CHAPTER 1

Research Design and Methodology
1.1 Introduction:

Sericulture is one of the viable and highly remunerative Agro-based Rural Industry in India. It is most suitable to the countries having agriculture based economy and abundant labour force. Thus, sericulture activities are mostly concentrated in India and China. It helps to improve the economic level of farmers and contributes in earning foreign exchange to the country. Karnataka has a lion’s share of more than 60 per cent of India’s raw silk production. Thus, it is considered as “Silk Bowl of the Country”.

Sericulture is practised in industrially advanced countries such as Japan, USSR, South Korea etc. Although Sericulture had been considered for a long time as a subsidiary occupation in rural areas, recent technological advancements have made it possible to practise on an intensive scale deriving higher returns than most of agricultural crops.

Silk, the undisputed queen of fabrics, represented as a luxury and royalty, is not only elegant but also the strongest and most versatile natural fabric, much desired as high fashion clothing. In India, silk is more than a fibre; it represents India’s culture and tradition. No Indian function, social or religious, is complete without silk in some form or the other.
India is the second largest producer of silk in the world after China. It enjoys a prominent status in the silk map of the world producing commercially all the four varieties of Silks viz. Eri, Muga, Tassar and Mulberry. In India, of the total 6,29,143 villages, sericulture is being practiced in 59,528 villages, accounting for 9.5 per cent, giving employment to more than 4 million people. The area under mulberry cultivation has come down from 3,42,764 ha in 1992-93 to 1,71,958 ha during 2004-05, but the Raw silk production increased to 14,620 M.Tonnes. The encouraging fact is that the research institutions have been able to develop high yielding mulberry variety of 60 mt/hq/yr, productivity of cocoon of 698 kg/ha/yr and raw silk production of 85 kg/ha/yr. The average net income of the farmers practising sericulture with improved technologies worked out to be Rs. 84,375/ha/yr. Once what was considered as a subsidiary has now become a full time and main occupation for the rural mass.

In India, 90 percent of the farmers are marginal and small in land-holdings that too fragmented, but due to shorter gestation period and higher returns, outperforming many cash crops made them to undertake sericulture. Thus, the planners adjudge it as the tool for rural development.

During the year 2003-04, India produced 15,742 M.Tonnes of raw silk. It exported its silk products to more than 50 countries of the world and earned foreign exchange of US$ 605 Million
during the year 2003-04. In addition, it also imported 9,258 M.Tonnes of silk to meet both domestic as well as international demands.

Sericulture is a village-based activity of mulberry plantation and silkworm rearing. It does not require huge investment but need irrigated land for mulberry plantation and some space for rearing of silkworms to make a start with. Short gestation period and comparatively higher income throughout the year attracted many farmers of traditional area and made them to take up sericulture as main occupation. The silkworm rearing, which is a major activity in sericulture, is an in-door activity involving all the family members including women, aged, children and even handicapped. Further, it is identified as, ideally suitable to small & marginal categories of farmers and weaker sections of the society viz. SCs, STs and Backward Castes/Communities.

The governments are encouraging sericulture activities as a measure for employment generation, balanced regional development and protection against migration to urban areas. Thus, Sericulture is included under rural industry in self-employment schemes of the Government. Today many rural youths are entering this new challenging area of agro-based rural industry, which provide comparatively higher income.

Various training institutions were also established in different parts of the state by the Department of Sericulture, to impart knowledge to the new comers and to the experienced farmers. Further, the
government is supporting all, particularly the new area farmers by providing subsidy and incentives for construction of rearing house, purchase of rearing equipments etc. Considerably, there is an increase in the number of farmers and improvement in both quality and quantity of Silk. Still, the farmers are facing various problems of high cost of production, finance, marketing etc., to run the enterprise economically viable providing higher returns to their produce.

In India, five states viz. Jammu & Kashmir, West Bengal, Andhra Pradesh, Tamil Nadu and Karnataka are categorized as traditional silk producing states, where more than 95 per cent of silk is coming from these states.

Karnataka has a long history of silk production. Mysore Silk Sarees are exported during the regime of Tippu Sultan. The climatic condition of Karnataka is ideally suitable for sericulture activities through the year. Five Districts of South Karnataka were categorized as traditional sericulture areas where sericulture activity is undertaken in a large scale and remaining as non-traditional. Under Karnataka Sericulture Project, introduced during 1980, the sericulture activities were extended to all districts of the state. The Central Silk Board, a Nodal agency of Govt. of India is making all efforts for overall development of the Silk Industry in India.

In India, Entrepreneurship Development has been introduced countrywide as a movement during 1960's. The Entrepreneurship
Development Programmes (EDPs) are organized both by the government and non-government organizations mainly to attract new entrepreneurs. The approach is to identify and select prospective entrepreneurs, motivate them to undertake an economic activity, train them in related activities and provide knowledge about new technologies in setting up a viable enterprise run profitably. In addition to the financial assistance like margin money, subsidy etc, preferential treatment was given in disbursing the funds to the farmers by the banks. The programmes are targeted mainly to Women, Rural, SC and ST, Science & Technology. The success generally depends on effective follow-up and monitoring of the trained. More often effective follow-up cannot be done by a training organization. Greater the level of efforts in the follow-up of the programme, higher is the level of success.

In spite of having a long tradition of sericulture in India, the industry suffers due to its nature of being cottage and decentralized small-scale activity, low productivity coupled with low quality and poor post-cocoon technology. The industry faces serious threats of high cost of production; fall in international silk prices, free flow of imported cheap raw silk particularly from China.

The Government of India has set the target for production of mulberry silk about 27,000 mt. which include 8000 mt. of Bivoltine by the end of XI plan (during 2011-12).
The experts opined that, WTO regulations would not have any adverse impact on the production of silk in the country. On the other hand, it provides opportunity of huge export market. However, the threat of heavy competition from other countries is also there.

In the present perspective, India has to plan a suitable strategy to increase its quality, switching over to Bivoltine production, besides rearing of silkworms for domestic use. Invite new entrepreneurs to cash the opportunities, minimise the import and stabilise the prices by controlling the market fluctuations, Contract farming to be introduced. Further explore new market and use silk cocoons other than clothing. Under the present situation, India has to take every threat as a challenge and convert it into an opportunity.

1.2 REVIEW OF LITERATURE:

There are numerous studies made by various authorities and research scholars to evaluate the sericulture activity from different angles. Volume of literature is available in the form of research papers, reports, government and semi-government publications, thesis, dissertations etc.,

Following are a few valid and most useful works taken up for this study.

Saini J.S. and Bhatia S. (1996) made a comparative study of trained and untrained entrepreneurs with an aim of finding out the extent which
they differ in terms of the future outlook of their enterprises. The study finds that there was no significant difference in the performance of trained and untrained entrepreneurs in terms of the average investment, turnover, efficiency achieved and growth rate of capital invested. Little difference could be found in availing working capital loans and subsidies. However, trained entrepreneurs exhibited significantly higher rate of growth in employment generation and sales turnover. The study further reveals that in spite of the efforts of training institutions, trained entrepreneurs could not achieve break-even sales faster than untrained entrepreneurs.

Seshagiri S.V and Ganapati Rao R. (2002) ³ conducted a study to know the level of participation of rural youth in sericulture at Giddalur, Prakasam District of Andhra Pradesh. The authors found that the youth are actively involved in sericulture. Majority of them are facing problems like lack of funds, subsidies by government agencies, financial support from government and the technical problems like lack of practical training and knowledge of improved technologies and extension support. It was found that youth are monopolized in sale of cocoons in the market. Due to lack of technical know how, the farmers are not in a position to produce good quality cocoons.

Ravindra Mattigatti and Iyengar M.N.S. (1994) ⁴ made a study in Hassan District of Karnataka, to evaluate the role of different agricultural enterprises, which are complementary and supplementary
in nature. They observed that the sericulture had direct contribution to
the farm income to the extent of 75.8 per cent. The net profit per hectare
was highest for sericulture (Rs. 30,597.30) followed by plantation (Rs.
20,057.50) and then commercial crop (Rs. 18,094.73). The indirect
contribution via animal husbandry was found to be higher mainly
because of supply of by-products to the livestock.

Lakshmanan S., Mallikarjuna B. and Geetha Devi R. G.(1997)\(^5\)
undertaken a study in Dharmapuri and Salem Districts in Tamil Nadu,
finds that the unit cost of leaf production (per kg) was Rs. 152 for size
group I, Rs. 1.28 for II, Rs. 1.16 for III and Rs. 1.09 for IV group. The
authors established an interesting relationship that the cost of
production and quantity of leaf per hectare decreased as land holding
size increased. Further there is an inverse relationship between farm size
and cost of production of cocoons. Smaller landholders had potential for
own family employment. Authors suggested the introduction of
Minimum Support Price (MSP) for commercial cocoon production to
encourage farmers to continue sericulture even in the event of escalation
of resource price.

Sunanda Sharan, Prema Kumari S. and Nagabhushanam K. (2001)\(^6\)
have made a study to assess the economics of sericulture farming in
three land holdings. The study finds that marginal farmers earned a
profit of Rs.425 to 2312 and small farmers Rs. 1446 to Rs.2837 per
rearing. The contribution of income through sericulture was found to be
65, 69 and 70 per cent by Marginal Farmer, Small Farmers & Big Farmers groups respectively. The study concludes that the higher the land holding, the greater the land allotted for mulberry plantation. The farmers owning very less land (0.1 acre) reserved the whole of it for mulberry.

