CHAPTER 3

METHODOLOGY
This chapter contains the statement of the problem, specific objectives, the hypothesis adopted to test the objectives and sampling procedure followed in the study.

III.1. STATEMENT OF THE PROBLEM

Poverty removal is an important objective of planning in India and yet the condition of the poor, specially in rural areas where the core of poverty lies, continues to be as appalling as it was at the beginning of the planning. The planning commission itself as admitted that depending upon different norms for measuring poverty, about 40 to 60 percent of the population fall below the minimum acceptable standard of living and according to recent estimates 29.9 percent of population still live below the poverty line.¹

The five year plans particularly the earlier ones have generally proceeded on the assumption that the programmes of development particularly those undertaken in rural areas such as in the fields of agriculture and irrigation would automatically bring about improvement in the standard of living of rural poor. However, these programmes, designed essentially to raise the output of food crops and agricultural raw materials would affect the income of landless workers only through their effect on the wage rate and employment. The wage rate is a function of demand for labour as determined mainly by the level of
output and technology in use and the supply of labour as determined mainly by the growth of population. The demand for labour in urban industrial sector did not grow at a sufficiently high rate to absorb the surplus labour force from rural agricultural sector. This as been not only due to a slow growth of this sector but also due to increase in capital intensity inherent the models prepared under the influence of professor Mahalanobis and also encouraged to some extent by policy instruments fiscal, monetary, trading etc. In addition, the growth of agriculture it self as not been high enough to increase wages and employment opportunities.

The result is unemployment has been increasing more rapidly in the country. According to the Rural Labour Enquiry 1974-75, the average number of days wage employment in agriculture declained between 1965-69 and 1974-75 and the average daily earnings in rural areas decreased from Rs. 1.45 to Rs. 1.26 during the same period (Kamath Prasad 1986). It is indeed fulfill the expect improvement in the economic conditions of agricultural labourers in the face of raising rural unemployment / under employment. And it is also not easy to enforce prescribed minimum wages under such a situation has been the case of India.

In the case of small and marginal farmers, the increasing capital intensity of the agricultural technology does not favour them as they have limited access to capital either on their own or borrowed. The indirect effect
of this technology could not be favourable to the rural poor since demand for inputs like fertilizer, pesticides, tractors etc, is transmitted to urban areas where these are produced. These capital intensive industries do not have much employment potentialities.³

It comes out clearly from the trend that agriculture itself cannot create more income and generate more employment opportunities for the rural poor and thereby improve the standard of living. Under these circumstances the planners and policy makers should give more emphasis on income and employment generating activities like agriculture and allied activities. The allied activities which create more income as well as employment opportunities are horticulture, dairying, fisheries, forestry, poultry and sericulture etc⁴. Sericulture is an agro based industry. Being a labour intensive activity and it can provide income and employment to a large number of people in the rural areas.

Therefore the present study seeks to analyze the extent of income and employment generated by sericulture activity across different categories of farms.

Based on the above discussion some of the issues are identified for the study they are:
a) How for sericulture activities create employment opportunities in rural areas and to what extent it can avoid the migration of rural agricultural labourers to urban areas in search of employment?

b) How for sericulture activities are helping the poor farmers to enhance their income?

c) Will sericulture help to uplift the socio-economic conditions of farmers who are engaged in it?

d) Will sericultural activities contribute for the upliftment of the rural labour force?

III.2. OBJECTIVES

Keeping the above information in view, a study in specific area has been undertaken in the present study, Tumkur district of Karnataka state is selected for this purpose. The main objective of the study is to assess the performance of sericulture in improving the standard of living of rural folk. As such an indepth analysis is required. The specific objectives of the study are formulated as follows:

1) To study the extent of mulberry cultivation and production of cocoons in the study area;

2) To study the labour absorption in mulberry cultivation and cocoon production;
3) To study income and asset creation by the sericulturists;

4) To study the impact of sericulture on the socio-economic conditions of sericulturists in the study area;

5) To study the income generation of the sericulturists in mulberry cultivation and cocoon production; and

6) To suggest measures for policy implications that would arise out of the study.

III.3. HYPOTHESES

Mulberry silkworm rearing with a low level of capital investment provide a very high level of income and employment opportunities to the family labours especially, female labourers and also to the labourers belonging to the weaker sections.

