



ORIGINAL RESEARCH PAPER

Economics

GROWTH AND DEVELOPMENT PROSPECTS OF SERICULTURE SECTOR

KEY WORDS: Mulberry Cultivation, Silkworm Rearing, Silk Cocoons, Raw Silk Production, Economics of Growth and Development.

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ABSTRACT

Sericulture is nothing but mulberry cultivation, silkworm rearing and production of silk cocoons, raw silk and in turn silk fabric. Sericulture generates gainful employment and regular income, which leads to economic development and improvement in the quality life for the people in the rural areas. Sericulture activity plays an important role in alleviating poverty and also it is helpful in reducing the migration of rural people to urban areas in search of employment as it generates employment throughout the year. Hence developing nations like China and India have taken up sericulture activities to provide employment to their population. India is the second largest producer of silk in the world next to China. Sericulture industry has been generating employment in rural and semi-urban areas in India. Of these, a sizeable number of workers belong to the economically weaker sections of the society, including women. However in the recent years the sericulture performance has been low and therefore in this paper an effort is made to study the trends in Area, Production of cocoons and Raw silk at the all India level and Karnataka state. This paper is based on the secondary data and CGRS are worked out to look at the performance for about four decades. After the analysis the paper concludes that the sericulture performance has been declining over a period of time. This is mainly due to the reduction in the mulberry area and also to some extent the economic recession of 2008 and the current situation.

INTRODUCTION:

Agriculture has been the major occupation of the people in India. Though industrialization is growing in the Indian economy. Agriculture has been providing employment in rural and semi-urban areas in India and Karnataka. In the rural area around 60 percent of the people are depending on agriculture for their livelihood (NSS Survey). Some of the cash crops contributing to economic development in India are sugarcane, cotton, jute & Mesta, Tea, coffee, Rubber, tobacco, Oil seeds, (Groundnut) silk and silk fabrics.

The major silk producers are China, Japan, Brazil, African countries, Thailand, Vietnam, Indonesia, Egypt, Iran, Srilanka, Philippines, Bangladesh, Nepal, Myanmar, Turkey, Mexico, Uzbekistan and the United States, etc. And the most silk consumers of the world are China, India, USA, Japan, Italy, France, United Kingdom, Switzerland, Germany, UAE, Korea, Vietnam etc. At present, sericulture and its products are being demanded in most of the developed countries, which leads to high demand in the global market. It plays an important role in foreign exchange earning opportunity for the developing countries in the world (Gregory, 1994). Nowadays Sericulture is the well- established agro based cottage industry. China is the world's largest producer of silk. China is the first country in the world to raise silkworms and produce silk. According to the Chinese legend, the technology of raising silkworms was invented and introduced by Leizu, the wife of Huangdi, which indicates the long history of Chinese sericulture. Sericulture was introduced for the first time in China by Hoshomin, the Queen of China. For a long time, sericulture was considered to be a national secret by the Chinese Government and as an industry it was not known to other countries and Later it was introduced to Europe, Japan as well as India (Kumaresan, 2002).

India is the second largest producer of silk in the world after China. About 97 per cent of the raw silk comes from five Indian states, namely, Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu & Kashmir (Sushikaran, 2020). India is the only country to produce all four varieties of silk namely Mulberry, Tasar, Eri, and Muga. Nowadays Sericulture is the well- established agro based cottage industry. In rural economy of the country sericulture industry occupies a pride place. The main advantage of sericulture for the farmer is that the whole family can lead their life depending on this occupation. In a year it is possible to harvest five to six crops

but sericulture activities are having most significant effect on employment of farming family (Hanumappa and Erappa, 1985). The largest practiced sericulture in India is mulberry. Mulberry silk contributes for about 80 per cent for the entire silk production in the country. Sericulture is one of the cash crops in agriculture sector as it gives cash returns within a short period of time (two months).

