CHAPTER I

INTRODUCTION

Sericulture is a unique field of agriculture because it belongs to insect industry and has contributed a fortune to human life all over the world since ancient times. It is an industry which changes the mulberry leaf into silk very efficiently by rearing silkworms. In other words, the silkworm is kind of very efficient bioreactor for protein synthesis, so the nutrition of the silkworm is of primary importance not only for the maintenance of its life but also for silk production. It is a labour intensive industry involving mulberry cultivation, silkworm rearing, silk reeling and weaving. The level of development of the said economic activity also depends on the socio-economic conditions of the society, scientific and technical personnel involved and on the nature and extent of involvement of the consumer agencies, and so on. With the advent of economic planning in the country, sericulture industry made progressive development through the consecutive plans and has undergone a sea of change in recent past and has started wearing a new look. However, the silkworm rearing practices have not changed much due to the absence of independent rearing houses with many farmers and also the quality of silkworm egg produced has not altered significantly since several years.

1.1 THE ISSUE

Generation of productive employment has become the central task of economic planning in India today. Increasing growth rate does not provide any security against the worsening unemployment and poverty on account of population explosion and work force explosion. The need for employment oriented planning has been more acutely felt since the middle of the Fourth Five Year Plan followed by progressively increasing emphasis during different Five Year Plans. Development goals have been redefined in terms of removal of unemployment and under employment, reduction of inequalities of income and ensuring of certain minimum needs to the people.

The task of eliminating unemployment is fraught with several problems. There is increasing evidence that poverty is more wide spread than unemployment. It means that more provision of employment cannot solve the problems of poverty. The employment opportunities created must be productive enough in assuring minimum

income and standard of living to the poor. Though the employment generating capacity of urban industrial and tertiary sector is greater than rural occupations, even rapidly increasing urbanization and industrialization cannot guarantee adequate employment opportunities to the overspill rural labour force as the growth rate of urban labour force is higher than the growth rate of rural labour force. Hence the solution lies in accelerating rural development, by generating productive employment opportunities, despite the trend of increasing pressure of population on land. Accordingly, the discovery of productive employment opportunities in the programme of integrated rural development assures vital importance in the economic development of India.

Agro-industries hold the key for generating productive employment for rural manpower. They enjoy favourable linkages with agriculture and industry on one hand and villages and towns on the other. Research studies of the different agro-industries reveal the employment and productivity potentials of investment present in this sector.

Sericulture and silk industry is an important agro-industry in India. It is a most suitable and productive occupation for small and marginal farmers. Accordingly it facilitates the achievement of growth with social Justice. The present study deals with the analysis of problems and prospects of development of sericulture and silk weaving industry and its employment potentiality in one of the backward districts of West Bengal i.e. Malda. The district is characterised by the preponderance of agricultural population, and has a weak industrial sector. However sericulture, an agro based industry present in Malda district plays a vital role in the rural economy of the district. It comprises 60% of national share and 75% of state's share in raw silk production. Sericulture is now practiced in about 660 villages in Malda district. With more than 19,000 acres of land under mulberry cultivation and with more than 60,000 families directly or indirectly earning their livelihood from sericulture the said sector has a significant role to play in the rural development. Out of the total workers engaged in sericulture and silk industry, 98% belong to minority communities (i.e. Muslim). Women folk of the rearer families also play a pivotal role in this industry contributing approximately 60% of the total work force. (Directorate of Sericulture, Malda.)

1.2 HYPOTHESIS

The present work has tried to assert the truth or falsity of the following statements:

(i) In general sericulture and silk weaving industry has potentialities for survival and bright prospects of development in Malda district as a whole and in core areas in particular.

(ii) However, out of various sectors of sericulture and silk weaving industry namely grainage, silkworm rearing, reeling, twisting and weaving not all have equal potentiality for survival in the study area, hence in the near future dyeing, printing and weaving sectors of silk industry may not flourish to a great extent in Malda district.