The main hypotheses are formulated to test objectives in the present study are as follows:

1) Mulberry growing and silkworm rearing generate higher level of employment as compared to the other commercial crops grown in the region and also across different size class of land holding.

2) The employment generated for family labour especially female labour is very high in the case of silkworm rearing activity.
3) The intensity of employment in sericulture directly related to mulberry productivity.

4) The income generated are also comparatively higher and

5) Majority of silkworm rearers are small and marginal farmers.

III.4. METHODOLOGY

This section explains the sampling procedure followed in the study. The information on the methodology adopted for the study are presented under four sections as follows:

1) Description of the study area.

2) Selection of sample.

3) Collection of data.

4) Method of analysis.

III.4.1. DESCRIPTION OF THE STUDY AREA

The concentration of mulberry in the study area is analysed to see the extent of sericulture activities. Table 3.1 shows that area under mulberry in the selected taluk and percentage to the district total (mulberry area). Out of 10 taluks in Tumkur district three taulks were selected they are Madhugiri taluk with an area of 3312.02 hectares, followed by Pavagada taluk 1803.04 hectares and Turuvekere taluk with an area of 330.24 hectares under mulberry.5
Table 3.1. Taluk wise area under mulberry in Tumkur district

<table>
<thead>
<tr>
<th>Taluk</th>
<th>1992 - 93</th>
<th></th>
<th>2001 - 2002</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mulberry area</td>
<td>% to district total</td>
<td>Mulberry area</td>
<td>% to district total</td>
</tr>
<tr>
<td>C.N.Halli</td>
<td>349.10</td>
<td>1.71</td>
<td>278.19</td>
<td>2.41</td>
</tr>
<tr>
<td>Gubbi</td>
<td>682.89</td>
<td>3.35</td>
<td>324.94</td>
<td>2.80</td>
</tr>
<tr>
<td>Koratagere</td>
<td>2565.87</td>
<td>12.58</td>
<td>2336.16</td>
<td>20.25</td>
</tr>
<tr>
<td>Madhugiri</td>
<td>5849.96</td>
<td>28.72</td>
<td>3312.03</td>
<td>28.71</td>
</tr>
<tr>
<td>Pavagada</td>
<td>4754.50</td>
<td>23.35</td>
<td>1803.04</td>
<td>15.63</td>
</tr>
<tr>
<td>Sira</td>
<td>4101.25</td>
<td>20.31</td>
<td>2200.76</td>
<td>19.07</td>
</tr>
<tr>
<td>Tiptur</td>
<td>447.20</td>
<td>2.19</td>
<td>146.57</td>
<td>1.26</td>
</tr>
<tr>
<td>Tumkur</td>
<td>1168.00</td>
<td>5.73</td>
<td>802.69</td>
<td>6.95</td>
</tr>
<tr>
<td>Turuvekere</td>
<td>444.05</td>
<td>2.18</td>
<td>330.24</td>
<td>2.86</td>
</tr>
<tr>
<td>Total</td>
<td>20363.82</td>
<td>100.00</td>
<td>11535.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Deputy Director office, Dept. of Sericulture, Tumkur Dist
In Tumkur district there are three revenue sub divisions Madhugiri, Tiptur and Tumkur. In Tumkur division Kunigal taluk has the largest mulberry area but it is declared as the seed area. The remaining Tumkur and Gubbi taluk having very low sericulture area. From Tiptur sub-division we select Turuvekere and from Madhugiri sub-division we select Madhugiri and Pavagada taluk.

III.4.2. SELECTION OF SAMPLE

Karnataka particularly the old Mysore State is known all over the country for the quality of silk that is produced. It is a leading producer of silk in the country. Sericulture as an activity is in existence for over 200 years. That is from the time of Tippu Sultan. The advantage for the development of the silk industry in the state is that nature has bestowed congenial agro-climatic conditions for the development of industry.

Interestingly, both urban and rural population are involved in sericulture activities, while mulberry growing and cocoon rearing fall in the rural category. Processing of cocoons and production of silk come under the category of allied industrial activities. There are six traditional sericultural districts in the state viz Kolar, Bangalore, Madya, Tumkur, Chamarajnagar and Mysore.6

There were only 36 sericultural taluks in the state till 1970’s and later sericulture activities slowly started spreading to the northern and western districts and now it has spread to all the districts in the state.
Tumkur district being the third largest area under mulberry in the state where mulberry cultivation is taken under irrigated conditions. Both varieties of mulberry plants that is local and improved variety (Hybrid / M5) are found. Larger area is covered by improved variety than local. The sericulturists are rearing cross breed, (C.B.) as well as bivoltine race (BV) under varied agro-climatic conditions in the district.

After having selected the taluks based on the information collected from all the technical service centers (TSE) in the selected taluk with the help of the area under mulberry cultivation one gramapanchayath from each taluk was selected for our study. The table 3.2 presents the information on the area under mulberry, number of villages, number sericulturists in the selected taluks. The dominance of irrigated mulberry garden can be seen in the district and selected taluks. And it is also observed that a quite good number of house holds involved in sericultural activities in Pavagada and Madhugiri Taluks.

Table 3.2 Distribution of siriculturists in selected taluks of Tumkur district in the year 2001-02

<table>
<thead>
<tr>
<th>Taluk</th>
<th>Area under mulberry</th>
<th>No. of sericulturists</th>
<th>No. of villages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rain-fed</td>
<td>Irrigated</td>
<td>Total</td>
</tr>
<tr>
<td>Pavagada</td>
<td>-</td>
<td>1803.04</td>
<td>1803.04</td>
</tr>
<tr>
<td>Madhugiri</td>
<td>-</td>
<td>3312.03</td>
<td>3312.03</td>
</tr>
<tr>
<td>Turuvekere</td>
<td>-</td>
<td>330.24</td>
<td>330.24</td>
</tr>
</tbody>
</table>

Source: Deputy Director office, Dept. of Sericulture, Tumkur dist.
In all the selected gramapanchayath a census survey was conducted to enumerate the concentration of sericulture among different categories of farmers from the sericulturists list. The sericulturists were stratified in to five categories on the basis of land owned. The different categories are land less, marginal (0.1-1 acre), small (1-2 acres), medium (2-4 acres), and large (above 4 acres). From each of the category, 20 farmers were selected in each gramapanchayath. Totally 100 sericulturists were selected from each of the selected taluk. Thus 300 sericulturists were selected from three taluks by following multi-stage stratified random sampling.

III.4.3. COLLECTION OF DATA

Data for the crop year 2001-02 were collected with the help of a pre-tested questionnaire developed for the purpose by personal interview method. Every effort was made during the time of interview to convince the respondents that the study was undertaken purely for research purpose and not for any other purposes which are detrimental to the farmers interests.

Keeping in view the objectives of the study, data pertaining to all crops particularly mulberry grown during the study year by each respondent were obtained. Thus, from the selected 300 house holds data covering every details of the material inputs and cost of producing mulberry leaves, silk cocoons and other crop enterprises were obtained. More specifically, the data relating to the following aspects were collected.
1) General information about the respondents and their families.

2) Details of area under the crop along with the input cost of establishing and raising the mulberry garden.

3) The cost of mulberry leaf production inclusive of labour and other input costs for the year 2001-02.

4) Details of leaf yield and value of the leaf.

5) Details of inputs used in rearing cocoons and marketing cost incurred each time.

6) Details pertaining to labour requirement for silk worm rearing per crop/year.

7) Returns from main and by products.

8) Details of fixed investment used in silk worm rearing.

9) Details of the other crops predominantly grown in the selected area and labour requirement.

10) Details of inputs used with value and returns from alternative crops other than mulberry crops grown by the sericulturists.

Secondary data pertaining to cropping pattern source wise information on irrigation, size of land holding and live stock were obtained from the District Hand Book published by the District statistical officer Tumkur district. The information were utilized to write the profile of the selected area for the study. The information relating to the area under mulberry and other details were obtained from the Department of sericulture, Bangalore, Central Silk Board, Bangalore, Deputy Director Office, Department of Sericulture, Tumkur.
In addition to this, the information was also collected from the Assistant Director of Sericulture from Madhugiri, Pavagada, and Turuvekere Taluks. The information of the census data of each of the gramapanchayaths was also collected from the secretaries of the selected gramapanchayaths.

III.4.4. METHOD OF ANALYSIS

Since the objectives were to study the economics of crop production, employment generation, and resource productivity in Tumkur district and to compare the same with other crops predominantly grown in the selected area, the following methods were used:

1) Analyses the income and employment generation in sericulture activities in the study area.

2) Analyses the economies of mulberry cultivation, cocoon production, and cultivation of other crop enterprises in the study area.

3) Resource productivity and allocation efficiency of different inputs in mulberry cultivation, cocoon production, and other crops production.

III.5. PERIOD OF STUDY

The data collected relate to the agricultural year 2001-02.

III.6. ANALYTICAL FRAME WORK

It is a comparative study of different categories of farmers practicing sericulture in the district. It examines how sericulture improves the socio-
economic conditions of farmers over a period. For this five categories of farmers are taken. Though the general definition of marginal, small, and medium farmers may be in hectares, here it is not used in literal sense of the terms they are:

1) Land less Sericulturists,

2) Marginal farmers (0.1 to 1 acres)

3) Small farmers (1.1 to 2 acres)

4) Medium farmers (2.1 to 4 acres) and

5) Large farmers (4.1 and above acres),

To achieve the objectives set out in the study, here the change in income and employment due to sericulture are analyzed among the above five categories of farmers. The socio-economic conditions of these five categories of farmers are also looked into.

For the above purpose appropriate statistical tools like percentage, averages, ratio's etc are used. In order to study labour absorption simple linear regression model were used and also study adopted Cobb-Douglas type of production function was found to be most suitable in explaining the variability in sericulture income.
III.7. DETERMINANTS OF LABOUR ABSORPTION IN SERICULTURE

As stated earlier, sericulture is a labour intensive activities. However labour use differs from farm to farm. Here an attempt was made to delineate the factors that conditions of the labour use in sericulture using simple linear regression model. The following models were used to study the contribution of some of the important variables in determining labour absorption in sericulture. Three separate regression models were of the following type used for family labour, hired labour and total labour use.

\[ Y = \alpha + \beta_1 X_1 + u \]

The regression model specified for the present study is as follows:

\[ Y_1 = a + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n \]

Where \( y_1 \) = Dependent variable (family labour, hired labour and total labour)

\( X_1 \) to \( X_n \) = Independent variables.

Independent variables identified for family labour are total hired labour, family size, total land holding and number of DFL. The hired family labour and total labour were regressed on total land holding, family size, number of DFL and total family labour.
III.8. DETERMINANTS OF INCOME FROM SERICULTURE

PRODUCTION FUNCTION ANALYSIS

Non-linear Cobb-Douglas type of production function was found to be most suitable in explaining the variability in sericulture income. The Cobb-Douglas form is as follows. The following functional form of cobb-douglas type was used for the analysis.

\[ Y = a \sum_{i=1}^{n} x_i b_i + \epsilon \]

\[ Y = a x_1 b_1 X_2 b_2 X_3 b_3 X_4 b_4 X_5 b_5 \]

On linearisation it becomes

\[ \log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + b_5 \log X_5 + m \]

Where \( Y \) = Net income from sericulture activity.

\( X_1 \) = Number of disease free layings

\( X_2 \) = Total labour used in sericulture

\( X_3 \) = Expenditure on FYM and chemical fertilizers

\( X_4 \) = Number of crops reared in a year

\( X_5 \) = Price per K.g. of cocoons.

The estimated co-efficient represents elasticity of income indicating percentage change in dependent variable as a result of one percent change in explanatory variable keeping all the other factors in the regression constant.
III.9. LIMITATIONS OF THE STUDY

The study is carried out in one district of Karnataka. Three taluks were selected in the district. One gramapanchayath area from each selected taluk is selected for intensive study. The period of the study is confined to one sericultural crop taken in the year 2001-02. Farmers have limited memory power to give authentic data about the expenditure spend on the production of cocoon and maintenance of mulberry garden. The sericulturists are identified by using schedules on the basis of their participation in the sericulture activities.

CHAPTER SCHEME

The present study comprises SEVEN chapters. The first chapter deals with the introductory part; Review of past studies conducted on sericulture related aspects and the gaps in the existing studies is examined in the second chapter; Methodology and Analytical framework is analysed in the Third chapter; In the Fourth chapter profile of the selected area and socio-economic conditions of the selected sericulturists in the Tumkur District are dealt with; Employment generation in sericulture is analysed in the Fifth chapter; Income generation in sericulture is analysed in the Sixth chapter; The Seventh and concluding chapter presents summary and conclusions of the study.
References


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5. Govt. of Karnataka, Taluk Sericulture Statistics Dept. of Sericulture SEO Pavagada, Madhugiri and Turuvekere Taluks.