



Research Article

GROWTH RATES AND TRENDS IN AREA, PRODUCTION AND PRODUCTIVITY OF SERICULTURE IN INDIA AND ANDHRA PRADESH

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Abstract: Sericulture in India dates to 15th century. Silk is one of the world's finest natural fibres and is called "the queen of fibres". India along with China accounts for 60% of the world's silk production. Andhra Pradesh is the second largest producer of silk in India. With its vast benefits sericulture provides employment in many ways including growing of mulberry crop, cleaning and maintaining the sericulture unit and cutting the leaves to feed worms, reeling of silk etc. Present study was undertaken to study trends and growth rates of area under mulberry cultivation, silk production and productivity. Study revealed that, growth rates for mulberry cultivated Area, silk production and productivity of silk are positive and significant in India. In Andhra Pradesh growth rates in area and production were positive but remained non-significant whereas productivity shown positive and significant growth indicating that, sericulture industry is growing day by day and increasing its profitability. Positive trend was observed in mulberry cultivated area, production and productivity of silk. With the limited available land productivity should be increased by utilizing advanced technologies.

Keywords: Sericulture, Silk, Growth rates and Trends

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Introduction

Sericulture refers to rearing of silkworms to produce silk. Sericulture involves number of operations such as moriculture, silkworm rearing and silk reeling. India is the only country which produces all types of silk namely eri, tasar, muga and mulberry of which mulberry and eri are extracted from domesticated silkworms where as tasar and munga are wild silkworms. Naik (2017) reported that sericulture can be used as a tool to reduce the increasing unemployment of the country by way of providing necessary resources and training needs of the unemployed in the country. Major silk producing states in India are Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal, Assam, and Jammu and Kashmir states. Country stands first in silk consumption and second in the production of silk after China contributing 15% to world's silk production, employing a massive population of 8.6 million people after agriculture. In Andhra Pradesh sericulture employs 67,750 farmers and 1.07 lakh weavers and is second largest silk producing state in the country after Karnataka producing 8422 MT (2021) with major silk producing areas namely Dharmavaram, Patur, Peddapuram, Rayadurgam and Poddutur, etc. The state is known to produce bivoltine silk of international grade. Climatic condition of Andhra Pradesh is suitable for sericulture with Rayalaseema region being the major producer despite of its low rainfall. Rathnam et al., (2012) [1] reported that in view of the income generating potential and income generation sericulture is regarded as one of the means of alleviating rural poverty and increasing rural prosperity. In this context the present study was taken to study the Trends and Growth rates of area under mulberry, production, and productivity of silk in India and Andhra Pradesh [2-7].

Material and Methods

For the present study secondary data collected from central silk board, Bangalore and annual reports of Central Silk Board for the period of 2010-11 to 2020-21.

Data regarding area, production and productivity of silk was collected, trends and growth rates were estimated using CGR-Compound Growth Rate's exponential growth formula [8-16].

$$Y = a b^t$$

Where, Y= Dependent variable for which growth rate is estimated

a = Intercept

b = Regression coefficient

t = Time variable

As the model is multiplicative the function was transformed to simple logarithmic form as below:

$$\ln Y = \ln a + t \ln b$$

The per cent compound growth rate (CGR) was estimated using the formulae

$$CGR = (\text{Anti } \ln \text{ of } b - 1) \times 100$$

Growth rate is indicated by the value and sign of 'b' coefficient. If coefficient is statistically significant and positive then growth of the calculated parameters is positive or accelerating whereas negative value of 'b' coefficient indicates negative or decelerating during the reference period.

Results and Discussion

CGR's were analyzed for Area under mulberry, production, and productivity of silk in India as well as Andhra Pradesh for the period of 11 years from 2010-11 to 2020-21. Trends in under mulberry, production and productivity of silk were also analyzed for the period of 9 years till 2030.

Growth rates of area under mulberry cultivation

The results from table 1 on CGR's of Area under mulberry cultivation showed positive and significant growth rate of 3.39% at all India level where as in Andhra Pradesh the growth rate was positive with 0.36% but remained non-significant.