Kumareshan P. and Vijay Prakash N.B. (2001)\textsuperscript{7} have made a comparative study on economics of sericulture with other major crops in Gobichettipalyam taluk of Erode District in Tamilnadu. They find that the cost of production of cocoon was Rs. 40,061.02. The revenue obtained by sale of Cocoon was Rs. 57924.00 and of by-products of Rs. 3290.53, totals amounting to Rs. 61,214.53 leaving a net profit of Rs. 21,153.51 per acre per year. The authors' study further reveals that the revenue obtained by sericulture was comparatively higher than the other crops except turmeric. Higher profitability, continuous income throughout the year by the sericulture was the main attraction for the farmers. Introduction of labour saving devices was the important suggestion given by the authors.

Rajesh B. and Ismath Afshan (1995)\textsuperscript{8} have made an attempt to examine the cost and returns in rain-fed sericulture in Mysore District of Karnataka. They found that, the net return by Ragi was Rs. 786.00/hectare/crop, Jawar Rs.753.00/hectare/crop and Sericulture Rs. 690.00/hectare/crop. But the cost-benefit ratio was more in sericulture i.e., 1.16 as compared to Ragi 1.13 and Jawar 1.15. This was mainly due
to low cost of production compared to other two crops. Further, the number of crops realized per year in sericulture is five, where as it was only one crop for Ragi and Jawar.

Vishwanathan K.U., Jayaraman B. and C.V. Reddy (2002) have made a study to assess the return on investment and the financial viability in sericulture enterprise in Kolar and other Districts of Karnataka. It was found that the net income on one acre of mulberry plantation was Rs. 1,23,189 in Kolar and Rs. 55,041 in Tumkur District. On an average, the net income per acre of mulberry plantation was found to be Rs. 89,195. The main constraint faced by sericulturists was low prices for their products and the other constraints are: disease to silkworms, low yield due to inadequacy of water, non-availability of electricity and shortage of labour.

Shrinivasa G., Surangai R.N., Geetha G.S. et. al. (2001) study found that the net return per acre was Rs. 15,756.86 with Bivoltine rearing and Rs.20,051.16 with Cross Breed. The overall net income was found to be Rs. 18,235.24. The study came to know that the investment on silkworm rearing is highly profitable with the adoption of Bivoltine races in combination with other cropping enterprises. The authors suggested for introduction of new robust Bivoltine hybrids for rearing silkworms throughout the year.

Kamble C.K. and Dipanjali Das (1999) made a comparative study on cost of production of dfls. in a private and public Grainages in Mandya,
Mysore and Kolar Districts of Karnataka. The result of the study indicates that the production cost per 100 dfls. was found to be Rs. 181.39 in State, Rs. 215.16 Central and 186.36 in Private sector Grainages with a variation in different seasons.

Ganapathi Rao Ratnala, Mallikarjuna B. and Datta R.K. (1995)\textsuperscript{12} made an empirical study to analyse the human labour employment in various sericultural activities. The authors selected 200 farmers of Anantpur and Chittor Districts of Andhra Pradesh during 1993. The higher magnitude of family labour employed was found in smallholdings. The hired labour mainly constituted of women labourers.

The authors found that higher the farm size more will be hired labour. Thus, there is an inverse between the farm size and hired labour. Land holding size of 1.01 to 1.5 acres was optimum for both mulberry cultivation and silkworm rearing. The authors suggested that, in order to engage the family labour, use it rationally.

Hanumappa H.G., Erappa S. and Gurumallaih H.S (1981)\textsuperscript{13} undertaken a study in Mysore, Bangalore and Kolar Districts of Karnataka by selecting 132 sample cocoon producing households and 45 reelers. The authors find that the cocoon production was more under irrigated conditions than rain-fed conditions. Both marginal and small farmers depend more on family labour for their Sericultural activities than medium and large farmers. The marginal farmers are shown better results than small farmers in terms of yield.
Saraswathi J.M. and Sumangala P.R. (2001) was of the view that the women participation was more in silkworm rearing (indoor activities) than in mulberry cultivation (outdoor activities) and it was high as a worker compared to supervisory role. The participation of women was highest in silkworm raring (94.67%) followed by nursery raising (90.95%). Their participation was very low in packing and marketing of cocoons and procurement of disease free layings. It was also found that the family members help them in all the activities of sericulture during peak period.

Lakshmanan S., Mallikarjuna B., Ganapathi Rao R., Jayaram H. and Geethadevi R.G. (1999) carried out a survey at Salem and Dharmapuri Districts of Tamil Nadu. The result of the 100 samples indicates that, employment in mulberry plantation was highest (1229.47 man days/hectare/year) in farm size group I compared with other groups. The study established a relationship that the share of family labour (out of total labour) decreased as the holding size increased. The small land holders engage more number of own female labour and their share decreases as holding size increases.

