

A Study Of Problems And Prospects Of Sericulture In Shivamogga District, Karnataka

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INTRODUCTION TO SILK

Silk is the queen of textiles which means luxury, class, luster, elegance and comfort. No ritual is complete without the use of the dream fabric silk as a wear. It has only 0.2% share in the world's total textile production. Asia is the main producer of silk in the world. Though there are over 40 countries producing silk, among them, China and India rank first and second respectively in the total global output followed by Japan, Brazil and Korea.

INTRODUCTION TO SERICULTURE

Sericulture is one of the labour intensive cottage industries involving mulberry cultivation, silkworm rearing and egg production, reeling and weaving of the loom and other post cocoon processes like twisting, dyeing, painting, finishing etc. along with the utilization of by products, offering a most promising alternative agricultural activity.

Sericulture is a way of life in India. Sericulture promotes self-employment and other livelihood activities in the rural economy and helps to accelerate income and provides employment opportunities to 35 million people and is practiced in Karnataka, Andhra Pradesh, Tamil Nadu, Jammu & Kashmir and West Bengal (Mulberry Silk) Jharkhand, Orissa, Chhattisgarh and North-Eastern States (Non- Mulberry Silk).

HISTORY OF SERICULTURE

Sericulture is an ancient industry in India which dates back to second century B.C. In its long history, sericulture has passed through the periods of prosperity and depression. About two and a half centuries ago, silk was introduced in the Karnataka by Tipu Sultan- the then ruler of the state. Today, it is the biggest silk producing state in India.

STATEMENT OF THE PROBLEM AND NEED FOR THE STUDY

There are number of problems in Sericulture in Shivamogga district i.e., labour, financial, marketing etc. The reviews of the published work also reveals the fact that no work of worth consideration on the topic of the present study has been undertaken by the researchers in the past. Hence, there is need for present study to fill the research gap that exists at present. In order to cover this gap, the present research was undertaken.

REVIEW OF LITERATURE

Sri Lakshminarasaih in his book, Entitled *Problems of Sericulture*, discusses the background of sericulture in India, its problems particularly market diseases and other problems. Sri H. S. Manjunatha, in his article, '*Kendriya Reshme Mandali Vegha Dakshathe Agathya*' emphasizes the urgent need for reorganization of central silk board. Sri S. G. Chandrashekar, in his article, *Problems of Pupa Labours*, points out problems of "Pupa labours in reeling activity". Dr. B. Nataraju, in his article, *Problems of Silkworm Rearing in Summer Season and remedial measures* identifies the problems of silkworm rearing in summer season, and gives some remedial measures.. A report on *sericulture promotion programme [Nepal]* critically examines the problems of sericulture with reference to employment, Marketing. *A critical review sericulture in Kerala*, a report critically examines the emerging problems of sericulture with reference to cocoons rearing, diseases, marketing and pricing. Miss. Puspavathi H.K, in her work, *Working Process of New Bivoltine Silkworm Rearing And Mulberry Cultivation Technology* discusses working process, technology and some problems of cultivation of mulberry in Shivamogga. P. Kumaresan, R.G. Geetha Devi and S.

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Rajadurai in their article, *Performance of Large Scale Farming in Sericulture - An economic Analysis* identify the problems of Sericulture farmers in Tamil Nadu, Kerala and Karnataka. R.K. Patnaik, in his book, *Sericulture Manual* discusses about the art of rearing silkworms for silk. G. Sandhya Rani, in her work, *Sericulture and Rural Development and Women in Sericulture* discusses the importance of sericulture, especially in rural areas of India. Like this, a few more papers are published in the journals of repute concentrating on one or other aspects of sericulture in general.

OBJECTIVES OF THE STUDY

- ✿ To study the present position of sericulture in Karnataka.
- ✿ To understand the problems of sericulture in Shivamogga district.
- ✿ To know the opinions of the farmers regarding various schemes of the central and state government.
- ✿ To know the participation of women in Sericulture.
- ✿ To know about the workings of the Sericulture Department and
- ✿ To offer suggestions based on survey findings.

SCOPE OF THE STUDY

For the purpose of the study, all seven taluks of Shivamogga district were covered and data relating to various aspects of the study were collected from the Department of Sericulture for a period of five years from 2000-04 to 2007-08.

Survey period: March 2009 to June 2009.

METHODOLOGY USED

Primary sources: Data was collected from the Department of Sericulture and other institutions; personal interviews, filling up of the questionnaire by the respondents and discussions with the farmers, and staff was undertaken.

Secondary sources : Related books, journals and reports as well as internet sources were consulted.

Analysis and Interpretation : Statistical tools such as tables, diagrams etc are used.

Sampling Plan: 100 Seri-farmers were selected on a Simple Random Sampling Method.

LIMITATIONS OF THE STUDY

- ✿ All types of farmers could not be covered and contacted.
- ✿ The study is not free from limitations of accuracy and time.
- ✿ Only 100 farmers could be contacted.
- ✿ The study is confined only to Shivamogga district.
- ✿ Non-co operation from many farmers.
- ✿ Non-availability of relevant data for some years.