(iii) In specific sectors like silkworm rearing, reeling and twisting with the aid of proper policies could be the prime focus for generation of employment for the relevant ethnic/religious groups. However, in some cases it could be the vehicle for the overall development of the core areas where the sector in question is concentrated.

1.3 OBJECTIVE

Keeping in view the need for revitalising the sericulture and silk industrial sector of Malda district for giving an impetus to the rural economy, the prime objective of this study has been to evaluate the problems and potentials of development of different sectors of sericulture and silk industry. Thus the present study intends to furnish a detailed account of the problems and prospects of different sectors under sericulture and silk industry at a greater length. Different sectors namely, grainage, silk worm rearing, reeling, twisting and weaving have been selected for the purpose of providing concrete ideograph of the subject. Bund wise analysis besides analysis in annual terms for various sub sectors of sericulture and silk weaving industry has been considered necessary here. Attempt has been made to formulate the constructive guidelines for eradication of inherent problems of sericulture and silk industrial sector so that it attains viable development in sectoral, as well as spatial aspect and ensures a maximum utilization of the potentials of the sector. While formulating strategies for the development of sericulture and regeneration of silk weaving industry proper emphasis has been given on identification of the problems of the sector like low income, low level of investment,

irregular employment, monopoly of middlemen and traders in the marketing system, absolute low level of technological attainment and skill formation, difficulties in procurement of raw materials, and meeting consumer's preference. Lastly, suitable policy measures have been framed for preserving suitable traditional practices wherever necessary in mulberry cultivation and silkworm rearing while development of design oriented innovative works have been suggested in case of silk weaving sector.

Thus, the present thesis will have the following objectives in focus:

1. To make an inventory of the existing condition of sericulture sector carried out in different bunds and to study different sectors of silk weaving industry.
2. To study the existing pattern of procurement of raw materials, marketing of finished products and financing the investment need in the sector.
3. To analyse the general characteristics and economic efficiency of the sectors in question.
4. To formulate a functional model for an empirical investigation of the mechanism of income generation and productivity growth for different sectors of sericulture and silk weaving industry.
5. To understand the level of technological innovations possible under present level of economic efficiency attained.
6. To recommend the viable size and cost of establishing and running the prospective industrial units and to prescribe investment requirement for modernisation, training and infrastructural facilities.
7. To derive a set of policy measures to achieve the social and economic goals of developing each sector of sericulture and silk weaving industry.

1.4 METHODOLOGY

1. To begin with, an attempt has been made to present an overview on sericulture and silk weaving industry based on the study of the works done by a number of authors with a view to understanding the concepts, processes and activities involved in various sectors of sericulture and silk weaving industry. This establishes the importance of the sector on the economy of the backward rural areas of the Malda district of West Bengal. This further established the need for

the development of sericulture and silk weaving industry as a reliever to the pressure on land, which is overburdened with excessive dependence on it.

2. Then efforts has been made to make an inventory into the different sectors of sericulture and silk industry and into involved communities and examine the major aspects like location, types of production, raw materials, seasonality in production, tools and accessories, marketing of finished products etc., to understand the importance of the operations related to sericulture and silk weaving industry, in the way of living of the community practising it, and to ascertain the level of development as well as the degree of acceptance towards modernisation of the sector.
3. This has been followed by an analysis of the economic characteristics of the sector with a view to identify the problems of growth and understand the ways of removing the inhibitive factors of development.
4. The inferences from the above analysis has led to build a model for income generation and productivity growth in the various sectors of sericulture and silk weaving industry for directing the path of growth and setting guidelines for a brighter future for both at the farm and at the industrial level.
5. The model has been applied to, and tested empirically for annual as well as for all the five bunds of sericulture practiced in Malda district, to find out the peculiarity and specialty of each bund in the total farm produce and to further gauge the relative importance of each bund in the sericulture sector as a whole. Keeping in conformity with the cycle of production in silk weaving industry the model has been applied for annual term only. This has further explained the relationship between various determinates of productivity growth and hence identified the contributions of factors responsible for the growth of the sector in question. Important factors and their contributions, thus found out, are actually indicative of the policy variables for plan formulation.
6. Finally a set of policies have been put forward for drawing action programmes for development of the different sectors in question based on the value of optimal policy variables so that social and economic goals related to the said sectors is achieved.

1.5 STUDY AREA

West Bengal ranks third in silk production in India. Malda district, which produces nearly 80% of the raw silk of West Bengal, occupies first position in the production of raw silk in West Bengal. The said district has been thus selected as study area for the present work.

Malda district is characterised by the predominance of agricultural population, poor industrial development, low productivity resulting in a low per capita income, deficiency in capital and the need for the employment for the additional labour forces as well as for the underemployed population of the working age. The rural economy of the district is overwhelmingly dominated by agriculture and primitive technology dominates the agricultural sphere. During flood and drought many of the agricultural laboures become unemployed. So, agriculture provides them with seasonal occupation. Such a rural economy should be-reorganised, and as much of its labour forces as possible has to be utilised in intensified, diversified, modernised, integrated and sustainable agriculture. Labour forces which cannot be utilised in re-organised agriculture and is known to be surplus to the requirements has to be utilised in rural industries, as the large scale industries have limited potential for absorbing the enormous and fast growing labour force in the rural areas. The rural industrialisation is the only alternative left to be used for finding rewarding work for the fast growing labour forces in the district.

Sericulture and silk industry in Malda district is an effective source of industrial activity for supporting different kinds of employment. In this district different sectors of sericulture and silk industry are mainly concentrated in four blocks namely Kaliachak I, Kaliachak II, Kaliachak III, and English Bazar. Nearly 75% of the grainage, silkworm rearing, reeling, twisting and weaving sectors are concentrated here. Thus the above four core blocks have been selected for detailed study into the problems and prospects of development of different sector of sericulture and silk weaving industry. However, in Malda district the twisting and weaving units are not much developed though Malda produces a large quantity of raw silk. Location of the selected blocks in Malda district is shown in Figure 1.1.

STUDY AREA
(MALDA DISTRICT)