Karnataka is the largest producer of silk in India. The state produces on an average of around 8,200 metric tonnes of raw silk every year (www. Maps of India.com 2018). Sericulture has a long history of more than about 215 years. In Karnataka state during 1785, the Tiger of Mysore, Tippu Sultan introduced sericulture in Mysore kingdom. He wanted Mysore as foremost among the silk producing states and the dream of this great ruler became true during later period. During those years sericulture in Karnataka has seen many ups and downs in its long journey. It is transformed into a model in mulberry sericulture in the country. During early 19th century the world sericulture was collapsing while Mysore Sericulture industry sustained with all adds as it generated employment or about 10.67 lakh rural, urban semi people and one hectare of mulberry cultivation provides year long continuous employment for a family (Roy Chandan and Mukherjee 2015). Sericulture is mainly spread over in the southern part of Karnataka as the southern part of Karnataka the climate is very much suited to mulberry cultivation and silk worm rearing.

The present paper is an effort to study the performance of sericulture industry in terms of area, production of silk cocoons and raw silk based on the secondary data collected for about four decades. The paper uses CGR by using regression analysis.

Performance of Silk Industry in India and Karnataka:

Sericulture sector was growing faster and there was encouragement from the government of Karnataka and Government of India to develop the sericulture industry there is an increase in the area under mulberry and increase in raw silk production and it is growing at the rate of 5.66 per cent including the production, Which is growing at the rate of 10.38 percent at the all India level (Table - 1). Where as in Karnataka, the growth rate of area under raw silk production was at the rate of 2.50 per cent and production of raw silk is grown at the rate of about 8.85 per cent which is lower than the all India

level but it is positive. Therefore, in the first decade of rapid development the GR is positive both in the state and the country.

The area and raw silk production started declining in the second decade (1990-91 to 1999-00) as compared to the first decade (1980-81 to 1989-90), where as production is increasing but although at a lower rate than the earlier decade. This is true for both Karnataka as well as India. The table clearly reveals that in the first decade all India performance was really good and in the second decade it started showing declining trend as it is negatively growing at the rate of 3.44 per cent at the all India level and in the state it is at the rate of 1.03 per cent. The production is low but it is positive growth rate but the industry performance started declining.

Similar trend has been noticed even during the third period i.e., from 2000-01 to 2009-10 where area is declining at the rate of -2.02 per cent and production is increasing at just 2.12 per cent which is again lower than the earlier period. When we observe the same table in Karnataka state also both the area and production started declining in the third period that is 2000-01 to 2009-10. Hence it can be concluded that in the state both area and production of raw silk started declining.

Table - 1: CGR of the Raw Silk Production in India and Karnataka

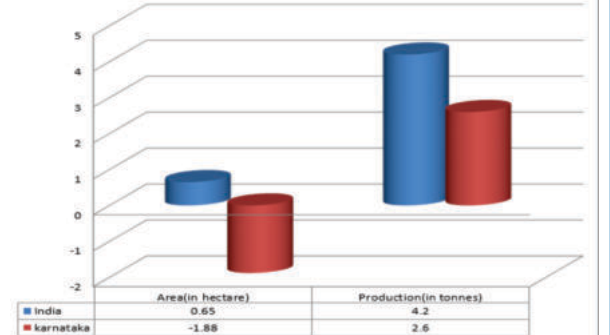
Years	All India		Karnataka State	
	Area (in hectare)	Production (in tonnes)	Area (in hectare)	Production (in tonnes)
1980-81	1,70,000	5,041	1,16,313	2,878
1981-82	1,79,949	5,249	1,19,838	3,000
1982-83	1,96,848	5,748	1,23,113	3,200
1983-84	2,06,913	6,423	1,25,900	3,345
1984-85	2,14,838	7,673	1,26,567	4,059
1985-86	2,17,839	7,997	1,32,420	4,300
1986-87	2,29,758	8,900	1,39,109	4,671
1987-88	2,41,603	9,498	1,40,456	4,970
1988-89	2,68,063	10,651	1,41,285	5,317
1989-90	2,94,241	12,016	1,46,285	6,076
CGR	5.66	10.38	2.59	8.85
1990-91	3,16,610	12,560	1,49,785	6,214
1991-92	3,31,237	11,763	1,53,085	5,489
1992-93	3,42,764	14,168	1,57,935	7,285
1993-94	3,19,215	13,691	1,60,835	8,250
1994-95	2,83,093	14,579	1,67,778	8,865
1995-96	2,86,496	13,909	1,67,422	8,264
1996-97	2,80,651	14,126	1,60,000	8,327
1997-98	2,82,244	15,236	1,66,000	9,236
1998-99	2,70,000	17,544	1,41,079	8,982
1999-00	2,27,000	15,214	1,28,618	8,855
CRG	-3.44	3.04	-1.03	4.83
2000-01	2,15,000	15,857	1,22,388	8,791
2001-02	2,32,076	17,351	1,16,158	8,728
2002-03	1,94,463	16,319	88,903	6,760
2003-04	1,85,120	15,742	79,778	5,949
2004-05	1,71,959	16,500	77,998	7,302
2005-06	1,79,065	17,305	87,734	7,471
2006-07	1,91,896	18,475	97,647	7,883
2007-08	1,84,928	18,320	91,434	8,240
2008-09	1,77,943	18,370	77,329	7,238
2009-10	1,83,773	19,690	82,098	7,360
CGR	-2.02	2.12	-3.32	-0.64
2010-11	1,70,314	20,410	62,697	7,338
2011-12	1,81,089	23,060	70,958	7,796
2012-13	1,86,015	23,679	74,128	8,219
2013-14	2,08,947	26,480	80,873	8,574
2014-15	2,16,810	28,467	88,489	9,645
2015-16	2,23,926	28,523	92,990	9,823