PROCESS OF SERICULTURE

Sericulture activity has three distinct processes:

- ✿ **Cultivation Of Mulberry.**
- ✿ **Reeling Of Silkworms.**
- ✿ **Reeling Of Cocoons.**

VARIETIES OF MULBERRY

Irrigation Mulberry variety, High yielding variety and Rained Mulberry variety.

COCOON MARKETS

Government cocoon markets were established in Karnataka under “The act of Karnataka Silkworm Seed, Cocoon and Silk Yarn Act 1959.” There are two types of markets viz., Seed cocoon market and Commercial cocoon market.

ADVANTAGES OF THE COCOON MARKET

- ✿ Only licensed cocoon produce and reelers can enter the market.
- ✿ Cocoons are weighed and counted in an electronic balance machine.
- ✿ Reelers can get uniform quality goods.
- ✿ Cocoon producers can get competitive price by bidding.
- ✿ Cocoon producers get cash on the same day.
- ✿ The prices of different varieties of cocoons are published in daily and weekly magazines.
- ✿ The producers are free to discuss about the procedures and methods of cultivation.
- ✿ The cocoon market offers canteen, drinking water, packing facility, toilets, lodging facilities for farmers and reelers.
- ✿ There are special and separate facilities for women.

COCOON MARKETS IN KARNATAKA

In Karnataka, there are 20 seed cocoon markets and 46 commercial cocoon markets. Ramanagara cocoon market is the largest market in Asia. Other cocoon markets in Karnataka are Kollegala, Vijayanagar, Kolar, Chikkaballapura, Kanakapura, Shidlaghatta, Bangarpet, Mandya, Shivamogga, Tumkur, Mudhol, Kyalanur, Malavalli, Chamarajnagar, Hunasur, Hassan, Huliurudurga, Magadi, Kunigal, Hebbur, and Kushalnagar.

MARKETING PROCEDURE

First of all, the cocoons that the producers bring to the market get entered. The producers are given an auction chit and specific area for auction is noticed. The department officers conduct the auction. When the reelers accept the higher bid, the cocoons are handed over to them. Before that, the cocoons are examined, weighted and counted in an electronic balance machine and the competitive price is fixed for all qualities and payments are made. There are 3 biddings which take place i.e., 1st Bidding - 12.30 p.m., 2nd Bidding - 1.30 p.m and 3rd Bidding - 2.30 p.m.

CENTRAL SILK BOARD (CSB) - A PROFILE

Central Silk Board (CSB) was established in 1949 as a statutory body under the Government of India. It is a national organization for overall development of sericulture and silk industry. Its head quarters are located at Bangalore.

SCHEMES OF CENTRAL SILK BOARD (CSB)

- ✿ Product design, development and diversification.
- ✿ Vanya silks market promotion cell.
- ✿ Enterprise promotion and training
- ✿ Beneficiaries empowerment programmes and seri-related exposure visit.
- ✿ Assistance towards studies and surveys, supervision, monitoring and evaluation of developmental projects.
- ✿ Assistance to NGOS/SHGS and agencies for meeting administrative expenditure towards project implementation.
- ✿ Publicity for sericulture sector.
- ✿ Support services cluster development programme.
- ✿ Women development components and
- ✿ Emphasis on tribal areas.

A PROFILE OF DEPARTMENT OF SERICULTURE, KARNATAKA

Karnataka is the biggest silk producing centre in India. The department of Sericulture is headed by the Commissioner for sericulture development and director of sericulture.

SCHEMES OF THE DEPARTMENT OF SERICULTURE OF KARNATAKA

- ✿ Facilities for transaction of cocoons and silks.
- ✿ Catalytic Development Programme.
- ✿ Credit Programme.
- ✿ Western Ghat Scheme.

- ✿ Women Development Programme.
- ✿ Price Stabilization Fund.
- ✿ Reshme Varadana Yojane 2007-08.
- ✿ Special Unit Programmes 2007-08.
- ✿ Human Resource Development Training.

The following table depicts the production of raw silk in Karnataka state for the period of five years.

Table 1 :Production Of Raw Silk In Karnataka (In Mts)

Year	Production of Raw-silk		
	Cross Breed	Bivoltene	Total
2002-03	640.00	352.49	6760.35
2003-04	5609.73	339.30	5949.03
2004-05	6804.10	497.74	7301.84
2005-06	7075.35	396.16	7474.53
2006-07	7524.871	357.767	7882.638
2007-08	7628.869	367.767	7996.636

Source: Annual Administration Report 2008

The above table clearly shows the continuous increase in the production of raw silk from 2004-05 to 2007-08 where as only from 2002-03 to 2003-04 there was a decline in the production. It shows the rising awareness towards the cultivation of mulberry in recent years in the state.

A PROFILE OF CENTRAL BOARD OF SERICULTURE- SHIVAMOGGA

The Department of Sericulture in Shivamogga was established during the year 1979-80. The district has 459 agriculturists who are growing mulberry in 186 villages covering an extent of 192.45 hectares. The department is headed by the Deputy Director and assisted by an Assistant Director, Extension Officer, Sericulture Inspector, Demonstrators and Operators. The main aim of the department is to provide financial and technical aids to the backward, landless, marginal and women Seri-farmers.