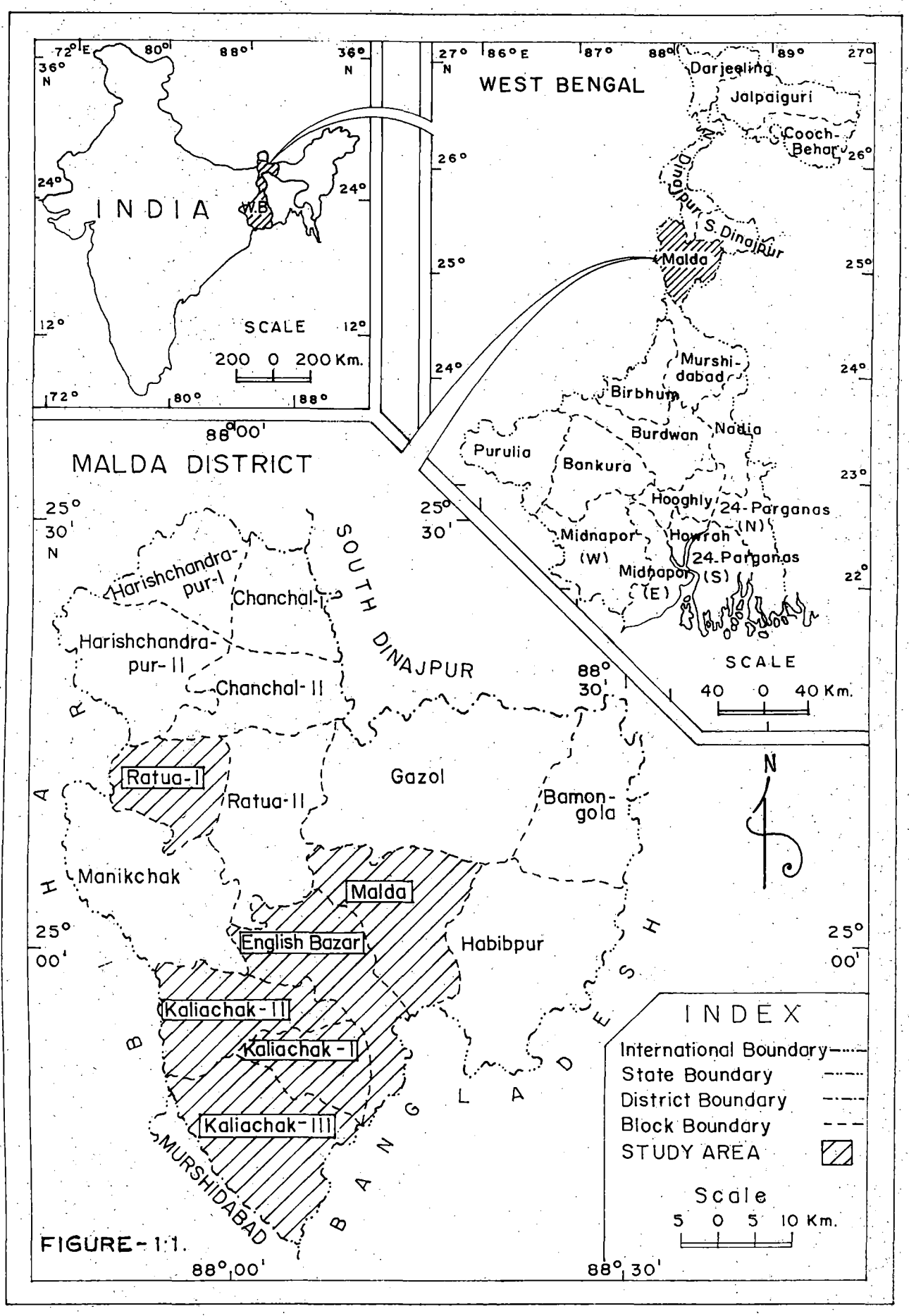

FIGURE-1.1.

1.6 SURVEY TECHNIQUE

No mentionable secondary source information on the number of units, employment, output and income, investment in fixed capital and in working capital was available for different sectors of sericulture and silk weaving industry for detailed analysis. However, a few research articles published in different journals and bulletins have depended largely on limited sample surveys conducted in a few villages hence such data or outputs could not be taken in this study for generalisations and application of decision making techniques.

Hence the study has been the outcome of a long drawn and rigorous field survey. To tackle the problem, several kinds of data were collected from primary sources. Each of the data obtained through primary surveys have been processed for analysing the socio-economic conditions of the labour force, examining the functioning of the sector in question and understanding the attitudinal make up of the owner. In view of this, industrial unit survey was done which was designed to collect data on the general and economic performance of the farm sectors/industries to have a clear understanding of the problems of different said sectors. (Refer to appendix II for questionnaire on different sectors of sericulture and silk weaving industry).

1.7 SAMPLE COVERAGE

Initially an attempt was made to conduct sample survey in selected 50 villages from 4 blocks already identified as core area. It was decided to cover about 150 silkworm rearers, 50 grainages, 50 reeling units and all the twisting and weaving units located in Malda district. The villages were selected on the basis of secondary sources supplied by the Directorate of Sericulture, Malda. For the separate five sectors of sericulture and silk weaving industry in Malda district the number of survey units have been selected from separate sampling scheme given below.

Table 1.1.
List of The Villages Surveyed

Blocks	Villages or G.P.	J.L.No.	No. of sample under different sectors				
			Graninage	Silkworm Rearing	Reeling	Twisting	Weaving
Kaliachak-I	Khaltipur	73	1	5	5	Nil	Nil
	Silampur	76	1	5	Nil	Nil	Nil
	Krishnapur	75	1	5	Nil	Nil	Nil
	Alipur	70	3	Nil	5	2	Nil
	Jalalpur	144	3	Nil	Nil	1	1
	Boro Sujapur	121	Nil	5	Nil	2	Nil
	Nazirpur	119	Nil	5	Nil	Nil	Nil
	Nabinagar	82	3	Nil	Nil	Nil	Nil
	Dallugrm	86	3	5	Nil	Nil	Nil
	Bamangram	145	Nil	5	Nil	Nil	1
	Gayeshbari	123	Nil	5	5	2	Nil
	Baliadanga	72	2	Nil	5	Nil	1
	Mojompur	169	Nil	5	2	Nil	Nil
	Khas Chandpur	68	Nil	5	Nil	Nil	Nil
	Baranagar	143	Nil	5	Nil	Nil	2
	Trimohonigangni	87	2	Nil	Nil	Nil	Nil
Kaliachak-II	Choto Mohodipur	133	2	Nil	Nil	Nil	Nil
	Uttar Laxmipur	88	1	5	Nil	Nil	Nil
	Mothabari	127	Nil	5	Nil	1	Nil
	Gangaprasad	106	3	Nil	2	Nil	Nil
	Dakhin Debipur	134	1	Nil	2	Nil	Nil
	Pratappur	125	Nil	5	Nil	Nil	Nil
	Chak Pratappur	126	Nil	Nil	2	Nil	Nil
	Purba Sripur	132	Nil	5	Nil	Nil	Nil
	Khanpur	91	Nil	5	Nil	Nil	Nil
	Meherapur	103	Nil	5	Nil	Nil	Nil
	Jotkabil	104	1	Nil	Nil	Nil	Nil
Kaliachak-III	Lakhipur	36	Nil	5	Nil	Nil	Nil
	Chak Serdi	37	Nil	5	Nil	Nil	Nil
	Krisnapur	39	1	5	Nil	Nil	Nil
	Bhagabanpur	60	Nil	5	Nil	Nil	Nil
Ratua-I	Maharajpur	101	Nil	Nil	Nil	Nil	3
	Islampur	65	Nil	Nil	Nil	Nil	2
English Bazar	Milki	7	Nil	5	Nil	Nil	Nil
	D. Jadupur	89	Nil	5	Nil	Nil	Nil
	Mohodipur	135	1	5	2	Nil	Nil
	U. Jadupur	88	1	Nil	Nil	Nil	Nil
Malda	Maheshmati	66	Nil	Nil	Nil	1	Nil
	Purapara	65	Nil	Nil	Nil	2	Nil
Total			30	120	30	11	10

1.7.1 i) Sampling scheme for silkworm rearing sector

There are fifteen blocks in the district of Malda out of which only 10 blocks have silkworm rearers to a significant extent. From the secondary sources it has been known that only four blocks of the Malda district includes almost 90 % of the silkworm rearers. Thus 120 sample units have been selected from the four blocks on

the basis of proportional size of distribution. The silkworm rearers in the sericulturist villages are almost homogenous in character; therefore samples of silkworm rearers are selected with simple random sampling method without replacement (SRSWOR). Details of the blocks, grampanchayats, villages and silkworm rearers were collected before the sampling. The sampling has been done with the help of random number table (Random Sampling Number arranged by Tippett). Distribution of sample sericulturist is given below in Tables 1.1 and 1.2 and Figure 1.2.

Table 1.2
Distribution of Sample Sericulturist in Malda District

Sl. No.	Name of the Selected Blocks	No. of Selected G.P	No of Selected Villages	No of Sericulturist Covered
1.	Kaliachak-I	8	11	55
2.	Kaliachak-II	3	3	30
3.	Kaliachak-III	3	6	15
4.	English Bazar	3	4	20
Total		14	24	120

1.7.2 Sampling Scheme for Grainage Sector

From the Directorate of Sericulture, Malda, it has been known that there are many non-registered private grainage sector producing DFLs in Malda district. But only 114 units have registered after a short-term training programme conducted by Granure Training Institute located at Amrity in Malda. According to the department of sericulture all these registered grainage sectors are active in the production of DFLs throughout the year. The number of grainage units selected, as sample from Kaliachak I, Kaliachak II and English Bazar Blocks are proportional to the number of grainage units available in the respective blocks. As the grainage sector are not homogenous in character. The sampling method applied is PPS (Probability Proportional to Size). The details of the units of grainage sector were collected from the said office. Distribution of sample grainage in Malda is presented in Table 1.3 and Figure 1.2

Table No-1.3
Distribution of Sample Grainages in Malda District

Name of Selected Blocks	No of Selected Villages	No. of Grainage Covered
Kaliachak-I	7	19
Kaliachak-II	5	8
English Bazar	3	3
Total	15	30

1.7.3 Sampling Scheme for Reeling Sector

The silk reeling industry is mostly found in Kaliachak I, Kaliachak II and English Bazar blocks. Samples have been taken from the villages of the said blocks where reeling sector is concentrated. Those villages are almost homogeneous in nature in the context of this type of industry. Thus five villages from Kaliachak I, three villages from Kaliachak II, and two villages from English Bazar block have been selected. A random sample of four, two, and two reeling units from Kaliachak I, Kaliachak II and English Bazar blocks respectively have been selected from each selected villages. The sampling method applied is simple random sampling without replacement (SRSWOR). The sampling is done with the help of random number table mentioned earlier. Here total number of sample is 30. Details of reeling sampling units are given below in Table 1.4 and Figure 1.2.

Table-1.4
Distribution of Sample Reeling Units in Malda District

Name of Selected Blocks	No of Selected Villages	No. of Reeling unit Surveyed
Kaliachak-I	5	20
Kaliachak-II	3	6
English Bazar	2	4
Total	10	30

1.7.4 Sampling Scheme for Twisting and Weaving Sector

For the remaining sectors of silk industry namely twisting and weaving (power loom), a complete enumeration is done because of the limited number of units present in such industries. The number of twisting and weaving sectors are eleven and ten respectively. Details of sampling units of these two types of industries are given in the following Table 1.5 & 1.6. Villages surveyed for different sectors of sericulture and silk weaving industry located in the earlier mentioned four blocks are shown in Figure 1.2.

Table-1.5
Distribution of Sample Twisting Units in Malda District

Name of Selected Blocks	No of Selected Villages	No of Twisting Unit Surveyed
Kaliachak-I	5	7
Malda	1	3
Kaliachak-II	1	1
Total	7	11