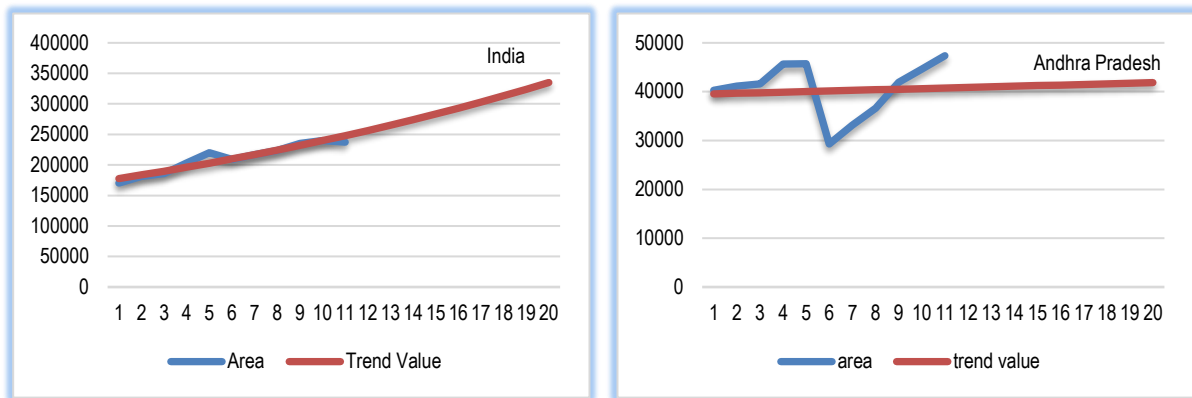


Fig-1 Trends in area of mulberry cultivation in India and Andhra Pradesh

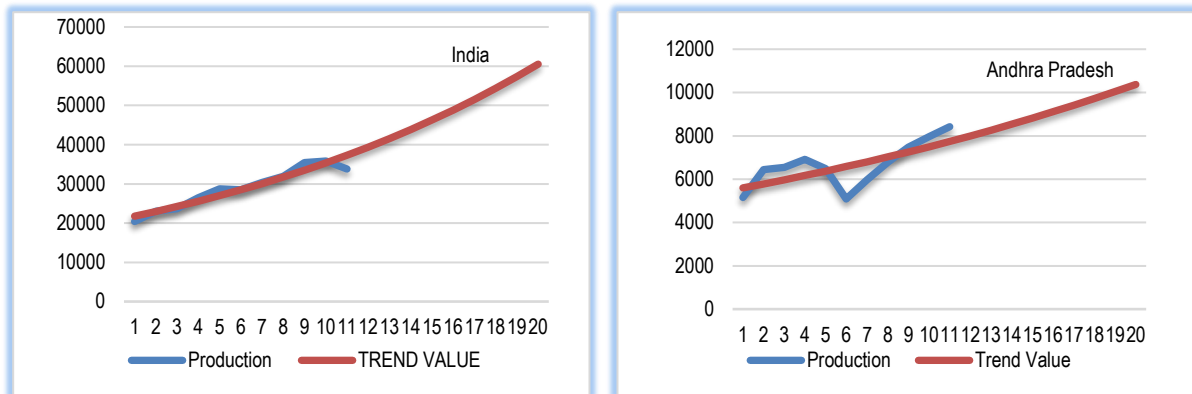


Fig-2 Trends in silk production in India and Andhra Pradesh

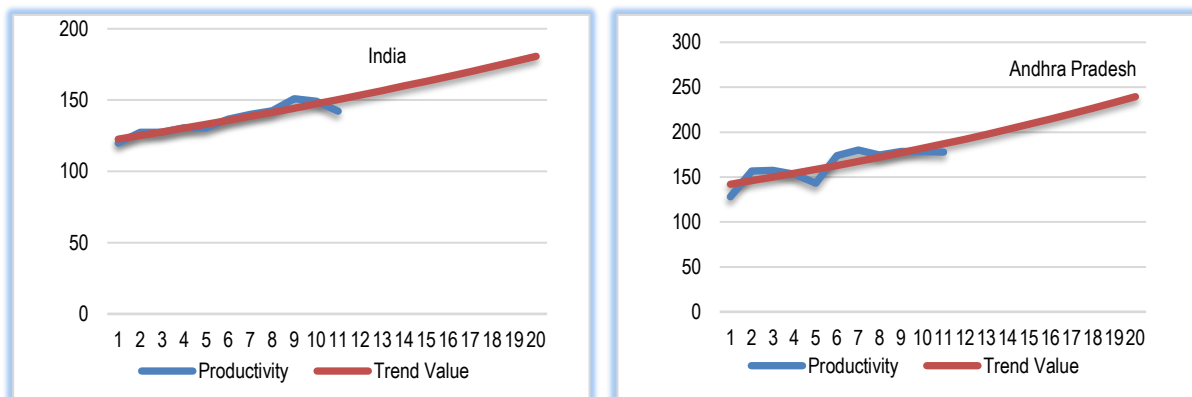


Fig-3 Trends in silk productivity in India and Andhra Pradesh

Table-1 CGR of mulberry area, Silk production and Productivity

India			
	Area	Production	Productivity
CGR	3.39***	5.53***	2.06***
R ²	0.91	0.93	0.87
Andhra Pradesh			
	Area	Production	Productivity
CGR	0.36 ^{NS}	3.29 ^{NS}	2.79**
R ²	0.0064	0.46	0.67

** - Significant at 5%, *** - Significant at 1%, NS - Non-significant

This was because rapid urbanization of villages has encouraged people moved to well-paid jobs. Results are in line with the findings of Vishakanta (2018) [17]. As shown in [Fig-1] trends shown growth rate in Area under mulberry cultivation in India as well as Andhra Pradesh. Even though there are fluctuations in total area under mulberry the overall cultivated area has been increasing. Bhat *et al.*, (2014) [18] reported that mulberry cultivated area has shown a marginal growth in India.

Growth rates of Silk Production

Production of any industry can be increased by following proper package of

practices. The results from table 1 showed that in India area under mulberry cultivation showed positive and significant growth rate of 5.53% because of increasing area under mulberry crop and emerging technologies whereas Growth rate in production of silk was positive yet non-significant because of massive imports lowcost silk from China. Results were in line with the results of Vishakanta (2018) and Manjunath *et al.*, (2015) [19].

As shown in [Fig-2] trends in growth rates for silk production were positive in India as well as Andhra Pradesh. This is because of increasing awareness on improved technological practices in sericulture.

Growth rates in Productivity of silk

The results from table 1 showed that there was a positive and significant growth rate of 2.06% and 2.79% in Andhra Pradesh. This was since area under mulberry cultivation and production were on increasing trend. The results were like the findings of Vishakanta (2018) and Manjunath *et al.*, (2015).

As in [Fig-3] trends in growth rate of productivity have shown positive and increasing trend in India as well as Andhra Pradesh. This is due to increasing trends in area as well as production.

Conclusion

Sericulture being the most profitable subsidiary industry is growing brightly in India as well as Andhra Pradesh. The growth rates of area under mulberry, silk production and productivity in India were positive and significant during the whole period from 2010-11 to 2020-21. Silk productivity has shown positive and significant growth, whereas production of silk and area under mulberry has shown positive and non-significant growth. Mulberry cultivated area, production and productivity of silk have shown positive trends for the period of nine years.

Even though all the three measures have shown fluctuations in India as well as Andhra Pradesh growth rate remained positive. India being the largest consumer of silk in the world, production and productivity need to be increased with limited available land. This can be achieved by way of adopting new technologies like precision sericulture, technological and economic research in sericulture industry, standardization and quality control of silk and silk products and most importantly equipping farmers with knowledge on sericulture and rationalization of marketing and stabilization of prices of silk cocoons and raw silk, could expand silk industry better than ever before. Application of Research: Study on trends and growth rates in sericulture in India and Andhra Pradesh helps to increase awareness on profitability of sericulture industry and provide incentives to develop new technologies which increase production in the limited available land and in formulation of policies to increase production and productivity.

Application of research: Study on trends and growth rates in sericulture in India and Andhra Pradesh helps to increase awareness on profitability of sericulture industry and provide incentives to develop new technologies which increase production in the limited available land and in formulation of policies to increase production and productivity.

Research Category: Agricultural Extension

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Study area / Sample Collection: Dharmavaram, Patur, Peddapuram, Rayadurgam and Poddutur, Andhra Pradesh, India

Cultivar / Variety / Breed name: Mulberry and Silk

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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