Subramaniam B.K., Sarkar G. et. al. (1995) selected three sericulture areas of Chamarajnagar, Kolar and K.R. Nagar of Karnataka state for their study. Their study indicates that the involvement of women (both self and hired) was higher than men in mulberry cultivation and silkworm rearing activities. Further it was much higher
in silkworm rearing activities than that of mulberry cultivation. Male members of family mainly enjoyed the ownership of immovable property but both male and female did cash handling equally.

Singhvai N.R., Sethu Rao M.K. et. al. (1994)\textsuperscript{17} a study was undertaken in Hunsur Taluk, Mysore District of Karnataka during 1993.

The study found that complete recommended sericulture practice was adopted in mulberry then in silkworm rearing practices.

The authors observed that the socio-economic characters of farmer's viz. education, land holding, mass-media participation, extension contact and cosmo-politeness had a significant association with adoption of recommended practices than the other variables. Lack of knowledge about disease control measures was perceived as the most important reason for non-adoption of recommended practices followed by lack of capital for construction of rearing houses, also lack of knowledge about optimum temperature and humidity.

Shrinivas G., Doddagadad C.B., Jayaram H. and Geethadevi R.G. (1998)\textsuperscript{18} have observed that the big farmers fully adopted (100%) the recommended practices relating to variety, spacing, incubation and mounting care and small farmers with regard to variety, spacing, incubation and mounting.

The authors observed that education, extension contact and mass media participation in case of medium farmers have contributed significantly towards adoption of technologies. Educated farmers had
high adoption index. Further, the study found that experience had an edge over education in adoption of technology. The study calls for a broader network of effective communication technologies through a dynamic set-up of various extension methods.

Ramanjaneyulu Y.V., Doddanarasaih S.K., Bhargava et. al.(2005)\textsuperscript{19} have made a survey to assess the present level of awareness and adoption of recommended sericultural practices among the seed rearers in Bivoltine seed area of Madakasira in Anantapur District. It was found that middle-aged persons (25-45 years) are more actively involved in sericulture activities. The total, partial and non-adoption of sericulture practices was 73\%, 14\% and 13\% in big, small and marginal seed rearers respectively.

Parvathy S. and N.P. Kumari Sushma (2000)\textsuperscript{20} conducted a study in Kalliyoor Panchayat of Thiruvananthapuram District of Tamilnadu to understand the training need of rural women with regard to self-employment avenues in agriculture.

The cursory view of the result of the study indicates that women require more training in the areas of Orchid cultivation and less in Sericulture. Majority of rural women (86.66\%) preferred the college of agriculture as the venue and preferred one month training (83.33\%) as suitable duration.

Karthikeyean C. and Shanmugasundaram B. (2001)\textsuperscript{21} in their study found that, only 15.54 per cent of farm women and 12.21 per cent of
youth agricultural labourers needed training in sericulture. The cent percent farmwomen needed knowledge-based training in basic aspects like nursery, silkworm varieties, rearing appliances, and feeding and shoot raring and post-rearing requirements. Knowledge and skill-based training was required in activities like preparation of Chandrike and brushing of young age worms. Youth and women agricultural labourers need knowledge-based training. Youth perceived to get trained in knowledge as well as skill aspects (54.54%). The study suggested for introduction of sericulture as a new enterprise in the command area.

Thangraj V. and John Knight (1980) made a survey at Salem district in Tamil Nadu by taking a sample of 120 sericulturists to know the adoption behaviour of trained and non-trained sericulturists. The authors found that, three characteristics viz. socio-economic status, sericulture experience and urban contact, trained farmers showed a relatively higher level than un-trained. Identification of disease-infected silkworm, method of cutting leaves were the areas where training is much needed. The practices like variety, fertilizer application, and disease control measures and pruning practices registered relatively higher percentage by trained sericulturists. The trained group opined that, sericulture is easy to understand and practice. The authors suggested, the extension agency should organize training programmes with the objective to provide needed knowledge and skill for the sericulturists.
Venkataramana P., Srinivasa Rao T.V.S. et. al. (2002)\(^{23}\) a benchmark survey result shows that, the new integrated sericultural technology packages produced higher mulberry leaves and cocoons. Adoption of new integrated seri-package, the mulberry leaf production increased from 48.02% to 51.74%. With adoption of new integrated seri-package, the cocoon yield increased by 23.63 kg/100 dfs (86.60%) compared to the benchmark yields to 27.17 kg/100 dfs. The authors came to conclusion that, by making an expenditure of ranging Rs. 1240-1380 per 0.5 acre on mulberry area and 100 dfs, the farmers could fetch an additional net income ranging between Rs. 10,575.00 to 11,607.80 per year. The largest percentage of adoption of technology was found in big farmer's group & low in small farmer's group.