SCHEMES OF THE DEPARTMENT

- ✿ Providing advisory services, demonstrations and publicity to farmers.
- ✿ Providing support to control various crop diseases.
- ✿ Provide incentives for Bivoltene cocoon.
- ✿ Provide subsidy for construction of rearing and heating sheds.

Table 2 : Area Under Mulberry In Shivamogga District

Year	Area under Cultivation of Mulberry (in acres)
2003	215
2004	177
2005	177
2006	210
2007	210
2008	220
Source: Annual Administration Report, 2008	

- ✿ Provide assistance in shoot rearing system to rearing houses and women demonstration farms.

The Table 2 clearly shows the continuous increase in the area under cultivation of Mulberry from 2006 to 2008 whereas only from 2004 to 2005 there had been no increase in the area under cultivation.

SHIVAMOGGA COCOON MARKET

The government cocoon market in Shivamogga was established in 1979-80. The basic aim of the establishment was to improve the living standards of economically backward people and to eradicate poverty and unemployment.

SCHEMES OF CENTRAL AND STATE SILK BOARD

To augment the production of quality and quantity of silkworm seed production both in mulberry and vanya seed sectors; to support targeted production of raw silk; to upgrade quality, technology absorption, productivity improvement and investment generation, the following schemes were introduced by the central and state governments as well as local bodies.

✿Central and State Aided Schemes

1) Catalytic Development Programme (2007-08 to 2011-12).

✿State Sponsored Schemes

1) Reshme Varadana Yojane 2007-08.

2) State Aided Special Component Programme of 2007 and 2008.

✿Zilla Panchayath Programmes

✿Special Component Programme for SC/ST

UNDER XI PLAN PERIOD: (2007-2011)

Following are the facilities provided by the Central Government under 11th Plan for the development of Sericulture.

✿ Support to establish large-scale Bivoltene seed production grainage in public and private sector.

✿ Assistance for seed testing facilities in public and private grainages.

✿ Assistance for mulberry silkworm seed production unit.

✿ Assistance for mulberry basic silkworm seed production units.

✿ Technological assistance for water conservation and irrigation viz., drip irrigation, well, tanks etc.

✿ Insurance facility according to demand.

✿ 100% subsidy for advertisement and publication.

✿ 100% subsidy for women empowerment programmes.

✿ 100% subsidy for tribal areas.

ANALYSIS AND INTERPRETATION OF SURVEY FINDINGS

To study the behaviour and attitudes of the Seri farmers and to know the problems faced by them, field survey had been conducted. The entire Shimoga district is covered for the purpose. The survey analyses the farmers from the following parameters:

✿AGE GROUP

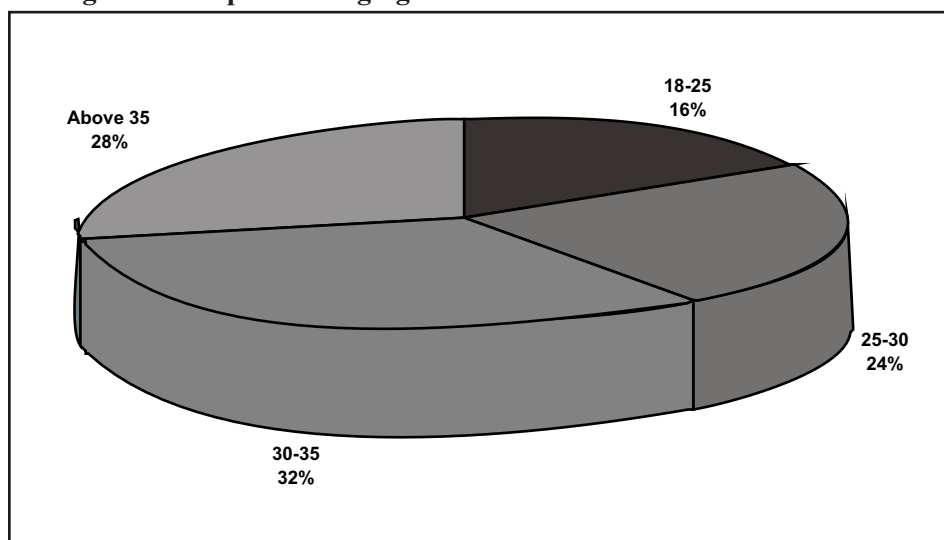
The Seri-farmers, who were classified on the basis of their age into four groups is presented below:

Table 3: Age Wise Classification Of Seri-Farmers

Age group	No. of farmers	Percentage
18-25	16	16
25-30	24	24
30-35	32	32
Above 35	28	28
Total	100	100
Source: Field Survey		

From the Table 3 it is clear that out of the total farmers, 16% belong to age group of 18 to 25 years, 24% of the farmers are in the age group 25 to 30 years. In the age group of 30 to 35 years, there are 32% farmers and 28% of them belong to the age group of above 35 years. It indicates that the middle-aged farmers are more interested in Sericulture and in earning more income.

Figure 1 : Graph Showing Age Wise Classification Of Seri-farmers



✿ IRRIGATION PATTERN

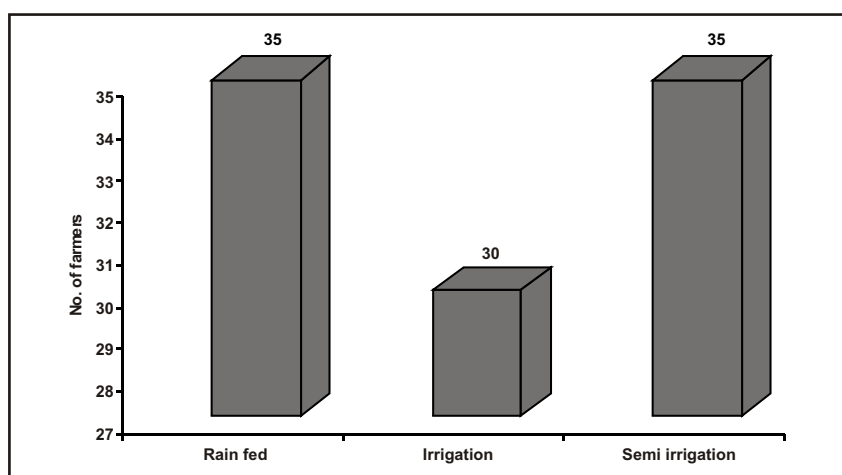
The classification of farmers according to the nature of irrigation is as follows:

Table 4 : Classification of Farmers

Nature Of Irrigation	No. Of Farmers	Percentage
Rain fed	35	35
Irrigation	30	30
Semi irrigation	35	35
Total	100	100
Source: Field Survey		

It is clear from the above table that 35% of the farmers' land is situated in the rain fed area, 30% of the land is in irrigated area and 35% of it is in semi irrigated area. Irrespective of the nature of irrigation, sericulture activity has been undertaken by the farmers.

Figure 2: Graph Showing Irrigation Pattern



✿ TIMES OF COCOON REARING

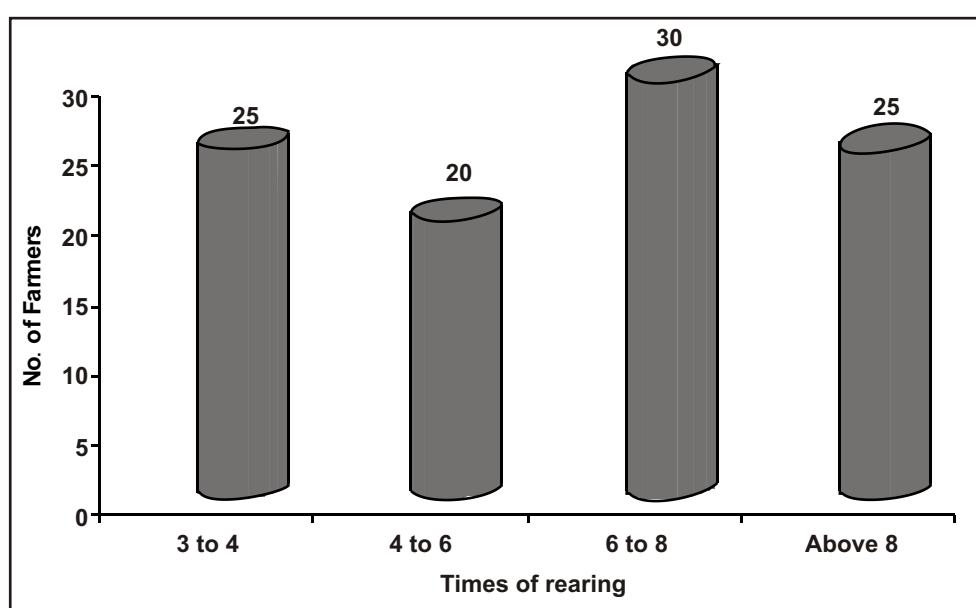
The classification of the farmers on the basis of times of cocoon rearing in a year as follows:

Table 5: Classification Of Farmers On The Basis Of Times Of Cocoon Rearing

Times Of Rearing	No. Of Farmers	Percentage
3 to 4	25	25
4 to 6	20	20
6 to 8	30	30
Above 8	25	25
Total	100	100
Source: Field Survey		

From the above Table no. 5 it is clear that 25% of the farmers rear cocoons 3 to 5 times yearly, 20% of them rear cocoons 4 to 6 times, 30% of them undertake the rearing activity 6 to 8 times and 25% of farmers rear above 8 times in a year.

Figure 3 :Graph Showing Times Of Cocoon Rearing



✿EXTENT OF HOLDING

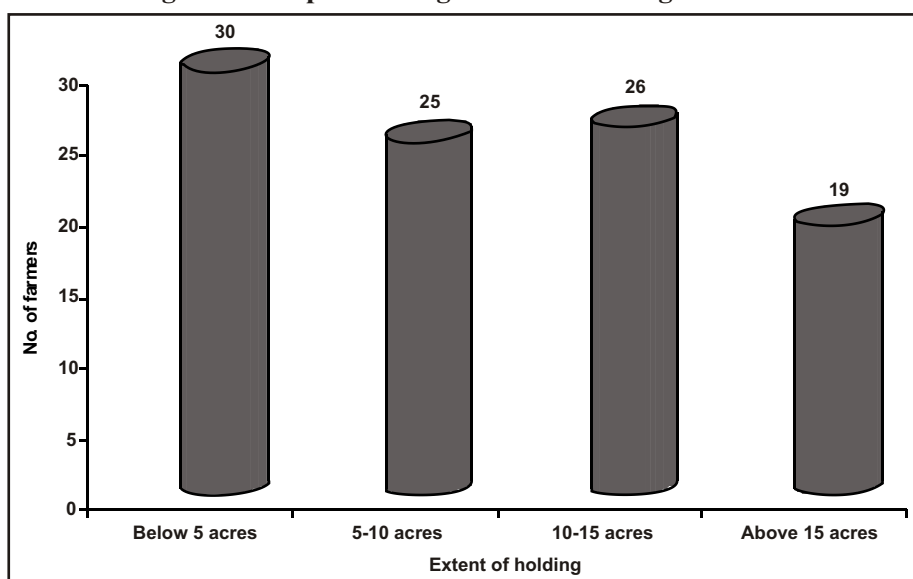
The classification of farmers on the basis of extent of holding is presented below:

Table 6 : Extent of Holding

Extent Of Holding	No. Of Farmers	Percentage
Below 5 acres	30	30
5-10 acres	25	25
10-15 acres	26	26
Above 15 acres	19	19
Total 100	100	
Source: Field Survey		

From the above table, it is clear that 30% of the farmers have 15 acres of land, 25% of them have 5-10 acres of land, 26% of them have 10-15 acres of land and 19% of the farmers have above 15 acres. Therefore, the majority of the farmers are the holders of below 5 acres. Farmers with large holdings are less in number.

Figure 4 : Graph Showing Extent of Holding



❁COCOON REARING

The farmers classified on the basis of the type of cocoon rearing is shown below:

Table 7:Classification On The Basis Of Cocoon Rearing

Type Of Cocoon Rearing	No. Of Farmers	Percentage
Cross breed	45	45
Bi-voltine	55	55
Total	100	100
Source: Field Survey		

It is clear from the above table that 45% of the total farmers rear cross breed cocoon and the rest of them rear Bivoltine. It indicates that more than 50% of the farmers prefer to use the Bivoltine type of cocoon rearing.

❁ CLASSIFICATION OF THE FARMERS ON THE BASIS OF YEARS OF CULTIVATION

As shown in the Table 8,15% of the farmers had been carrying sericulture activity for less than two years and 25%of them were in this field from the past two to five years and majority of them i.e. 60% of farmers had been practicing sericulture from more than five years.

Table 8 : Classification On The Basis of Cultivation

Period Of Cultivation (years)	No. Of Farmers	Percentage
Less than 2	15	15
2-5	25	25
5-10	60	60
Total	100	100
Source: Field Survey		

OPINION OF FARMERS TOWARDS CENTRAL SILK BOARD DEPARTMENT OF SERICULTURE, SHIVAMOGGA

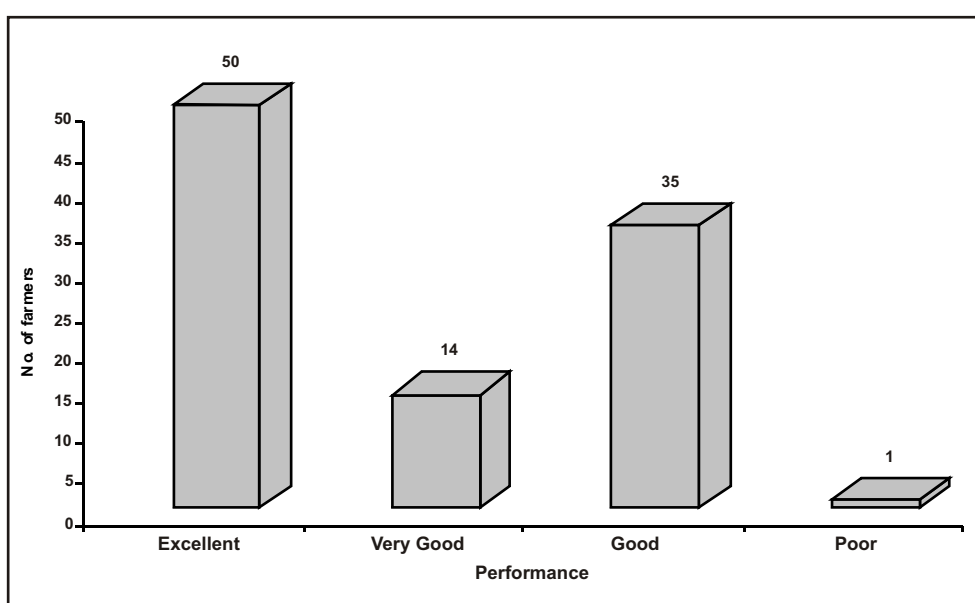
The following Table 9 shows the opinion of farmers towards Central Silk Board, Shimoga. Most of the farmers are satisfied with the support, performance, and Schemes of the Central Silk board of Shivamogga.

Table 9 : Views of Respondent Farmers

Performance	No. Of Farmers	Percentage
Excellent	50	50
Very Good	14	14
Good	35	35
Poor	01	01
Total	100	100
Field Survey		

Half of the respondents felt that the performance of Central Silk Board was excellent. In total, 99% of the respondents have a good opinion about its performance.

**Figure 5: Graph Showing Opinion Of The Farmers Towards Central Silk Board
Department Of Sericulture, Shivamogga**



✿EDUCATIONAL LEVEL

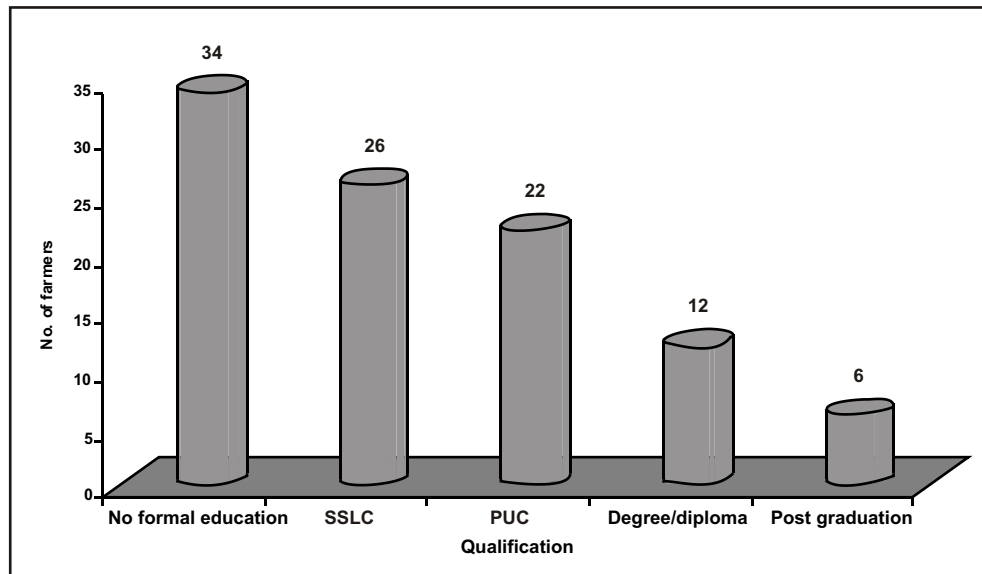
The Seri-farmers are classified into various categories according to the level of education attained by them and the same is depicted in Table No 10.

Table10 : Classification Of The Farmers On The Basis Of Education Level

Qualification	No. Of Farmers	Percentage
No formal education	34	34
SSLC	26	26
PUC	22	22
Degree/diploma	12	12
Post graduation	06	06
Total	100	100
Source: Field Survey		

From the above table, it is evident that 34% of the farmers contacted have had no formal education, 24% of them had attained education upto high school, and 26% of them had attained PUC level education. In the degree/diploma level, there are 12% farmers and only 6% of farmers had attained Postgraduate level education. Therefore, the majority of the farmers belong to the category that have no formal education.

Figure 6 : Graph Showing The Educational Level Of Farmers



❁CROPPING PATTERN

The Seri-farmers can be classified according to the cropping pattern as shown below:

Table 11 : Classification Of The Farmers On The Basis Of Cropping Pattern

Cropping Pattern	No. Of Farmers	Percentage
Subsidiary crop	65	65
Mono crop	35	35
Total	100	100
Source: Field Survey		

From the above table, it is evident that 65% of the farmers cultivate sericulture as a subsidiary crop and the rest of them cultivate this as mono crop. Efforts are needed to encourage more and more farmers to take up sericulture as a more crop.

PROBLEMS OF THE SERICULTURE INDUSTRY

The objective of the study is not only to assess the progress and prospects of sericulture, but also to identify the factors which hinder its development. The following are the problems plaguing sericulture that were noticed by the researchers while conducting the study. They can be classified into two types viz., **General problems and Specific problems.**

GENERAL PROBLEMS

MARKETING PROBLEMS

1)Defective cocoon markets;2)Lack of competitive price.;3)Poor marketing design.;4)Competition from imported silk.;5)Competition from artificial fabrics.;6)Lack of storage facilities.;7)Lack of facilities to farmers.

FINANCIAL PROBLEMS

1)Lack of credit facilities.;2)Problems of capital.

NATURAL PROBLEMS

1)Weather conditions.;2)Pests and diseases.

LABOUR PROBLEMS

1)Scarcity of labour.; 2)Lack of skill.

TECHNICAL PROBLEMS

1)Lack of pre cocoon techniques.;2)Obsolete pre cocoon techniques.;3)Lack of dissemination of information.
4)Lack of advanced equipments.;5)Lack of cropping pattern.;6)Wrong choice.;7)Lack of irrigation facilities.

ADMINISTRATIVE PROBLEMS

1)Non co-operation among staff.;2)Lack of manpower planning.;3)Lack of training.;4)Lack of motivation
5)Poor extension machinery.