LOCATION OF VILLAGES SURVEYED

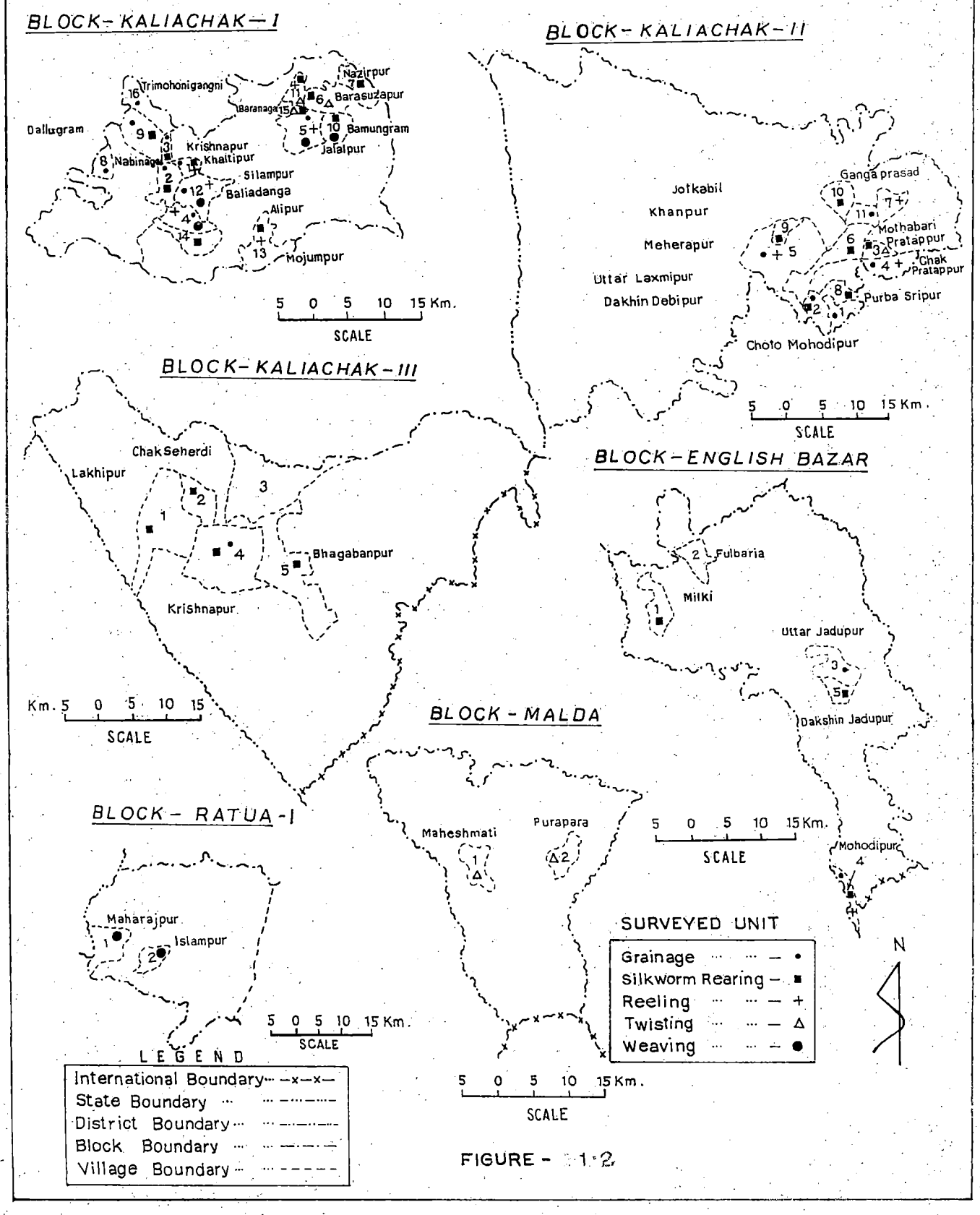

FIGURE - 1·2

Table-1.6
Distribution of Sample Power Loom Sector in Malda

Name of Selected Blocks	No of Selected Villages	No of Power Loom Sector Surveyed
Kaliachak-I	5	7
Malda	1	3
Kaliachak-II	1	1
Total	7	11

1.8 LIMITATIONS

Much of the information collected corresponds only to single recent year and no data over time for temporal comparison could be obtained either from the farm units or industrial units.

The units of different sectors of sericulture and silk reeling industry do not maintain formalised accounts due to low levels of operation and near absence of formal education among the rearers and reelers. This raises questions on the accuracy of the data collected. Further, the questionnaire pursued during the field survey included several prospective questions on aspects like income, expenditure, investment, education, participations for skill formation etc. Where there are some probabilities of exaggeration and concealment cannot be denied.

Much of the information obtained through primary survey suffers from the sense of subjectivity and many of the attributes cannot be expressed in quantitative forms. In fact they are qualitative statements only. These limitations have rendered some restriction on the application of sophisticated analytical techniques

Lastly the study suffers from the limitation of excluding from its scope, the institutional provisions for implementation of policies and its financial implications and related organisational setup.

1.9 OUTLINE OF THE WORK

The study has depended largely on primary survey and the data collected have been appropriately analysed and reported. The study's basis, background and findings are presented in seven chapters ending with a conclusion.

Chapter One is the introductory chapter. It introduces the problems and states the hypothesis, objective, methodology and sampling scheme for survey of related sectors of sericulture and silk weaving industry of the study area. Statement of pinpointed objectives to be met after clearly identifying the problems to be tackled

becomes a necessary prelude to the study of the specific case of Malda district. The core blocks selected for the intensive survey and study is based on the high concentration of the said economic activity in these areas. A one-year time span of data collection was found fruitful, as season wise data structure was considered necessary for the study. It yielded the expected quantity and quality of data in support of the envisaged study.

Chapter Two to start with provides a comprehensive introduction of sericulture and silk industry from geographical perspective. It explains the definitional aspects related to specific terms of the said economic activity. It further explains the processes and activities included in each sub sector of the broad activity of sericulture and silk industry. The study is largely based on the works of other authors on sericulture and silk industry and dealt the subject matter from geographical perspective. The Chapter ends with a presentation of global and domestic scenario of the said economic activity pointing out the significant position Malda occupies, with respect to raw silk production in West Bengal which in turn ranks third in raw silk production in India.

An account of the sericulture and silk industry in Malda district presented in Chapter Three starts with a short summary of the history of mulberry sericulture and further includes an exhaustible discussion on growth and distribution of grainage, mulberry cultivation, chawki rearing, silkworm rearing, reeling, twisting, weaving and silk waste and matka spinning. The study here is based on secondary data.

Chapter Four is devoted to an in-depth analysis of the basic economic characteristics of different sectors of sericulture and silk industry, which includes the study of the factors like employment capacity to produce, raw materials, market, capital, costs output and income. Variations in the factors are normally studied from relevant classification. However, their average values and variabilities are studied by examining mean S.E.$\overline{X}$ and the co-efficient of variation. Besides, some of the indicators representing specific nature of functioning of the various sectors have also been used in understanding the performance of the industry. The study is the result of the analysis of data collected through primary survey.

Analysis done in previous section has been instrumental in revealing the problems and identifying the factors inhibiting the growth in various sectors of sericulture and silk industry, which has been presented in Chapter Five. The problems

have been broadly categorised under three groups; they are problem related to production, marketing and labour along with entrepreneurship aspects for each sector of sericulture and silk industry. A detailed insight into the problems of the industry in question demands formulation of model of the process of income generation, which has been tackled in the next chapter.

In chapter six an attempt has been made to conceptualise the process of production and income generation and output growth. It further tries to identify the factors regulating the above mentioned process and hence find out interrelationship among the responsible variables first in annual term for each sector of sericulture and silk industry. However, the above mentioned analysis has also been done for each five bunds practised in Malda district to determine the specific role of policy variables to principle variables in each bund. Structural equations explaining relevant policy variables are obtained from regression analysis using least squares method. The analysis done in this chapter is also based on data collected through primary survey.

In the light of the findings derived in earlier chapters a set of policy for each sector of sericulture and silk industry present in Malda district i.e. grainage, mulberry cultivation, silkworm rearing, reeling, twisting, weaving and spinning have been mediated on to ensure effective, comprehensive and balanced development of the said economic activity.

The study report ends with a conclusion highlighting the urgencies of the development of each sector of the industry in a balanced and coordinated manner for sustainable development of this industrial activity in Malda district, to generate the interest of the rural population in general and rearers in particular. It also indicates the future researches for promoting the development of the industry in general.