Anjaneya Gowda D.M. (1993)\(^{24}\) analyzed the adoption behavior of farmers. The big farmers in mulberry cultivation and silkworm rearing was found to be positively and significantly associated with their farm size, social participation, mass media and extension contact has a positive and non significant association with adoption. Small farmers showed positive but non-significant with all characteristics. Marginal farmers were positive and highly significant with education. The authors come to the conclusion that, marginal farmers had better adoption compared to their other counter-parts.

Geetha G.S., Srinivasa C., Jayaram. H. et. al.\(^{25}\) conducted a study with an objective to find out the socio-economic status of farmers
influencing the level of technology adoption in Channarayapatna taluk of Hassan District in Karnataka. The authors found that, the size of land holding and mulberry under irrigation had a negatively significant correlation with the rate of adoption of sericultural practices. Education had non-significant correlation with the rate of adoption. The adoption rate was high when the support was provided through state and central extension agencies. Vakkaligas had the highest rate of adoption followed by SC/ST, Lingayats and others. Further the study reveals that the income had negative association with technology adoption. The constraints reported by farmers for non-adoption of technology are mainly non-availability of money, inputs and ignorance of technology. Small and marginal farmers need more support.

Maruthi and Parameshwarappa K.J. (1995)\textsuperscript{26} undertaken a study to identify the possible reasons for uprooting of mulberry and the factors which encouraged farmers to retain mulberry on their land in Gulbarga district of Karnataka. The study finds that lack of water was the main reason for uprooting and the other reasons in order are; difficulty in management, crop failures, labour problems; low/ fluctuations in prices (not profitable) and marketing problems. The authors is of the opinion that Irrigation, mulberry suiting the region are the important points to be considered for development of sericulture activities.

Beena Panicker and Chaudhari M.R. (2000)\textsuperscript{27} carried out a study to identify training needs on various improved practices of the farm women
in Nagpur of Maharashtra state by selecting 150 women sericulture farmers. The authors found that age, land holding, cosmo-politeness, socio-economic status and economic motivation increased the training need of the farmwomen in the modern practices of agriculture. Family size was found to be negatively co-related with training needs.

Chitnis D.H. and Kothikhane R.R. (2000) made an investigative study by the authors in Aurangabad Agricultural Division of CMP Zone of Maharashtra to find out efficient extension methodology for effective implementation of IPM programme.

The study found that demonstration, group discussion and field visits were the superior & effective methods of extension teaching preferred by 97, 79 and 69 per cent respondents respectively. The respondents reported lack of sufficient training. Scientists' visit to the fields where new technology is being adopted, play a very important role in transfer of technology, as well as removing doubts and giving proper solutions for the field problems.

Abdul Aziz and Hanumappa H.G. (1985) in their edited work, 'Silk Industry: Problems and prospects' suggested that Government shoulder the responsibility of ensuring production of quality cocoons through suitable extension services, provide adequate marketing facilities for the yarn and fabric, set up suitable organisations for standardization of machinery and processes, set up suitable advisory bodies to provide consultation etc.
Shivappa H.V. (2001) suggests that silk industry has vast export potential, the government of India should make all necessary efforts to face the competition, improving the quality of silk & also increasing the yield per acre. He added that a market survey should be conducted in European countries to understand the needs of consumers' tastes and preferences with the view to enhance the export of those goods that can, which fetch more unit price and profit.

Radhika Rani (1998) in her research study titled, "Sericulture in Andhra Pradesh with special reference to Ananthpur District", found that the average cost of establishing an hectare of mulberry garden was Rs. 12,048 and it was higher in small category of farmers compared with medium and large farmers. The cost of production of cocoon was highest in large farmers, due to the use of hired labour. The study came to the conclusion that the net income per hectare was more in case of medium farmers compared to small and large farmers in the study area. The author suggested developing nutritious mulberry leaves, adopting scientific method of cocoon rearing so as to ensure highest returns.

Muguntha Raj E. and Bharathi M. (2001) in their paper titled "Problem of Farm Women in Small Holdings: A case study in Karnataka" made an attempt to examine the factors which determine the active participation of farm women in agriculture and allied activities. It revealed that most of the economic activities of women are ignored or
unaccounted, though it is still a fact that without her earning the family would hardly survive. With regard to sericulture, the authors said women go to field and get the mulberry leaves and feed silk worms periodically, but when the question of marketing comes it is the men who takes them to the market and get the cash. The study suggested that to improve the condition of small farmers the co-operative management is essential, which would pool resources of fragmented holdings and bringing them conveniently together in one place, making most convenient and more profitable to all.

Gowda K. T. and Rajashekhargouda R. (2003)\textsuperscript{33} presented a study paper in Agricultural Situation in India, to discuss the economics of using V-1 mulberry, adopting different methods and frequencies of feeding in Dharwar District of Karnataka. The comparison of benefit cost ratio across the varieties and frequency of feeding revealed that four feeds per day in shoot rearing method using V-1 produced highest benefit cost ratio (1.98:1). The net returns were more in shoot rearing than in shelf rearing. Four feeds with shoot feeding method could fetch a maximum net profit of Rs. 5,367 for every 100 dfls. While least net profit of Rs. 2,375 for every 100 dfls was found by shelf rearing with single feed frequently.

Mridula Reddy D., and Kamalamma N. (2000)\textsuperscript{34} conducted a study in Batlagundu in Tamil Nadu among 88 sericulture families, where 4/5 of the sericulture units were managed by women either individually or
jointly with the male member of their families. The study found that the net income of the families from sericulture ranged from Rs. 5,300 to 75,000 with an average of Rs. 18,366. Further, the study came to know that sericulture is economically productive but highly labour intensive occupation. Major share of the work is done by women through the work poses occupational stress and strain.

Koundinya P.R., Suma A.S. and Sikdar A.K (2001) made a study on the adoption of new technologies by the farmers of Chitradurga and the reasons for non-adoption of some of the technologies. The results shows that, by adopting new technologies the leaf yield increase was 1207 kg/acre/yr from the bench mark level of 953.1kg/acre/yr, accounting for 12.66 % improvement. In the same way, cocoon yield was of 54.5 kg/100dfls from 35.2/kg/100dfls. which is an increase of 54.82 % over the control for lead farmers. However, leaf and cocoon yield of participant farmers found an improvement of 9.73% and 34.09 % respectively over the control.

Dhane V. P. and Dhane A.V.(2004) conducted a study in Poona District of Maharashtra, to understand the constraints faced by the sericulture farmers in mulberry cultivation and silkworm rearing. They found that inadequate labour for picking leaves and high cost are the major constraints for mulberry cultivation. With regard to rearing of silk worms, high cost of construction of rearing house and difficulties in protection of silkworms against diseases are the major constraints faced.
The authors suggested that, the extension agents should provide all necessary know how to overcome the difficulties.

**Kumaresan P. and Vijaya Prakash N.B. (2001)** study reveals that 93.33% sericulture farmers were risk averters. The sericulture provided stable income with moderate risk compared with other crops. The authors pointed out that risk and uncertainty are the important constraints, which affect the production decisions of farmers, resulting in inefficiency in allocation of resources for farm activities. The study suggested for introduction of suitable Insurance Scheme to protect the farmers against the risks like loss due to diseases, pests and predators as well as vagaries of the nature such s cyclones, hailstorm etc. Further, the study found that the failure of insurance scheme in sericulture was due to lack of awareness and the returns to the farmers premium paid was not attractive.

**Vivek Deolankar (1993)** undertaken a field survey in Maharashtra, Uttar Pradesh, Tamil Nadu and some other states of India by selecting 526 sample entrepreneurs. The author finds that, it is difficult to stimulate entrepreneurship among the people in the backward, rural and tribal areas, and it is much more difficult to sustain their interest. He suggested that, the promotional agencies are yet to make a dent in development of entrepreneurship among the Weaker Sections, Tribals and Women who constitute a large section of the Indian masses and need to be brought into mainstream.
S. Prem (1995) conducted a study in Andhra Pradesh, by taking 120 trained and 79 non-trained entrepreneurs. By using Chi-square and Z-test the authors confirmed that, the start-up rate in the trained groups of the EDPs would be significantly higher when compared with non-trainees. The successful units generally have low investment and employ less labour. The author found that self-financing was a major source of finance. He suggested that, women be better motivated to take up entrepreneurship through general EDPs, rather than through women EDPs. Role-play, Management Games, Case Studies are to be employed for EDP training programme. The follow-up measures after training programme to be taken very seriously and it must be organized properly.

Tewari V.K, Joseph Philip, A.N.Pandey, (1991) A study of small entrepreneurs conducted by the authors, revealed that the better performing entrepreneurs were relatively young and the desire to be self-employed was the greatest motivating factor for becoming an entrepreneur. Entrepreneurs were motivated by their own ambitions rather than the ambitions of their parents and other relatives. Also, dissatisfaction with previous job or occupation was found to be the most compelling factor for motivating them to become entrepreneurs. While the greatest source of encouragement was entrepreneurs' previous experience, Entrepreneurs developed greater confidence from their own abilities and skills rather then from financial and other material resources available to them.
Mishra B.B. and Bal R.K. (1996) undertook a research with an objective to identify the factors which influenced the new entrants to undertake industrial entrepreneurship in major towns of Orissa. A strong desire to satisfy their urge was the greatest motivational factor. Persuasion from friends and relatives was important. Among the internal factors, which helped in generating confidence, previous experience, own resources and education played a great role. The environmental factors like access to appropriate technology and general industrial climate coupled with a desire to stand independently were also dominating factors.

1.3 Objectives of the Study:

The Research study aims at analyzing the effects of Training and Entrepreneurial Qualities of Sericulture Practicing Farmers of Non-traditional sericulture area of Belgaum Division of Karnataka State.