2016-17	2,16,810	30,348	97,492	9,571
CGR	4.76	6.64	7.57	5.2
CGR for the whole period	0.65	4.2	-1.88	2.6

Source: Government of India, Central Silk Board (2019), Compendium of Statistics of Silk Industry, Bangalore.

During the last period i.e., from 2010-11 to 2016-17 the industry started performing really better as the area under mulberry started growing at the rate of 4.76 per cent and the production is grown at the rate of 6.64 per cent at the all India level. Even in Karnataka state the performance seems to be positive as it is growing at the rate of 7.57 per cent area and 5.20 per cent production of raw silk. During this period the government started protecting the industry from the Chinese competition. Towards this, for more clarity, Graph - 1 is given.

Graph - 1: CGR of the Raw Silk Production in India and Karnataka



Performance of Silk Industry in Terms of Area Across Major Silk Producing States:

The Table-2 reveals that during 1980-81 to 1989-90, the area under Mulberry cultivation grew at a rate of 5.66 per cent at all India level and the highest growth rate was witnessed in the state of Jammu and Kashmir 14.34 per cent where as the growth rate was least in Karnataka constituting only 2.59 per cent. Andhra Pradesh stands second highest in terms of performance. In the second decade, the growth rate declined by 3.44 per cent at the all India level and the decline was largest in Tamilnadu constituting 14.81 per cent and it is declined by 0.66 per cent in Karnataka. Though there was a decline at the all India level, states like Jammu and Kashmir, Andhra Pradesh and West Bengal witnessed positive growth rate in the area under mulberry cultivation. Similarly, in the third decade, a decline of 2.02 per cent was seen at the all India level and in states like Karnataka, Andhra Pradesh and West Bengal whereas the positive growth rate was seen in Tamilnadu and Jammu and Kashmir. However, during 2010-11 to 2016-17, the growth rate was positive at the all India level as well as in all major silk producing states. To summarize, it can be said that during the period between 1980-81 to 2016-17, the area under mulberry cultivation has declined at the all in India and in the states like Karnataka and Tamilnadu whereas it is increased in Andhra Pradesh, West Bengal and Jammu and Kashmir to some extent.

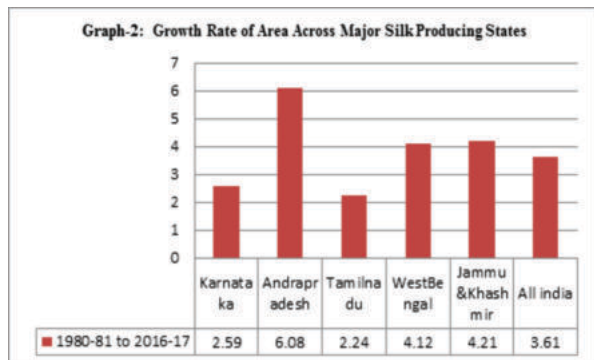
Table - 2: Growth Rate of Area Across Major Silk Producing States:

Year	Karnataka	Andhra Pradesh	Tamilnadu	West Bengal	Jammu & Kashmir	All India
1980-81 to 1989-90	2.59	12.24	8.08	5	14.34	5.66
1990-91 to 1999-00	-0.66	8.22	-14.81	1.45	25.94	-3.44
2000-01 to 2009-10	-3.52	-5.47	5.59	-2.34	0.17	-2.02
2010-11 to 2016-17	6.59	1.03	6.56	3.53	2.76	4.76
1980-81 to 2016-17	-19.2	0.16	-2.81	0.25	8.8	-0.65

Source:

Government of India. Central Silk Board (2019), Statistical Biannual, Bangalore.

As it is already mentioned elsewhere the sericulture industry flourished in five states in India. In the three states, which are located in Southern India, Karnataka, Andrapradesh and Tamilnadu) Mulberry silk is produced as the climate and other features are suitable. However, Tassar, Eri, muga silk cocoons are also produced in a limited extent in these three states. Kashmir and two states located in northern part of India (West Bengal and Jammu and Khashmir) in these two states other three varieties viz, Muga, Eri and Tassar silk cocoons are produced. However, most of the silk produced in India is only mulberry silk constituting more than 90 per cent of silk. Therefore, it is also planned to study the performance of the silk industry across the five major producing states in the country over a period of about 40 years. Towards this, for more clarity, Graph - 2 is given.



Performance of Silk Production Across Major Silk Producing States in India:

Production of silk cocoons intern raw silk play an important role in the sustenance of the industry in turn the sericulturists. Even the price for the silk cocoons and also the raw silk are very important as they have both forward and backward linkages. Therefore, in this section growth performance of raw silk across five states presented.

The Table-3 reveals that during 1980-81 to 1989-90, the production under mulberry cultivation grew at the rate of 10.21 per cent at the all India level and the highest growth rate was witnessed in the state of Andhra Pradesh (18.36 per cent) where as the growth rate was negative in Jammu and Kashmir (-11.10 per cent). In the second decade, the growth rate was 2.59 per cent at the all India level and the highest growth rate was seen in Jammu and Kashmir. While the growth rate remained positive in the all major silk producing states, however negative GR was noticed in Tamilnadu. In the third decade, the growth rate of 12.28 per cent was seen at the all India level and it was highest in Tamilnadu. States like West Bengal, Jammu and Kashmir also saw a positive growth where as Karnataka and Andhra Pradesh saw a declining trend. However, during 2010-11 to 2016-17, the growth rate was positive at the all India level as well as in all the major silk producing states. To summarize, it can be said that during the period between 1980-81 to 2016-17, the production of raw silk has gone up in India and in all the major silk producing states. Towards this, for more clarity, Graph - 3 is given.

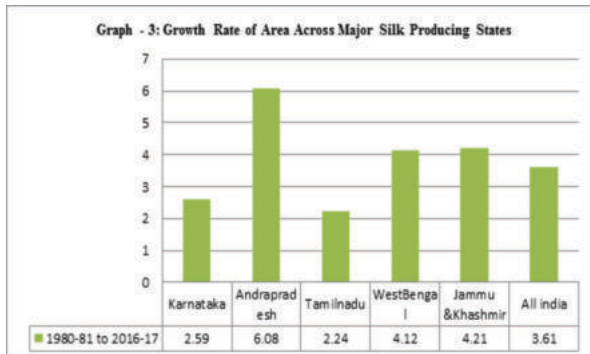
Table - 3: Growth of Silk Production Across Major Silk Producing States:

Year	Karnataka	Andhra Pradesh	Tamilnadu	West Bengal	Jammu & Kashmir	All India
1980-81 to 1989-90	8.85	18.36	5.8	7.83	-11.1	10.21
1990-91 to 1990-00	4.83	2.43	-3.63	4.88	18.83	2.59
2000-01 to 2009-10	-0.64	-0.39	13.52	3.33	3.33	12.28

2010-11 to 2016-17	5.03	1.29	8.09	5.82	2.78	4.19
1980-81 to 2016-17	2.59	6.08	2.24	4.12	4.21	3.61

Source:

Government of India (2019). Statistical Biannual, Central Silk Board, Bangalore.