POLITICAL PROBLEMS

1)Over ambitious plans.;2)Poor system of subsidy.;3)Inefficient Co-operative societies.;4)Non Co-operation by local bodies.;5)Low state participation.

OTHER PROBLEMS

1)Lack of research and innovations.; 2)Subsidiary activity.;3)Lack of quality production.

SPECIFIC PROBLEMS OF SERI-FARMERS IN SHIMOGA DISTRICT

Following are the specific problems of the Seri farmers in Shimoga district.

✿**Absence Of Cocoon Market** :There is no well-organized market for cocoons in Shimoga. Due to this most of the farmers depends on Ramanagara market, which is quite at a distance from Shimoga.

✿**Labour Problems** :Sericulture is a labour intensive industry, but there is a lack of skilled labour due to the increasing urbanization process.

✿**Scattered Farmers** : The Seri farmers are scattered and they cultivate in isolation. There is no sericulture cluster group and quality clubs.

✿**Lack Of Economic Holdings** : The land cultivated by the Seri farmers is subdivided and fragmented. As a result, the application of advanced technology is difficult.

✿**Illiteracy** : Most of the farmers are illiterates. They are not capable of understanding modern techniques of cultivation.

✿**Seasonal Activity** : Farmers have not taken up sericulture seriously and have not realized its economic importance. They are not taken as monocarp.

✿**Pests And Diseases** :The Seri farmers have no proper knowledge about the pests and diseases that harm mulberry silkworms and cocoons and they are unaware of pest disease control and preventive techniques.

✿**Lack Of Good Quality Saplings** :Due to the poor management of mulberry gardens, the Seri farmers are supplied with low quality and unhealthy saplings.

✿**Weather Conditions** :Heavy rainfall, drought, flood etc.,affect mulberry cultivation and silk rearing.

✿**Lack Of Transportation Facilities** : Due to the lack of transportation facilities, there is delay in supply of silkworms, eggs, rearing materials. The whole crop may be hampered and farmers may be frustrated.

✿**Non Planned Production Of Leaves** :The quality and quantity of mulberry leaves are not in line with the quantum of silkworm, eggs. So that on one side, there is shortage of leaves on the other, there is wastage of leaves.

✿**Poor Quality Seeds** :The seeds that are supplied to the farmers are not properly graded and sorted. Unlicensed and unauthorized private seed producers supply untested unauthorized and unguaranteed seeds to the farmers.

PROSPECTS OF SERICULTURE

Its substance, besides the economic viability, rests more on the systematic research and adoption of latest technologies, creation of required infrastructure at farmer's level and assured marketing facilities. But, often, it is experienced that many developmental schemes, despite of all the good intentions, design and implementation suffers from isolation and lack of sustainable backward and forward linkages and hence, falls short of their original ideas. Apart from these problems, today, there is a positive signs in sericulture industry, which can be sustained on a continuous basis.

INTERNATIONAL SERICULTURE CONGRESS

The mega global event in the history of sericulture industry was the 21st International Sericulture Congress (ISC) held at Athens from 3rd to 6th November 2008. A good number of sericologists, scientists and policy makers from leading silk producing and consuming countries took part in this event including India.

11TH FIVE YEAR PLAN (2007-2012)

During the 11th five-year plan under implementation, an outlay of Rs. 147.24 crore has been envisaged under the Catalytic Development Programme with a central share of Rs. 661.62crores. The scheme would be implemented in 24 sericulture states including Karnataka.

NEW AGRICULTURAL POLICY OF GOVERNMENT OF KARNATAKA - 2006

Mr. H.D. Kumaraswamy, the then Chief Minister of Government of Karnataka, announced the “New Agricultural policy of Government 2006.” Under this policy, various facilities were provided to the sericulture industry to modernize and uplift the silk industry.

INNOVATION OF HIGH YIELDING VARIETIES

✿Japan International Co operative Association (JICA) with the help of Central Silk Board and the Central Silk Research and training Institute, Mysore has developed a new variety called CSR.

✿Karnataka State Silk Research and Development Institution with collaboration of Switzerland has developed new varieties of Bivoltene NP2 and KSO1.

✿Karnataka State Silk Research and Development Institute, Talagattapur has developed new varieties CTM, NCTM and CN2.

✿Karnataka State Silk Research and Development Institute has developed new bivoltene varieties CSR2, CSR3, CSR4, CSR5, CSR6, CSR18, CSR19 and CSR24.

✿Research institutes have developed new varieties of mulberry to match the rain fed as well as irrigated areas like S13, S34, RFS 135/175.VISHWA(DD).S30, S36, S63,V1 etc.

SERICULTURE AS MONO-CROP

Efforts are made to promote sericulture as mono-crop in well-irrigated areas with latest technology packages. The farmers are motivated to match the quality parameters and standard norms.

SELF HELP GROUPS

Self help groups can be a viable system of promoting sericulture in the form of:

- ✿Effective delivery channels for adoption and transfer of technologies.
- ✿Effective source of micro-finance and mobilization of plan funds under various schemes.
- ✿Forum to debate on technical, economical and social aspects of sericulture.
- ✿Potential to develop in to income generation centers.

TECHNOLOGY ORIENTED APPROACH

The Central Silk Board has demonstrated the latest technology packages relating to moriculture and reeling activities, facilities for sorting of cocoons, disinfectants, sericulture appliances to farmers. Cropping pattern has been developed

for ecological zone.

MARKET ORIENTED APPROACH

The Central Silk Board is working towards the development of rich market both in domestic and international fronts in the areas of market research, sales promotion activities, design development and product diversification.

CLUSTER APPROACH

In recent years, the concept of cluster approach is gaining ground. It aims at bringing together all the developmental agencies - central, state, private and their initiatives under a collective banner to have better interaction linkages and collaboration to achieve better efficiency and quicker results.

SERICULTURE ZONAL APPROACH

A proposed cluster based zonal approach as has been proposed for the development and sustained growth of sericulture. It is necessary to concentrate all sericulture development activities in the proposed sericulture zone rather than diluting the activities all over the state.

INCREASED USE OF COMPOSITE MANURES

In recent years, there is an increased application of composite manure in the place of fertilizers to cultivate mulberry.

SUGGESTIONS

After a detailed survey, the researchers recommend the following suggestions for the sustainable growth of the sericulture industry:

- ✿ To propagate sericulture only in selected districts, taluks and villages based on viability and potentiality of operation.
- ✿ Ensuring the participation of Gram Panchayath, Taluk Panchayath and Zilla Panchayath in the promotion of sericulture.
- ✿ Providing managerial and technical training to the required staff and to make them accountable and responsible for executing the task entrusted to them.
- ✿ Making the Government silk reeling, weaving and spinning units economically viable.
- ✿ Establishing a post cocoon and market designing team to establish both backward and forward linkages.
- ✿ Deploying the extension officers and other required staff in order to disseminate technical knowledge based on the concentration of the activity.
- ✿ Need for good technicians and their timely and continuous support including frequent monitoring and appropriate evaluation.
- ✿ Efficient and effective communication and transportation facilities should be provided in rural areas.
- ✿ The Government should develop mechanisms for mulberry gardens and sapling production and distribution.
- ✿ Emphasis to be laid on large-scale production on economic holding by the unification of Seri farmers.
- ✿ There should be a support programme for Seri farmers at each stage of sericulture in order to enhance the benefits.
- ✿ There is a need for commercialization of sericulture in order to compete in the world of new economic regime.
- ✿ Provision of subsidy to the targeted farmers on a sustainable basis.
- ✿ Active participation of rural women in sericulture activities.
- ✿ Effective and efficient primary co-operative societies to popularize the support programmes.
- ✿ Support to design and product development to meet the market demand for raw silk and finished products.
- ✿ Need for value addition for the raw material based on market needs for better profitability.
- ✿ Rational mulberry farm management to improve the quality and leaf yield.
- ✿ Efforts to promote sericulture with mono culture are needed.
- ✿ Effective sources of micro finance and mobilization of plan funds under various schemes should be emphasized.
- ✿ Need for establishment of sericulture quality clubs and cluster development centers.
- ✿ Careful selection of farmers to promote new clusters in the potential sericulture zone is required.

- ✿ There is need for proper system for grading and sorting of cocoons and need for modern and systematic storage facilities.
- ✿ Need of support to senior research officers and silk technological research institutes.
- ✿ Organizing supply of quality seeds to the farmers in required quantity at appropriate time with proper planning.
- ✿ Close interaction with farmers and to provide best extension support.
- ✿ Providing adequate and in depth training to the farmers.
- ✿ Sales promotion activities for identified marketable product in domestic as well as international markets.
- ✿ Need for reorientation of sericulture in order to make it an economically viable sector.
- ✿ The post cocoon sector like twisting, dyeing, design development, weaving should be supported as commercial activities.
- ✿ Need for a scientific grading and standardization in order to stabilize quality and need for a use of standard weight and measures and market surveys.

CONCLUSION

There is ample opportunity to expand sericulture in Shivamogga district, which have not been fully exploited by the rural people because of several challenges faced by them at each stage as majority of the people are illiterates. Great potential exists to mobilize farmers, train them with the technology and drive them into sericulture. This requires highly qualified human resources, ample time and resources which are to be allotted in order to provide technical expertise and program support, monitoring and evaluation. Every component of the program should be equally strong and well developed with equally exceptional workers for its sustainability.

Main focus should be given to these aspects in addition to diseases, insect pests, mulberry varieties and silkworm races. Poor monitoring, evaluation and lack of coordination always results in failure or an unsuccessful ending of the program. For these reasons, it demands good technicians and their timely support, including frequent monitoring and appropriate evaluation for a successful sericulture program. Efficient communication and transport issues should be considered before the implementation of future projects in rural areas. The government should develop mechanisms on sapling provision for organizations supporting or implementing sericulture, an earlier constraint in the project. Until the farmers feel a sense of ownership, sustainability will remain a question. Primarily by raising their issues and working within groups, they can be motivated to realize their responsibility and by placing emphasis on large scale production as well as by focusing on quality production and quality seri-farmers, sustainability can be achieved.

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