The Core objectives are:

1. To know about sericulture activities and socio-economic status of sericulture farmers of Belgaum Division.

2. To analyze the sericulture training benefits and the Entrepreneurial Qualities of Sericulture Farmers of the Study Area.

3. To evaluate the factors that encouraged the farmers to undertake sericulture activity, problems encountered by them and suggest measures to improve.
1.4 Hypotheses:

The present study intends to test the following hypotheses:

1. Training benefits in improving skills of farmers in different areas of sericulture activity.

2. Most of the small & medium categories of farmers undertake sericulture activity – more cocoon crops.

1.5 Need for the Study:

Belgaum Division of Karnataka, though it is a non-traditional sericulture area, it has been bestowed with fertile land and irrigation facilities, ideal climate most suitable for undertaking sericulture activities throughout the year. The department of sericulture has allotted some parts of this area for Seed Production. With the introduction of Karnataka Sericulture Project, during 1980, the sericulture activities have spread to all districts including non-traditional sericulture areas, with the additional facilities/assistance offered to the sericulture farmers. The Training Institutions were also established to train and guide the new farmers. However, the sericulture could not grow as fast as expected.
Under these circumstances, the need was felt by the researcher to X-ray the sericulture activities in the study area and intensity the training and entrepreneurial qualities of sericulture practicing farmers of Belgaum Division.

1.6. **Statement of Problem:**

In spite of the training programmes conducted the expected entrepreneurial qualities were still found wanting in sericulture farmers. Though sweeping changes in Sericultural activities are taking place yet the farmers of non-traditional Sericultural area are still averse to adopt the new technology. Present study will try to find out the reasons for the existing gap and suggest some measures to develop the essential entrepreneurial qualities. Hence, the statement of problem:

"TRAINING AND ENTREPRENEURSHIP DEVELOPMENT IN SERICULTURE INDUSTRY; A CASE STUDY OF BELGAUM DIVISION".

1.7 **Scope of the Study:**

An attempt through this study is being made to know the present practice and condition of farmers right from the initial stage of mulberry plantation to the production and sale of cocoons. Good return and high income are naturally the main attraction for both the present practicing farmers and the new entrants. Thus, the study covers all the stages of sericulture, identifying the drawbacks/shortcomings and also makes some useful suggestions aimed at bringing about popularization and improvement.
There is wide scope to develop sericulture in a large scale, attracting young and enthusiastic farmers through motivation, training and developing entrepreneurial qualities among the sericulture farmers.

1.8 Study Area and Period of study:

The present study cover 7 districts of the Belgaum division of Karnataka state, where sericulture activity i.e., mulberry plantation and cocoon production for commercial use is undertaken. The period of study relates to the sericulture activity undertaken during the financial year 2003-04.

1.9 Sampling Design:

An exhaustive list of sericulture practicing farmers has been obtained from the offices of the Department of Sericulture of all 7 districts of the study area. A proportionate random sampling method was adopted to cover all castes and categories of farmers.

During the year 2003-04, there were 3203 sericulture farmers in the study area, 10 per cent representation has been considered for the purpose of study. Equal importance has been given to all categories/land holdings. Much importance has given to select Sc/St, women & Minorities making total sample of 320 sample farmers. Selected Sample Sericulture Farmers of the study area is presented in table 1.1 below.
<table>
<thead>
<tr>
<th>Name of Districts</th>
<th>Total Taluks in each district</th>
<th>Taluks declared for Cocoon seed production</th>
<th>Taluks of commercial cocoon production</th>
<th>Sample Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bagalkot</td>
<td>05</td>
<td>00</td>
<td>05</td>
<td>50</td>
</tr>
<tr>
<td>2. Belgaum</td>
<td>10</td>
<td>05</td>
<td>05</td>
<td>50</td>
</tr>
<tr>
<td>3. Bijapur</td>
<td>05</td>
<td>00</td>
<td>05</td>
<td>50</td>
</tr>
<tr>
<td>4. Dharwar</td>
<td>05</td>
<td>01</td>
<td>04</td>
<td>40</td>
</tr>
<tr>
<td>5. Gadag</td>
<td>05</td>
<td>00</td>
<td>05</td>
<td>50</td>
</tr>
<tr>
<td>6. Haveri</td>
<td>07</td>
<td>00</td>
<td>07</td>
<td>70</td>
</tr>
<tr>
<td>7. Uttara Kannada</td>
<td>11</td>
<td>11</td>
<td>00</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>17</strong></td>
<td><strong>31</strong></td>
<td><strong>320</strong></td>
</tr>
</tbody>
</table>

The table 1.1 shows that, total sericulture activity is well in progress in all the 48 taluks of 7 districts of Belgaum division. However, the Department of Sericulture, Government of Karnataka, declared 17 taluks of Belgaum, Dharwar and Uttara Kannada districts as Cocoon Seed Production Areas. 10 Farmers from each taluka were considered for the sample, raising the number 310. Though all taluks of the Uttara Kannada district are declared as cocoon seed production area, yet some farmers of Mundagod and Yallapur Taluk are still interested in commercial cocoon production. Therefore, 10 farmers have been taken up to represent the sample of Uttara Kannada district for the study.
purpose. Thus, the selected sample number goes up to 320 for the purpose of study and the same has been presented in Annexure-I.

### 1.10 Pilot Study:

Based on the information obtained from the review of literature and due consultation with the experts, an Interview Schedule was formulated. A pilot study was undertaken in 5 villages to test the requirements and objectives of the study. Based on the information obtained in the pilot study, a revised Interview Schedule was prepared and used for data collection.

### 1.11 Sources of Data:

The present study is based on primary as well as secondary data.

**a. Primary Data:** The Primary data is collected from the 320 selected Sample Sericulture Farmers of the 7 districts through pre-tested Interview Schedule to know the perception of farmers towards sericulture in the study area and the training programme. Personal contacts have yielded good results in getting a clear picture of their views.

**b. Secondary Data:** The secondary data was collected from a wide range of published Annual Administrative Reports of the Department of Sericulture, District Offices and Technical Service Centers of the Sericulture, Government of Karnataka, Central Silk Board, NABARD. Published - Reports, Books, Journals, Magazines etc. were used.
The collected data has been arranged in a tabular form and analysed with the help of percentage and averages to draw the conclusions.

1.12 Research Technique:

For the purpose of data analysis, simple mathematical and statistical tools like Percentage, Mean, Standard Deviation and Co-efficient of Variations were applied to derive conclusions.

a. Mean: It is the representative of group of numbers calculated by -

\[
\bar{X} = \frac{\sum X}{N}
\]

\(\bar{X}\) = Mean Value

\(\sum X\) = Sum of observations.

\(N\) = Number of observations.

b. Standard Deviation:

It is the dispersion of items from the mean value. The lowest S.D. shows less dispersion of the items from the mean value.

\[
\sigma = \sqrt{\frac{\sum(X - \bar{x})^2}{N}}
\]

\(\sigma\) = Standard Deviation

\(\bar{X}\) = Mean value

\((X - \bar{x})^2\) = Square of deviation from \(\bar{X}\)
c. Co-efficient of variation:

It is a relative measure of dispersion expressing the standard deviation as a percentage of mean. It gives variations of observations in relative magnitudes of the population. It is used for the comparison of dispersion in two different data of same nature.

\[ CV = \frac{\sigma}{\bar{X}} \times 100 \]

\( CV = \) Co-efficient of variation.

\( \sigma = \) Standard Deviation

\( \bar{X} = \) Mean value

1.13 Limitation of the study:

The study does not cover the activities in detail relating to developing of mulberry plantation and its harvesting, rearing of silkworms used for other purposes, the biological characteristics of silkworms and also the post-cocoon activities. The farmers who have abandoned the sericultural activities during the study period are also excluded from the study.

1.14 Organization of the study:

The Thesis is divided into Eight Chapters.

The First Chapter deals with a brief Introduction of Sericulture Industry and its Economic significance in the Indian context. This Chapter also includes a brief explanation of Objectives of the study,
Hypotheses, Review of Literature, Need for the study followed by its Scope, Limitation and organization of the study.

The Second Chapter provides a brief introduction of Indian Silk Industry, World Raw Silk Production, Silk Production in India, Exports and Imports, Funds allocated in various plan periods, followed by Future Prospectus of Indian Silk Industry.

The Third Chapter has been devoted to the broad Conceptual Approach covering following three areas viz.

a. **Training** – Importance, objectives, Androgogy, Trainer's Role etc.

b. **Entrepreneurship Development** – Entrepreneur, Entrepreneurship, Entrepreneurship Development Training, Entrepreneurship Development Programme etc.

c. **Sericulture Industry** – Silk, Origin, Mulberry, Silkworms, Contributing factors for success of Sericulture.

The Fourth Chapter deals with the growth of sericulture in Karnataka, covering growth of Mulberry, Cocoon, Silk, Training Schools, Markets etc., and the promotional measures undertaken by the Government for development of sericulture in the state.

The Fifth Chapter presents a brief description of Study Area and Socio-Economic Profile of Sample Farmers.
The Sixth Chapter is focused on the analysis of Training programmes, Training Benefits and Entrepreneurial Qualities of Sericulture practicing farmers of the study area.

The Seventh Chapter analyses the factors which influenced to undertake sericulture activity in the study area, resources available, rearing houses, financial and other problems, difficulties, threats etc., and suggestions to improve sericulture activity in the study area.

The Eighth Chapter presents major findings of the study and Suggestions to improve sericulture industry. The Chapter is followed by Bibliography and Interview Schedule.

REFERENCES:


