

## Impact of Socio-Economic Parameters on Knowledge Levels of Mulberry Growers In Chittoor District of Andhra Pradesh

A. Padmaja\* and G. Savithri

Department of Biosciences and Sericulture,  
S.P. Mahila University, Tirupati (Andhra Pradesh), India.

(Corresponding author: A. Padmaja\*)

(Received: 19 September 2023; Revised: 20 October 2023; Accepted: 25 November 2023; Published: 15 December 2023)

(Published by Research Trend)

**ABSTRACT:** Silk farming is important agro-based rural industry that plays an important role in the rural economy and provides livelihood throughout the year. Technologies developed by the scientists ushered in the qualitative and quantitative characteristics of the cocoon crops. Still, there is a wide gap between the potential yield and the farmer's yield. The quality and productivity of cocoon crops mainly depend on the level of knowledge and adoption of advanced technologies by sericulture farmers. Knowledge has been found to have stronger impact on enhancing productivity in agriculture and its allied sectors. Technology advancement, transfer of technology, and its adoption to promote the overall development of sericulture industry. Obviously, knowledge of improved technologies plays an important role in the adoption of improved technologies and in the enhancement of the qualitative and quantitative characteristics of cocoon crops. Socio-economic factors may influence the level of knowledge and, in turn, the adoption of the improved technologies. Therefore, the present investigation focused on understanding the impact of socio-economic determinants such as education, age, experience, family size, information seeking behaviour, income, etc. on the knowledge level of the sericulture farmers in Chittoor district of Andhra Pradesh. The study revealed that socio-economical parameters have a profound influence on the knowledge level of sericulture farmers. Farmers with an age group of 36–55, high school education, small family size, experience, and a high-income level had a good knowledge level.

**Keywords:** Impact, Socio-economic factors, Knowledge, Seiculturists.

### INTRODUCTION

Sericulture is the art of producing silk through cocoon production by rearing silkworms. Technically speaking, Sericulture is comprised of two major activities: I Mulberry cultivation and (ii) Silkworm rearing (Shashi Kanta, 2017). Sericulture is the rearing of silkworms on mulberry or non-mulberry-feeding plants in order to produce different types of silk. It is a living culture as well as a tradition of our country. It is a farm-based business operating at the cottage and small-scale levels. Sericulture has developed into a significant economic activity due to its quick gestation, frequent and high income, and year-round activity.

Sericulture offers productive employment, economic growth, and an improvement in the quality of life in rural areas, and the sericulture industry provides employment not only in rural areas and semi-urban areas, but especially in socially underprivileged groups Vani Sree *et al.* (2023). As a result, sericulture becomes crucial for anti-poverty programmes and discourages rural residents from moving to urban areas in pursuit of work, as sericulture is one of the largest generators of employment. It provided employment to approximately 8.8 million people (2021–2022) in rural and semi-urban areas in India. Sericulture is a distinctively

remunerative agriculture-based industry with frequent income. The development of farm to fabric creates a link between industry and agriculture. The growth of the silk industry in different sectors in the past few years is not merely due to horizontal expansion but also to vertical improvements in productivity.

About 32% (11,191 metric tonnes) of the nation's total silk production was produced in Karnataka. Andhra Pradesh came in second place with a 25% (8835 metric tonnes) share in 21–22. Andhra Pradesh cultivates three natural silk varieties, i.e., mulberry, tasar, and eri, and it occupies fourth place in tasar silk production in the country.

The majority of the mulberry acreage is concentrated in the Rayalaseema region of Andhra Pradesh, especially in drought-prone areas of Chittoor and Anantapur districts. Chittoor district is the first largest silk-producing traditional sericulture belt of Andhra Pradesh, where farmers have successfully practised sericulture, and this area represents the irrigated sericulture tract of the state. Sericulture plays a very important role in the socio-economic upliftment of the rural population (Sreenivasa and Hirayana 2014). In recent years, mulberry acreage, cocoon production, and productivity have increased in some mandals of Chittoor district, namely Kuppam, Palamaner and

Madanapalle which are adjacent to Karnataka state. Kuppam mandal in Chittoor district, which was just like any other sericulture area in the state till two decades ago, transformed itself into a "Model Sericulture Cluster". In Chittoor district, sericulture activity is mainly concentrated in western mandals, i.e., Kuppam, Palamaner, Madanapalle extending to Chittoor and Tirupati divisions. An extent of 46,600 acres of mulberry was under cultivation, covering 2348 villages in 52 mandals out of 66 mandals in the district. It is providing employment for more than 2,23,660 people in rural areas of the district. Farmers earn Rs. 1-2 lakhs/year/acre from 10 to 12 crops (Source: Department of Sericulture, 2021–2022).