Growth of Various Varieties of Raw Silk:

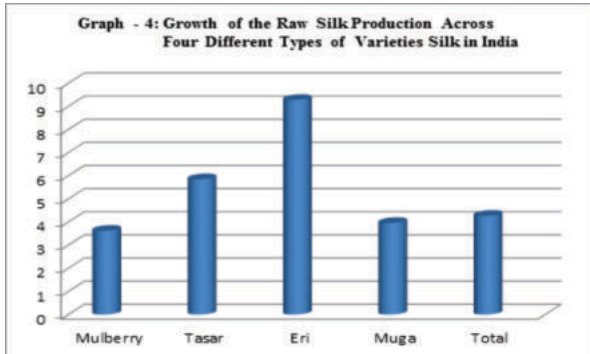
As mentioned earlier, in the country, all the four varieties of silk are produced in the country. Though mulberry is the largest variety of silk produced other three varieties also produced, which is unique in the country. Hence an effort is made in this section to study the performance of all the four varieties of silk (Table - 4). Among the four varieties of silk, over a period of time, Eri silk has been growing at the highest rate compared to other three varieties of silk. Mulberry silk has shown that during the first period 1980-81 to 1989-90 the CGR was 10.17 per cent, which started declining then onwards. Though there is an increasing trend during 2010-11 to 2016-17 the same table clearly reveals that there is lot of uncertainty in the growth of mulberry silk varieties produced in the country as there is no clear cut trend in terms of the production of all the four varieties of silk. Towards this, for more clarity, Graph - 4 is given.

Table - 4: Growth of the Raw Silk Production Across Four Different Types of Silk varieties in India:

Years	Mulberry	Tasar	Eri	Muga	Total
1980-81 to 1989-90	10.17	6.08	17.56	3.38	10.22
1990-91 to 1990-00	2.54	-6.76	3.94	2.81	2.12
2000-01 to 2009-10	1.24	12.54	7.75	1.65	2.12
2010-11 to 2016-17	4.48	10.75	12.23	8.29	6.23
1980-81 to 2016-17	3.62	5.85	9.28	3.96	4.27

Source:

Government of India. Central Silk Board (2019), Statistical Biannual.



CONCLUSION:

India is the unique country in the world where all four varieties of silk namely mulberry, muga, tasar and eri are produced. It clearly indicates that, there is need for encouraging and strengthening the Indian sericulture industry and farming to fulfil the national and international demand for silk from India. Indian silkworm breeds are

multivoltine and though good progress has been achieved in multivoltine × bivoltine silk production, the quality still remains inferior to that of Chinese breeds which are bivoltine. Recently, Central Silk Board has started a testing laboratory for Silk and Zari at Kancheepuram to facilitate customers, producers and other stakeholders for spot non-destructive testing of silk and zari material. More importantly, 'Silk Mark' Scheme has been introduced by Silk Mark Organization of India (SMOI), a registered society, sponsored by the Central Silk Board, Ministry of Textiles, Government of India. The Silk Mark is a quality assurance label for the assurance of pure silk and in addition serves as a brand for generic promotion of Pure Silk. The Silk Mark is under the process of registration as a Trade Mark.

Indian sericulture is not only vast, widely dispersed but also multifacets in nature involving silkworm seed sector, cocoon sector (cultivation of food plants and silkworm rearing) and post cocoon sector (silk reeling, spinning, twisting, processing and weaving). Although collaborative research activities promoted and implemented by the Central Silk Board in association with National level R&D Institutions, State Sericulture Research and Development Institutes, Universities, Department of Science and Technology, Department of Biotechnology and other Private and International Research and Development institutions have resulted in the development of appropriate technologies towards attaining higher quality and productivity levels of Indian silk. Even then, over a period of time it is observed that there are lots of ups and downs in terms of area under mulberry cultivation, silkworm rearing and raw silk production. Towards maintaining stability the Govt's role in policy making towards international trade of silk will go a long way strengthening it.

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