



# TECHNOLOGY ADVANCEMENT AND ITS ADVANCEMENT AND ITS ADOPTION: A BOOSTER FOR SERICULTURE DEVELOPMENT AND EXPANSION IN KARNATAKA WITH SPECIAL REFERENCE TO RAMANAGARA DISTRICT

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## Abstract

Sericulture is a growing activity in the primary sector which aims more income to the farmers. This paper entitles an agro based artisanal industry, Sericulture which has proved its potential in raising sustainable income and employment in the rural sector of both traditional and non-traditional states of India. Adoption of technology becomes a trend in the primary sector from few years. The study is concentrating on the impact of technology on sericulture in selected area. sericulture is an agro industrial activity aiming to produce silk though rearing of silkworm. It involves the raising of food plants for silkworm, rearing of sillworm for production of cocoons, reeling and spinning of cocoons for production of yarn for value added benefits such as processing and weaving. The knowledge of technology has found to have greater impact on improving the productivity and production in terms of agriculture as well as its allied activities. This study finds out significant positive impact of full and partial knowledge about advanced technology and its adoption on the development of the sector. The climatic conditions of Karnataka favour sericulture throughout year. Hence, there will be regular crops throughout the year, farmers take up to 12 crops in a year. The government of India initiated various programs to promote sericulture in the country. Where sericulture took a rapid stride towards progress by emerging as one of the most economically viable small scale agro based Industry.

**Key words :** Sericulture, agro industry, technology, silkworm, cocoons, processing and weaving.

## Introduction

Sericulture is one of the promising enterprises supporting agriculture which may substantiate the income of the small and large farmers. Sericulture is an agro based labour intensive industry providing gainful employment mostly for rural people. Sericulture enterprise in its totality is along chain Industry form mulberry cultivation to fabric making. Sericulture is considered as a boon to many farmers in the drought prone areas in southern part of Karnataka like Ramanagara Districts when compared to food and other commercial crops. Being rural based labour intensive Industry sericulture is ideally suited for improving the social and economic standards of the rural poor.

Sericulture is an agro based provides a continuous income throughout the year. Sericulture serves as an important tool for rural reconstruction, benefiting the weaker sections of the Society; Sericulture provides not only periodical return within short period of time but also assures own family employment opportunities around the year. A number of new Technologies have been made by the scientists of research institutes which is a boon for the development of Sericulture Industry. Unless all these innovations reach the field the development would not take place. By realizing the need of extension activities to create awareness on the new innovations to the farmers, extension activities are being conducted regularly by the Sericulture extension personnel. Since knowledge on the improved Sericulture Techniques' and their adaptation or influenced by various factors like education, economic conditions of the farmers the study was undertaken to know the impact of Education and knowledge of improved practices on the adaptation of innovative Sericulture Technologies in Ramanagara District of Karnataka State. Sericulture plays a vital role in development of rural economy in India because of high employment oriented. Low capital intensive and remunerative nature of the production that churns out value added products of economic importance.

Sericulture helps the economy and generate higher income and employment. It is practiced a wide range of agro climatic region like forests, hilly areas and plains. In fact the recent Technology advancements have made it possible to practice it on an intensive scale. Mainly due to increased profits obtained from it when compared to most of the crops and enterprises.

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Sericulture is an agro based Industry; it involves rearing of silkworms for the production of raw silk. Which is the yarn obtained out of cocoons spun by certain species of insects? The major activities of Sericulture comprises of food plant cultivation to feed the silkworm which spin silk cocoons and reeling for value added benefits such as processing and weaving.

The breeding and rearing of silkworms for the production of silk a farmer undertaking Sericulture activities is called as Sericulture. Sericulture provides an excellent and unique opportunity for socio-economic progress of developing counties. It is well known as a highly employment oriented and low capital investment Industry. Sericulture is a livelihood activity that goes round the year and provides

remunerative income to farmers. This sector has low gestation, high returns and it is a women friendly occupation. Sericulture is ideal program for weaker sections of the society. It ensures monthly income to Seri culturists as one crop of silkworm can be reared and cocoons are produced within 25 to 27 and the farmers can directly sell them at the government cocoon markets and get the money directly on the same day without any delay.

Sericulture plays an important role in upliftment of the socio economic life of Indian rural folk. Sericulture Industry is the source of livelihood and provides employment to approximately 7.56 million persons in rural and semi urban areas in India. Of these a sizable number of workers belong to economically weaker section of the society. The growth in different areas of silk Industry in the past few years is not merely due to horizontal expansion but also a vertical improvement in productivity. Low capital investment and high employment potential, quick and high returns made sericulture a unique activity. It bridges agriculture and Industry at the same time. It is unique in the sense that from farm to fabric, the science of Botany, Zoology, Physics Chemistry and Engineering are all applied. Art, craft, creativity and aesthetics are added to these in equal measures. The end product enjoys place of paramount amongst all the fabrics, although it is ironical that the farmer who produces the basic material can hardly afford the luxury of the end product. It is village based activity catering to the predominantly urban needs. It is unlike other agricultural produce because it enjoys a premium by way of quick returns to the farmers and a favourable cost –benefit ratio. Silk enjoys prominent place in global market, which is evident from the increase of export and import of silk goods year by year. Sericulture being a labour intensive and cost effective activity has made the policy makers, administrators and scientists to explore and popularize the Sericulture activities throughout the country in order to raise the per capita income.

India is the second largest silk producing country in the world, next only to China, out of 5.76 lakh number of villages in India, Sericulture is practiced in more than 59,528 villages. (Meenal, 2008) Synthetic fibers have been dominating the market ever since nylon was commercially produced in United States of America in 1937. But still silk has its own place in the textile marketing. Among all the textile fibers, silk occupies a top place for the characters like softness, fineness, luster, dye ability and elegance. It has good draping quality also. Hence, silk is aptly called as the “Queen of fibers and Queen of textiles”. Silk has been intermingled with the life and culture of the Indians. India has a rich and complex history in silk production and its silk trade dates back to 15th century. India’s traditional and culture bound domestic market and an amazing diversity of silk garments that reflect geographic specificity has helped the country to achieve a leading position in silk Industry. India has the unique distinction of being the only country producing all the five known commercial silks, namely, mulberry, tropical tasar, oak tasar, eri and Muga, of which Muga with its golden yellow glitter is unique and prerogative of India. Haracters like softness, fineness, luster, dye ability and elegance. It has good draping quality also. Hence, silk is aptly called as the “Queen of fibres and Queen of textiles”.

## Objectives of the Study

- To study the profile of farmers in the study area
- To examine the effect of technology used in the cultivation by considering certain aspects that are related to the silk worm technologies and the output that will get from the sericulture.
- To study the relationship between the Technology and the productivity of the Sericulture in Kanakapura Taluk of Ramanagara District.
- To assess the production constraints in sericulture.

## Scope of the Study

Sericulture has attained a significant growth in the past four decades in India. The growth rate of raw silk production reduced in the later part of the last decade due to the reduction in mulberry area, but still there is an improvement in the silk production due to increased productivity.

The study is mainly concentrating on the Sericulture Production Technologies by the farmers in their cultivation of mulberry by considering the cost and the total output. In the present scenario Technology plays an important in all the sectors of the economy in this regard the study is focusing on the how Technology plays an important role in the productivity of the Sericulture. The study is conducted in Kanakapura Taluk, Ramanagara District of Karnataka which has considered being one of the leading silk producer places.

## Importance of the Study

Sericulture is considered to be one of the allied activities in the cultivation sector and it is said to be a growing activity. In the present context practice of Sericulture has undergone many Technical changes like in other cultivation; the most importantly the adoption of Technology. In the present days, adoption of Technology has also become a trend in the primary sector from few years. Here, the study is concentrating on the Sericulture Production Technologies adopted by the farmers in selected area i.e. Kanakapura Taluk of Ramanagara District. Hence, it is necessary to understand whether the modern Technology is better than traditional Technology. This is because in Sericulture some farmers follow the modern Technology just to earn more productivity or yield and some are still following the traditional method. The study tries to find out which method of Technology which gives a higher yield in Sericulture.

## Methodology

This study is exploratory and descriptive in nature that includes following methodology.

The study uses both primary and secondary data. Primary is used to obtain information regarding the study through the schedule interview method of randomly collected 90 samples in Kanakapura Taluk Ramanagara District of Karnataka. Secondary data is collected from government journals, publications and articles.

This study analyses data using econometric tools namely simple Linear Regression to identify the impact of Technology on the productivity of Sericulture. Charts and tables have been used to enhance presentation of findings. The socio-demographic variables involved in the study are- age,

gender. Marital status, education and occupation. Other independent variables include the silkworm breed, method of rearing house, fertilizers used. The dependent variables are compared with the dependent variable.

### Research Gap

Received literature along with the above theories and supported articles indicates the widespread use of Technology in Sericulture where they all concentrated on the socio economic factors, the constraints that has involved in the adoption of Technology and other issues which have mentioned in the above research issues but they didn't raised the issue of productivity and cost and benefits that has involved in the cultivation of mulberry cultivation. The study will be conducted in Ramanagara by taking Kanakapura taluk in to consideration which will be the area limited.

### Review of Literature

Review of related literature literally means reviewing already acquired knowledge in a detailed and completely connected way. It is a summary in which, various truths intensively studied are seen as an organised whole, accurately related and well unified researcher takes the advantage of the past as a result of constant human endeavour.

**Tippawan Limunggura.et.al (2007)** the paper entitled on *“Sericulture Technology of Farmer Network under Community Reeling Factory”*. Community reeling has been established to solve the problem of reeling labours and improve the quality of Thai hybrid silk yarn in weaving industry. To find the fact of farmer network's Sericulture technology under community reeling factory is important to increase the chances of successful management.

**Masaaki Yamada .et.al (2015)** the paper entitled on *“Transfer and Localization of Sericulture Technology for Redeveloping Silk Industry in Central Asia-An integrated Effort of Academic Research and Extension-“*. Tokyo University of Agriculture and Technology has been collaborating with the Uzbek Ministry of Agriculture and Water Resources and the Uzbek Research Institute of Sericulture on two rural development projects in the Republic of Uzbekistan. This cooperative effort is sponsored by the Japan International Cooperation Agency.

**Sivapatham Sivakumar .et.al (2015)** the paper entitled on *“Sericulture Scenario in Sri Lanka – a re-emerging Industry for Poverty Alleviation in Sri Lanka”*. Sericulture is an art of rearing silkworm from the production of silk and bi product. Sericulture as a cottage industry has flourished in many countries. China and India contributes more than 60 percent of world's annual production of silk. Sericulture has a major role in the employment generation for the rural people. The study has been undertaken to analysis of re – emerging of sericulture industry for poverty alleviation in Sri Lanka.

**B.R.Patil, K.K. Singh.et.al (2009)** the paper entitled on *“ Sericulture: An Alternative Source of Income to Enhance the Livelihoods of Small-Scale Farmers and Tribal Communities”*. This paper a summary review of the development and implementation of BAIF's sericulture programme in the state of Maharashtra. BAIF Development research foundation (BAIF), a national NGO based in Pune, Maharashtra, has been active in developing and promoting better livelihood options for the rural poor in the country.

**Eswarappa Kasi (2013)** the paper entitled on “*Role of Women in Sericulture and Community Development: A Study from a South Indian Village*”. In any discourse on sociology and anthropology, one fact that clearly emerges is that women can generally be trusted to perform their duties with utmost care and attention. This is more so in the case of agriculture and allied activities. No wonder women are playing a very important role in the sericulture industry. Their qualities like maternal instincts and loving care of those under their charge prove to be very helpful in the successful breeding of silk worms.

**Mr.R.Ranjith Kumar .et.al (2019)** the paper entitled on “*Automatic Feeder for Sericulture*”. Sericulture, or silk farming, is the cultivation of silkworms to produce silk. Sericulture has become an important cottage industry in countries like Brazil, China, France, India, Italy, Japan, Korea, and Russia. Today, China and India are the two main producers with more than 60 percent of the world's annual production. The major hurdle in this field is shortage of manpower. From the survey it is absorbed that the most time-consuming process in sericulture is feeding of worms with mulberry leaves. As the feeding system for sericulture is concerned, the technologies available in market are of no match to feed the worms efficiently. This project “Automatic -Feeder for Sericulture” aims to provide the solution for the existing problem.

**P.Kumaresan.et.al (2005)** the paper entitled on “*Productivity and Profitability in Rainfed Sericulture – A Study in the District of Chamaraja Nagar in Karnataka*”. The resources-use pattern and profitability of dry land Seri cultural operations have been analysed. The study has been conducted with the information collected by interview method from randomly selected 67 rainfed-sericulture farmers in the Chamaraja Nagar district of Karnataka. It has been revealed that the cash inputs such as chemical fertilizers and disinfectant chemicals are used less than the recommended quantities, whereas labour is used in excess.

**B.T.Sreenivasa.et.al (2014)** the paper entitled on “*Analysis of Yield Gaps in Sericulture: A Cross Sectional Study in Chitradurga District of Karnataka State*”. The study on the yield gaps in mulberry leaf and cocoon production was taken up in Chitradurga district of Karnataka at farmer's level. A total of 155 samples were drawn from three taluks at random. The magnitudes of yield gaps at different levels were quantified and the possible reasons for such existence were reported.

**Manjunatha et.al (2018)** the paper entitled on “*Arduino Based Automated Sericulture System*”. Sericulture alludes to the raising of silkworm to deliver silk. India is the second biggest maker of silk by delivering 15 percent of the aggregate silk creation alongside China. Temperature, Relative Humidity, Light force and Atmospheric air assumes an imperative part in the advancement of sound silkworms and legitimate encouraging ought to be done according to the prerequisites in each stage. Occasional varieties assume an imperative part in the development and advancement of silkworm.

### **Findings and Suggestions**

The study emphasised on the technological impact of sericultural production activity which involved both primary data through scheduled interview method and secondary book through journals, books, articles, newspaper articles. The study explains the relationship between dependent variables which is output of the production and other independent variables which has mentioned in the study that is age, education, secondary occupation, caste and most importantly silkworm technology that includes rearing method, leaf production, marketing strategy, technology in terms of cost, training and traditional pattern.

Findings for the study has been developed with the help of data interpretation in terms of graphs and also econometric analysis of correlation.

### Major findings

The major findings identified in the present is on the respondent's socio-economic conditions or their profile with respect to their income and awareness towards the technological implications in sericulture. Most of the farmers in the study have started adopting the new technology because of the more yield they receive from the production and also we can make analysis of the educated farmers have given more preference to the scientific knowledge towards the cultivation. When we observe the overall knowledge of farmers about improved production technologies of sericulture comparatively it is increasing and growing as commercial activities. The relationship between selected independent variables and level of the farmers is gradually increased compare to the other agriculture and allied sectors as such

### Suggestions for Improvement/Further Research

Since the study is conducted in the village that is mainly considered to be the primary sector in the economy and which is said to be the backbone of our country. If we see from the individual point of view below are the policy suggestions.

With the fast developing of all other sectors like industry and communication agriculture is lagging behind initially that is during 1950 GDP from the agriculture is high than the sectors but gradually that has started decreasing. Proper initiative should be taken by the government for the development of agriculture. In this the technology also plays an important role in determining this. From the above analysis it has found that adoption of technology results in positive result and it has also found that many variables have determine the dependent variable that has mentioned in the study.

Only thing that is needed is to provide proper education facilities to the farmers in related to the adoption of technology in cultivation and also there should be Chawki centers that has to be opened in each district that helps the farmers to adopt the technology and make their productivity more

If we see from the government point of view, Government of India has taken several policies with regard to the development of Sericulture in our country. Some of them are like;

- Silk worm pest and disease control act of 1943
  - Silk worm seed act of 1952
  - Silk transaction act of 1969
  - Other amendments deals with
  - Quarantine measure to control pest and disease
  - The licensing or rearers
  - Controlling the seed production and distribution
  - Prohibiting the sale or purchase of silk worm cocoon and raw silk except in the cocoon market and silk exchanges respectively established under the act
  - Enhance penalties for certain offences
- Computer allocation in all research centres of sericulture

## Conclusion

The study is mainly conducted to know the technological impact on sericulture productivity in respect to the Kanakapura taluk in Ramanagara district. Technology plays an important role in all the sectors of the economy in terms of increasing the productivity most importantly to make profit. Now a days in agricultural sector technological implications has gained more importance as traditional method of cultivation or farming will lead to more yield in production. Sericulture is said to be the commercial crop stand next to china in respect to the productivity. The present study focused on the technological applications in production of the sericulture in terms of rearing, warehouse, breeding, mulberry cultivation, marketing strategies of cocoons by considering the various market strategy.

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