Advanced technologies in sericulture have ushered in high scope to attain global competence in silk quality and production as well. The new technology, besides doubling yields, has also led to qualitative improvements in cocoon production with considerably reduced renditta and has also helped break the climate barrier. Yet knowledge and adoption of improved technologies remained enigmas at the farmer's level. Iqra Khan *et al.* (2022) opined that a large proportion of the benefits of new sericultural technology have yet to be realised at the field level. Knowledge is a prerequisite for adoption (Mehta *et al.*, 2000). Knowledge on various sericulture technologies may be influenced by various socio-economic factors, including education, age, experience, family size, information seeking behaviour, income, etc.

With this background the study has been carried out with this objective. To understand the impact of socio-economic factors on the knowledge level of advanced sericulture technologies among different farming groups in Chittoor District of Andhra Pradesh.

## METHODOLOGY

The present study was taken up in the Chittoor district, which is the main cocoon-producing region in Andhra Pradesh. The Chittoor district of Andhra Pradesh,

where sericulture is widely practiced under irrigated conditions. Based on the concentration of mulberry acreage and sericulture activities and in consultation with the sericulture officers, 10 mandals were selected from 5 revenue divisions, with 2 mandals from each division. From each mandal, 2 villages were selected. From the selected villages, 12 sericulture farmers from different groups of farmers, i.e., small (4), marginal (4), and big (4), were selected. Thus, the total sample size is 240 farmers. The farmers were categorized into marginal (>), Small (acres) and large (acres) farmers based on the land holding size of the mulberry garden. The data was collected on socio-economic parameters such as age, education, family size, experience, contact with extension personnel, participation in extension activities, and level of knowledge in mulberry production technologies by using a pre-prepared and tested questionnaire through the personal interview method. Pre-testing was done to ensure that the questions in the interview schedule were clear, complete, unambiguous, and comprehensive before the finalization of interview schedule. The data was tabulated and subjected to statistical analysis using SPSS software.

### Statistical Methods Used

(A) Correlation Analysis: Was applied to test the association of the Independent with Dependent Variables.

(B) Multiple Correlation Analysis: Was carried out to estimate multiple correlation (R) and Coefficient of multiple determination  $R^2$ .

(C) Multiple Linear Regression Analysis: Was carried out to know the functional relationship of the Independent Variables with Dependent Variables.

## RESULTS AND DISCUSSION

### Socio-personal and socio-economic characteristics:

The respondents were categorized into different groups based on their age, family type, land holding and education and are presented in Table 1.

**Table 1: Distribution of respondents according to their age, education, family size, land holding Farming experience in Sericulture, and Annual Income of the Marginal, Small and Large farmers.**

### 1. Age:

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Age	0-18 years	N	4	8	2	14
		%	5.00%	10.00%	2.50%	5.80%
	19-35 years	N	15	16	15	46
		%	18.80%	20.00%	18.80%	19.20%
	36-55 years	N	42	35	24	101
		%	52.50%	43.80%	30.00%	42.10%
	>55 years	N	19	21	39	79
		%	23.80%	26.20%	48.80%	32.90%
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

It is observed from Table 1 that 5.80%, 19.20%, 42.10%, and 32.90% were in the age groups of 0–18, 19–35, and 36–55 above 55 years, respectively. In marginal farmers, the majority (52.50%) were in the age group 36–55 years; 23.80%, 18.80%, and 5.0% of farmers were in the age group above 55 years; 19–35

years; and 0–18 years, respectively. In the case of small farmers, 43.80% of farmers were in the age group of 36–55 years. 26.20%, 20.00%, and 10.00% were in the age groups of >55 years, 19–35 years, and 0-18 years, respectively. In large farmers, 42.10% were between the ages of 36 and 55, while 32.90%, 19.20%, and

5.80% were between the ages of >55, 19-35, and 0-18, respectively. On the whole, most of the farmers belonged to the 36–55-year-old group.

## 2. Education

**Table 2**

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Education	Illiterate	N	15	5	5	25
		%	18.80%	6.20%	6.20%	10.40%
	Primary School	N	17	11	7	35
		%	21.20%	13.80%	8.80%	14.60%
	Middle school	N	21	30	13	64
		%	26.20%	37.50%	16.20%	26.70%
	High School	N	18	20	38	76
		%	22.50%	25.00%	47.50%	31.70%
College education	N	9	14	17	40	
	%	11.20%	17.50%	21.20%	16.70%	
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

From Table 2, it is observed that 31.70% of the farmers have high school education, followed by middle school education (26.70%), college education (16.70%), primary school education (14.60%), and 10.40% of farmers are illiterate. Among marginal, small, and large farmers, the illiterate rate is higher among marginal farmers (18.80%) compared to small and large farmers (6.20%). 21.2% of marginal farmers had primary school

education, followed by small (13.80%) and large (8.80%) farmers. Middle school education is higher (37.80%) in small farmers than in marginal (26.20%) and large (16.20%) farmers. Most of the large farmers had high school (47.50%) and college education (21.20%), followed by small farmers (25% and 17.50%) and marginal farmers (22.50% and 11.20%).

## 3. