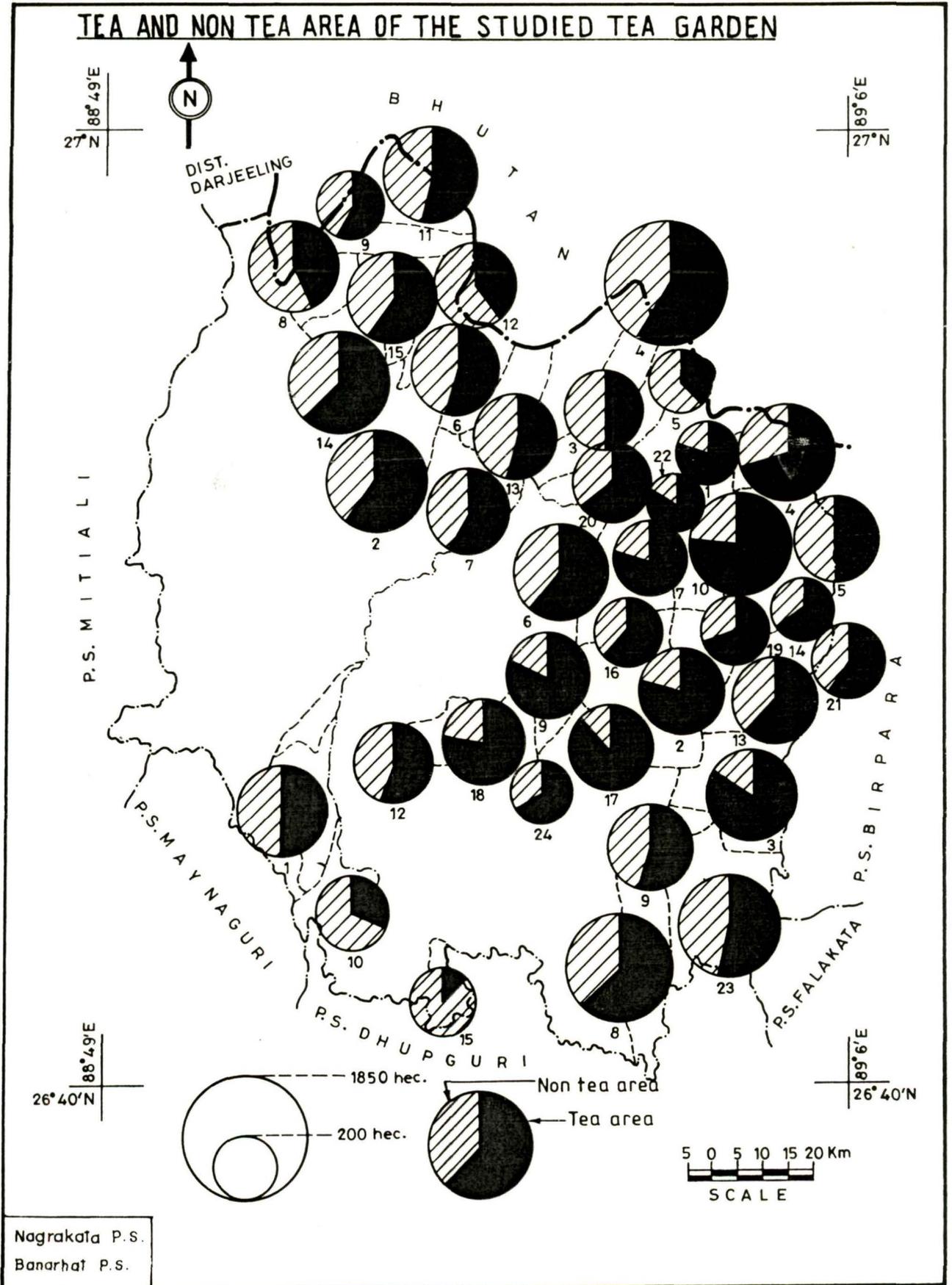


Fig. 3-1

TOTAL AREA AND TEA AREA OF LAST 6 DECADES (1950-1994)

BANARHAT POLICE STATION

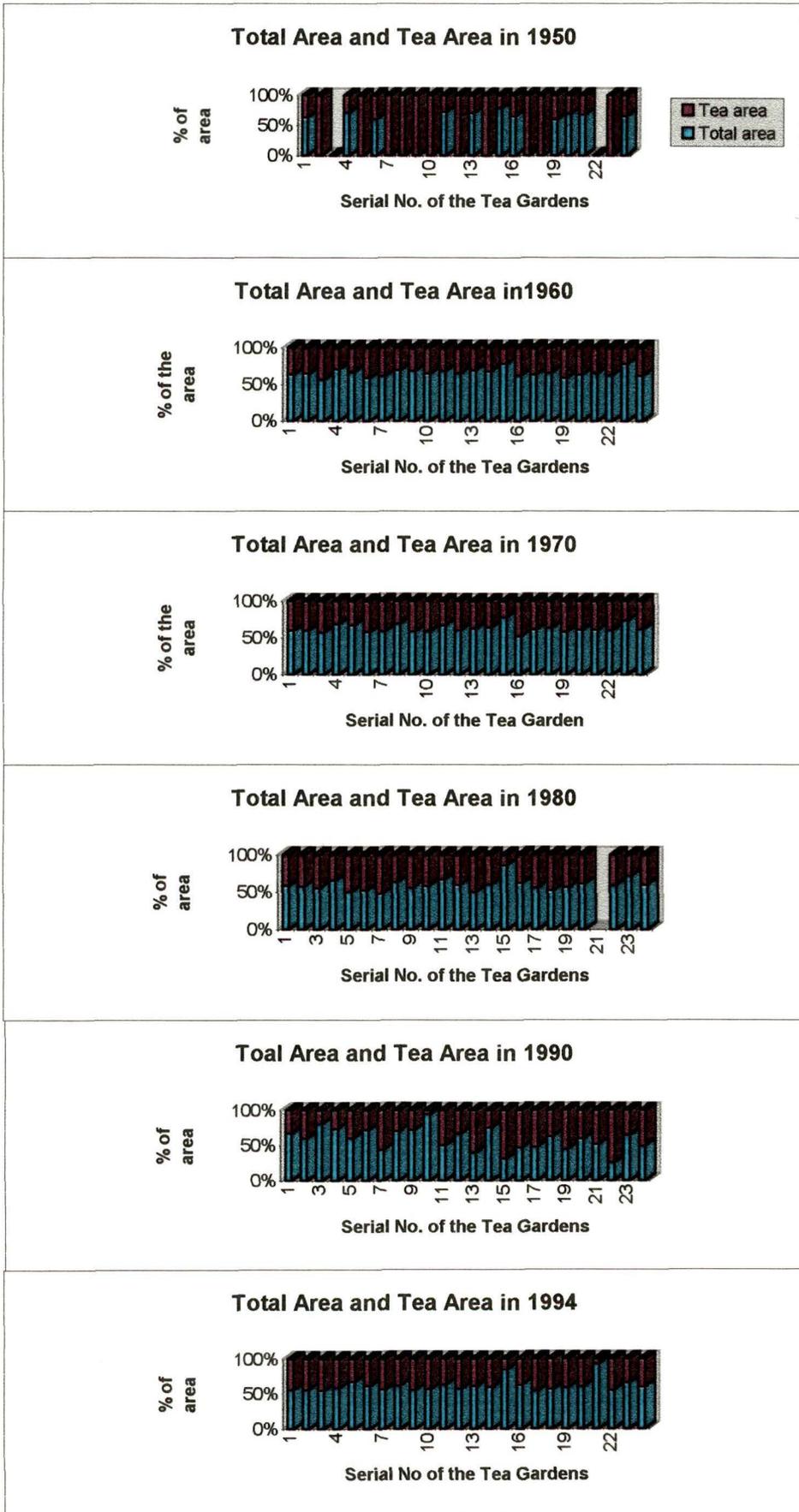


FIG.3.2

TOTAL AREA AND AREA UNDER TEA OF LAST 6 DECADES (1950-1994)

NAGRAKATA POLICE STATION

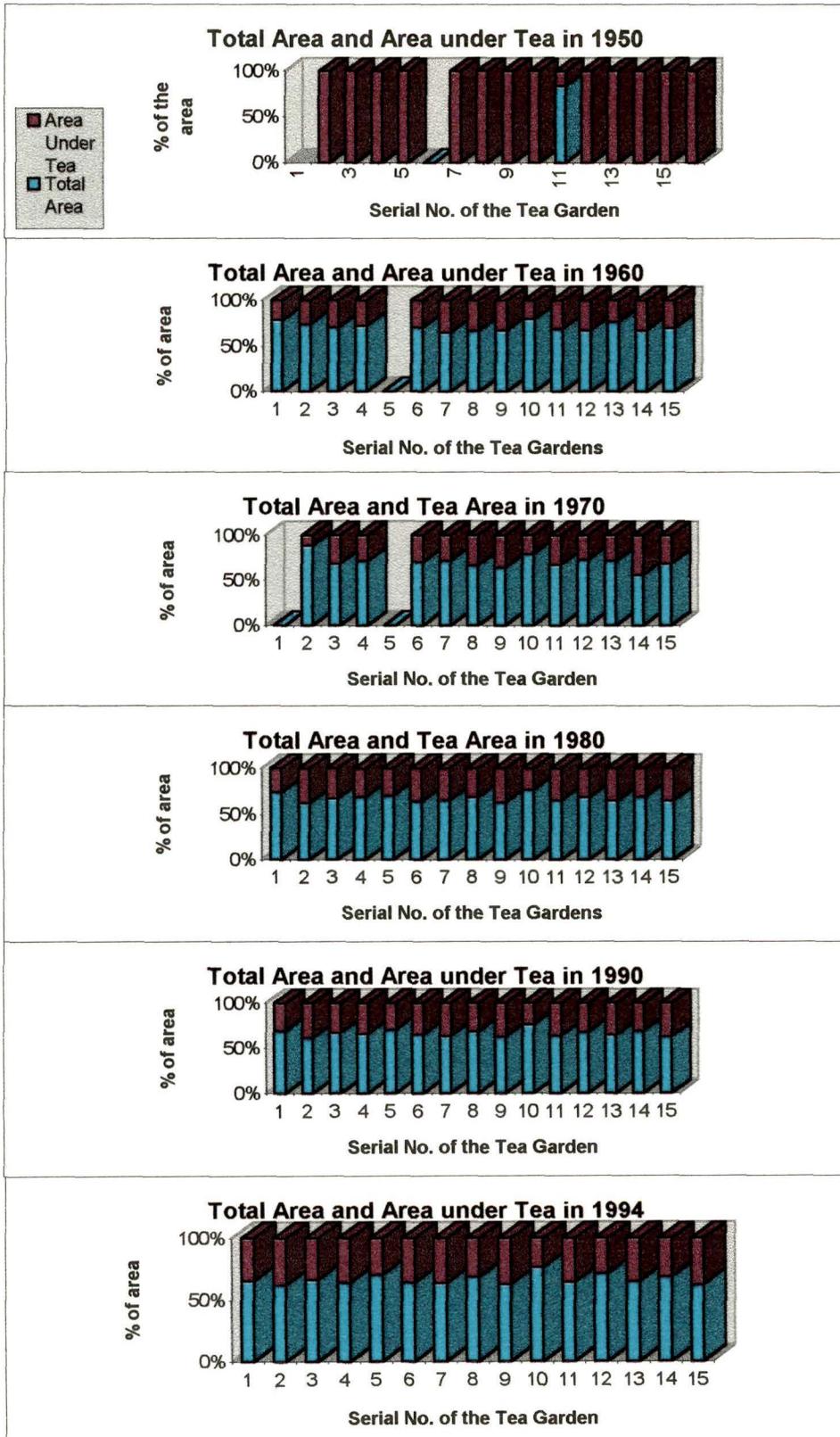


FIG. 3.3

T.Gs. in Nagrakata P.S. cover less than 800 hector. The general tendency of T.G. area in Nagrakata was lowered than it expected during the last four decades whereas an inverse situation is noticed in Banarhat P.S.

The rate of growth in area of tea gardens in Nagrakata P.S. was obviously low before 1980. It is gradually high after 1980. The growth was also high in some of the tea gardens of Banarhat P.S. from the beginning of 1950. It also gradually changed. But after 1970 the rate of growth was high in some of the tea gardens (Fig. 3.3).

3.4. IRRIGATED AND NON-IRRIGATED AREA UNDER TEA

It is expected that supply of water during the periods of water stress will increase growth and yield of tea is not realised when some other factors are essential for growth in limiting scale (Barua, 1989).

Distribution of rainfall in the study area is highly uneven. During the period from October to February, rainfall is scanty and the quantity varies from 5%-10% of the annual rainfall. In this period, average evaporation exceeds average precipitation by 8 - 357 mm. So conservation and supplementation of soil moisture by irrigation becomes necessary during the period of dry seasons.

There are three main procedure to adopt the irrigation of tea estates.

1. The natural flowing
2. The Drilling well
3. The Dug-well etc.

Most of the tea gardens of Nagrakata P.S. are irrigated. The fig. 3.5 reveals that 50% of area of 7 tea gardens are irrigated. These T.G. are managed by the Public Limited Companies. Two of them have above 70% of land under irrigated. Only two tea gardens have below 15% of total tea area under irrigated and in the Nagrakata P.S. it is noticed that 50% of total area of tea are under irrigated. So the yield rate is also high.

Figure 3.4 reveals that most of the tea gardens of Banarhat P.S. are also under irrigation. Only 8 tea gardens out of 24 have 50% area under irrigation and five of these have above 70% irrigated land. The high percentage of irrigated land is noticed in the Karbala Tea Estate under Andrew Yule Co. limited. In this P. S. there are four tea gardens those have less irrigated area to their total tea area. These are Lakshikanta (2%) Ambari (10%), Red Bak and Surendra Nagar (12%) tea gardens. These four gardens are all managed by private limited companies.

IRRIGATED AND NONIRRIGATED AREA OF THE TEA GARDENS

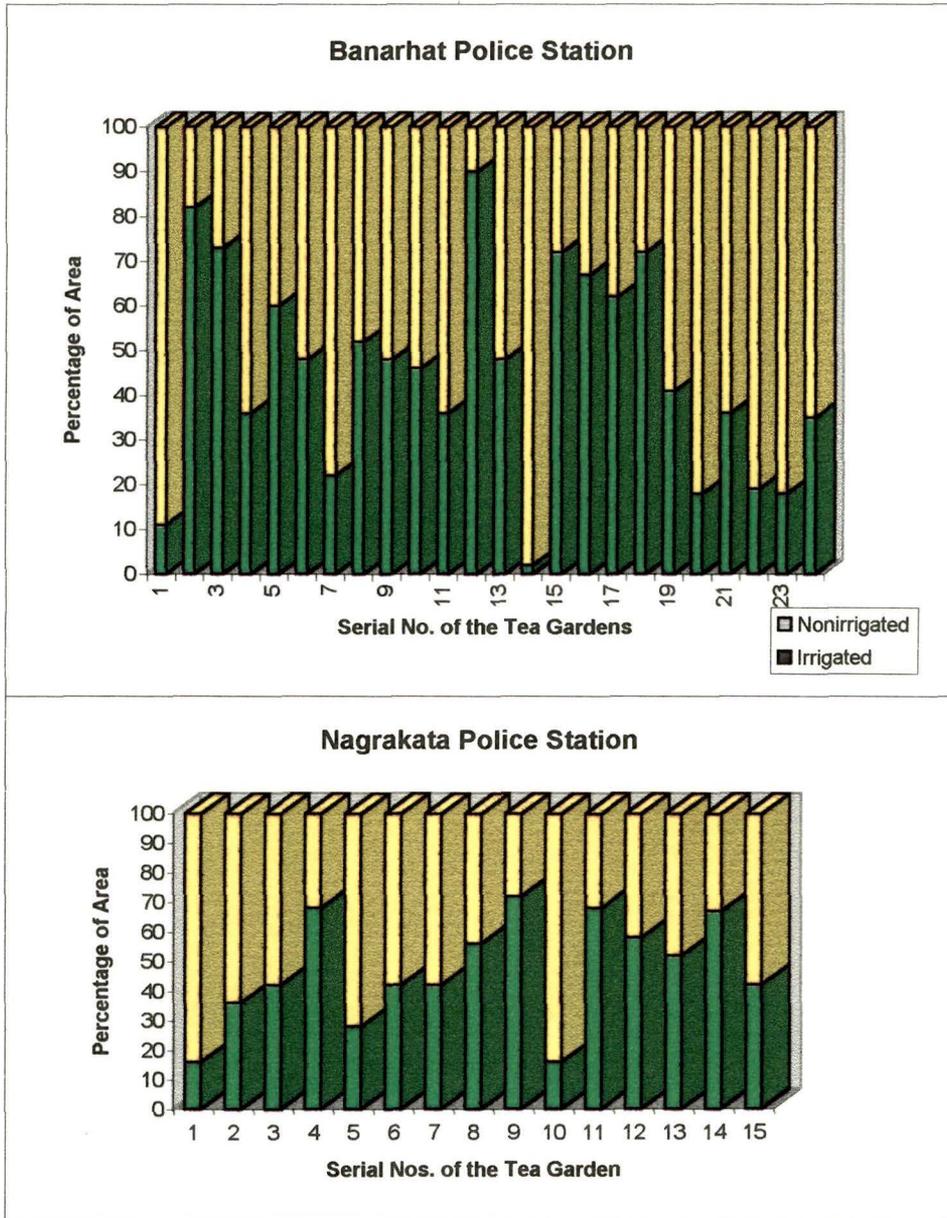


FIG 3.4

All most all the gardens have sprinkler irrigation system for irrigation (Plate - 3.1) Sprinkler method has efficiency of 70% to give water to plant. (Plate - 3.2) So most of the tea gardens use this system. Irrigated area in the public limited companies gardens are between 70 to 80% of the total area. These are Karbala T.E., Banahart tea estate, (Banahat P.S.) and Hope, Jiti Tea estates (Nagrakata P.S.). Only six tea gardens of the study area use natural flow of water for irrigation (Plate 3.3).

Irrigation is started before the bushes start showing the symptoms of moisture stress. The gardens follow a policy of giving 2 cms of irrigation in tea and UT sections over there. As it has been seen that irrigation during the drought months helps in harvesting the early crop more areas have to be brought under this system.

3.5.AREA UNDER DIFFERENT TYPES OF BUSHES

Most of the tea gardens of the study area are very old in age so the characteristics of bushes also noticable (Fig. 3.5) In both the P.S. the percentage of young tea is less than mature tea. Most of the gardens have covered from 70 to 80% of mature tea (that is above 5 years old). The Agency houses companies gardens are properly used for tea cultivation but the small companies are not suitable for proper land management (Ghosh,1987). Looksan tea garden is one of the sick gardens of this area. Some of the tea gardens have planted young tea of 20-25% of their total tea area because of two natural calamities i.e. flood of 1993 and drought of 1994. So most of the T.Es. tried to replanting by two years from the uprooted land. The flood of 1993 destroyed many tea bushes the study area.

The area under young tea is small. Only 10 - 30% of the total area is covered by the young tea (less than 5 years old).

The fig. 3.6 reveals the pattern of land use in Banarhat tea garden. It is also revealed that all the plots are square or rectangular in shape.

Figure 3.7 reveals the areal expansion of Banarhat tea garden prior to 1900. Most of the area of Banarhat tea gardens had been utilised before 1961. Only some part were extended after 1961. Tea is also planted for the border area during 1971 - 94.

3.6. LANDUSE FOR OTHER PURPOSES

The area other than tea means the landuses for the following categories.

- (1) Residential use
- (2) Office and factory uses
- (3) Roads and other uses.

VARIOUS TYPES OF TEA PLANTATION AREA

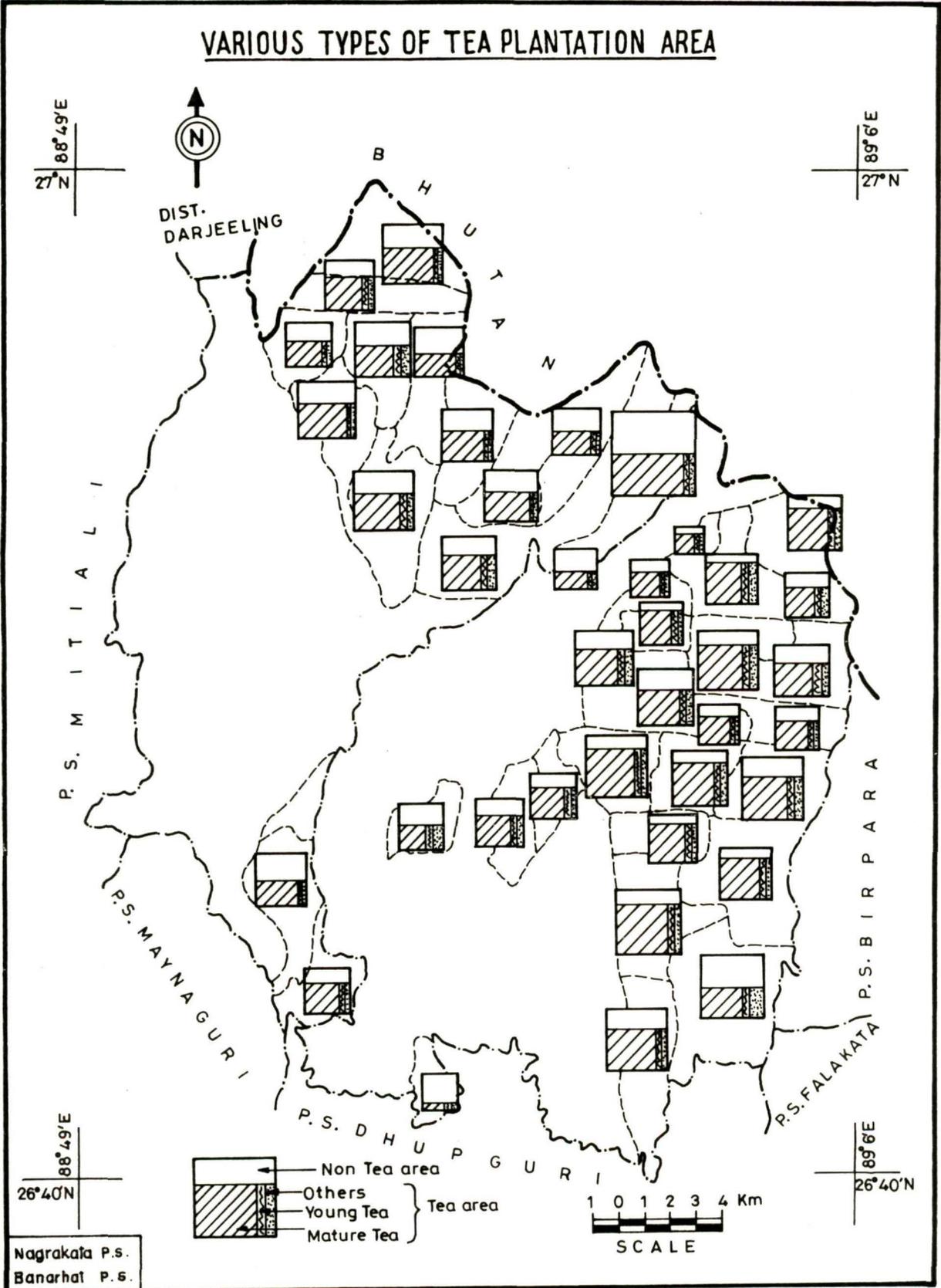


Fig. 3.5

LAND USE MAP OF BANARHAT TEA GARDEN

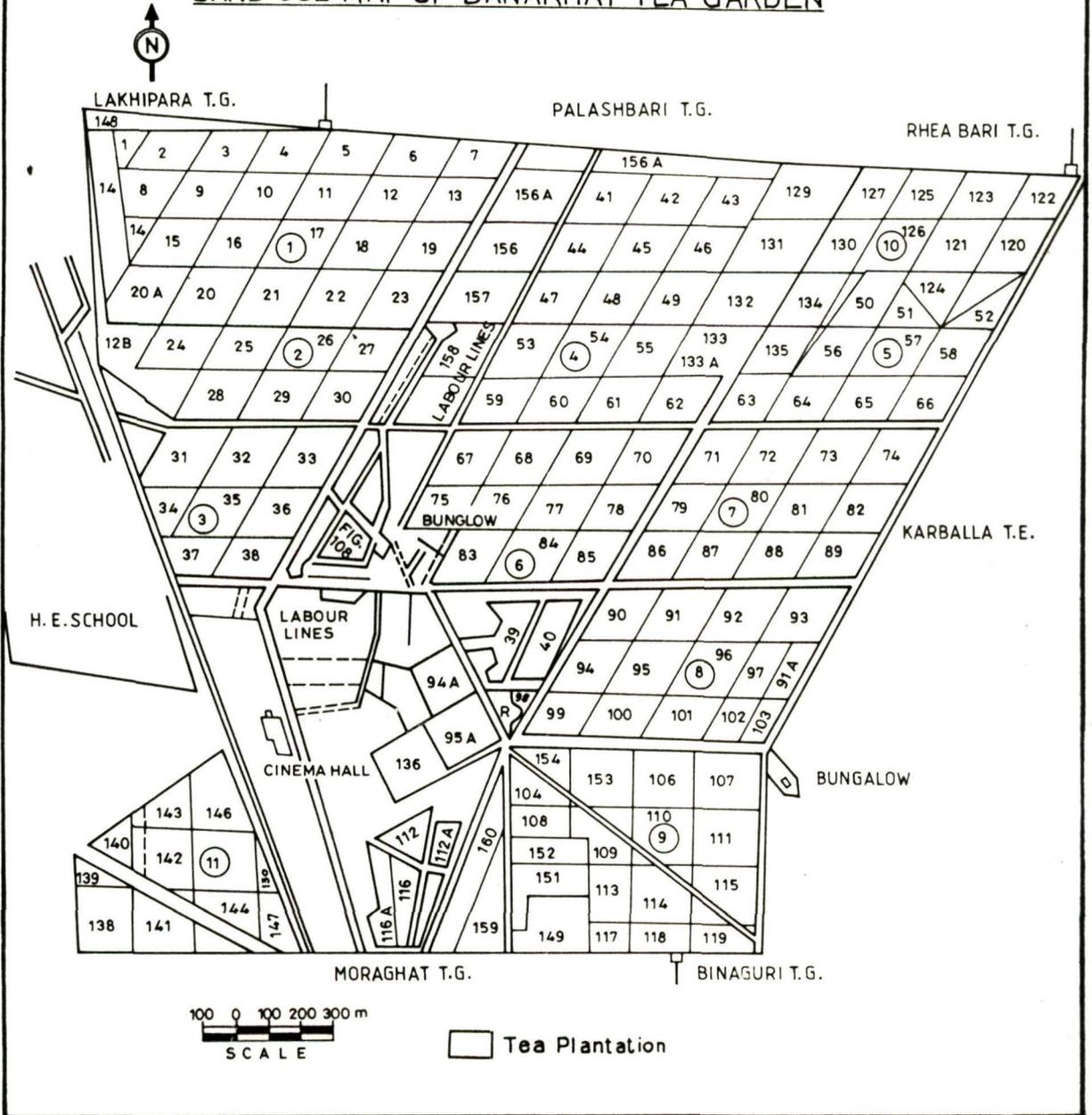


Fig.- 3-6

AREAL EXPANSION OF BANARHAT TEA GARDEN AT DIFFERENT TIME PERIOD .

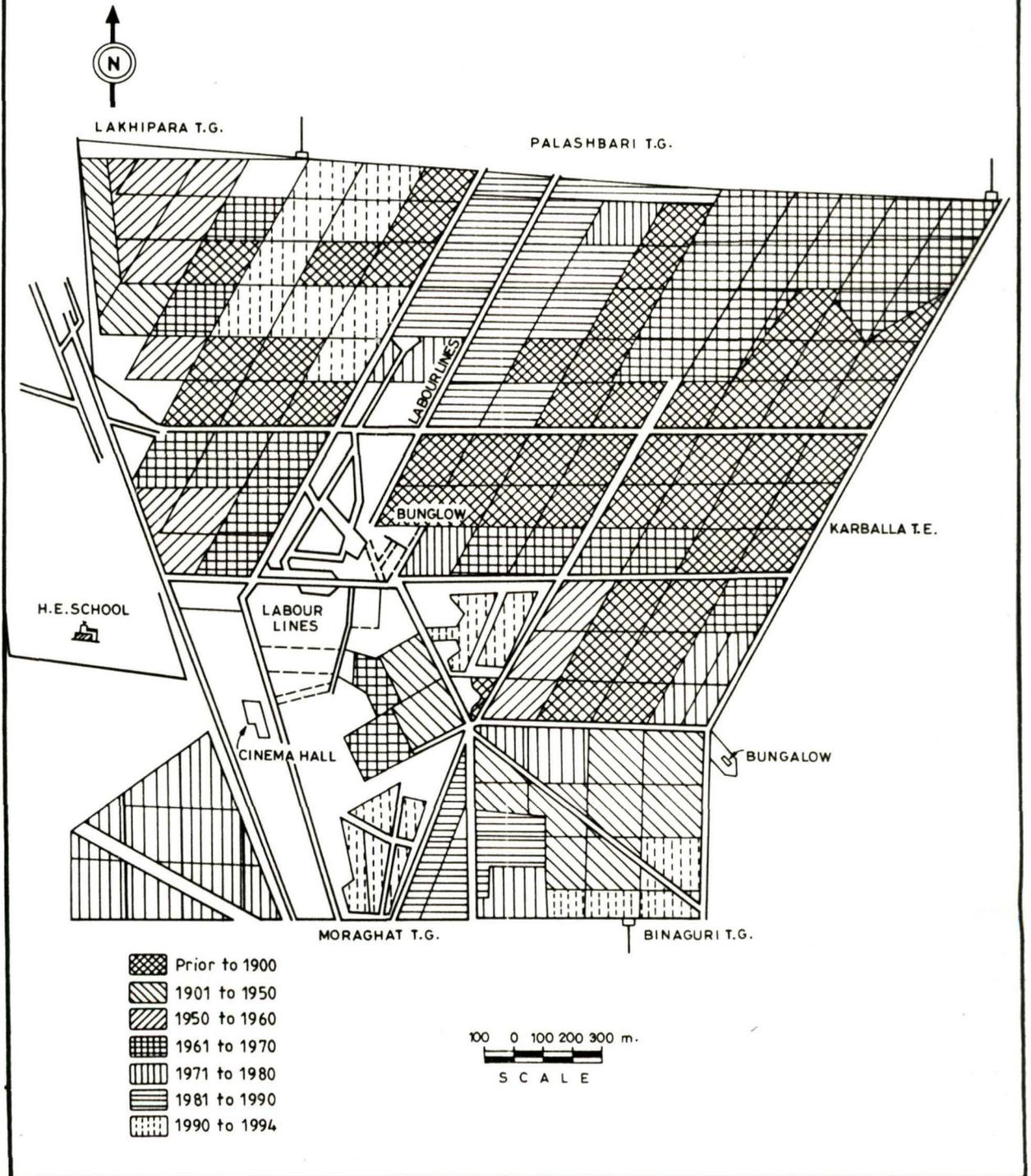


Fig. 3.7



*Plate 3.1 Natural Source of Irrigation
at Jiti Tea Estate.*



*Plate 3.2 Sprinkler at Nursery Bed
in Karbala Tea Estate.*



*Plate 3.3 Sprinkler Irrigation
at Karbala Tea Estate.*

3.6.1. The Residential use

The residential land use in both the P.Ss. share very small part of the tea garden. There is an inverse relationship between the sizes of the gardens and the space occupied by residential area. That is to say, the smaller the residential use is the larger the area under tea. The location of the residential area of the labourers is the labour line which is located on one side of the gardens or near the forest boundary. It may be due to frequent interaction with the labour & management. The residential areas of the monthly rented staffs are very near to the office and the factory. The bungalow of Manager and other officers are situated in the middle portion or safe portion of the garden. The residential area is controlled mainly by the time distance from the place of factory or plantation and the nearest availability of different amenities.

Most of the gardens of the Nagrakata and Banarhat P.S. are not suitable for residential purpose because of the location of Maraghat forest. The wild animals are coming around and they killed the human life in several times. The smallest percentage of land is being devoted to residential use.

3.6.2. Office and Factory uses

The factory of some of the tea gardens has been located in the central part to gain larger site and good communication (Fig. 6.1). A few have been located in peripheral area to supervise the plantation part. Perhaps the management of this type of garden has been changed several times and these are all managed by former private limited companies.

3.6.3. Roads and other uses

The amount of space devoted to roads varies according to the characteristics of individual tea garden. Standards of roads is depended upon the condition of the garden management. Because roads and paths are very important to the factory and the garden. Every well maintained garden has metal road from the garden to nearest means. Hope T.G. Carron T.G. of Nagrakata P.S. managed by Duncan Groups and Banarhat T.E. and Karbala T.E of Banarhat P.S. are managed by Andrew Yule Group of Companies have good road communication. But very poor communication system is noticed in Laxikanta T.G and Jaldhaka T. G. Though the road is used, commonly for the garden and the factory, but it is important for workers also. Communication is needed to avail education, market and nearest recreational purposes.

In tea garden, there may have multivarious uses of lands. The share of various landuse is related with the different activities of individual tea gardens.

Conclusion

Studying the landuse pattern in the tea gardens mainly two types of landuses are noticable. During the last few decades changes of landuse took place and some landuses like seed reserve area for awaiting uprooted and replanting have been experienced a higher growth rate than residential or other landuses. The changes in each landuse in Banarhat are faster than Nagrakata due to location of Banarhat on a post decay area. It is also noticed that the largest size group may continue their infilling programme in order to reduce the percentage of vacancy substaintially. The smaller tea estate may initiate massive infilling programme to reduce the percentage of vacancy for increasing the yield rate.

After studying the landuse pattern of the tea gardens the study have been going to the production and marketing of the tea. Because production is most important for the whole of the study and types of marketing is co-related with tea production. So discussion about production and marketing of the tea will be in the next chapter.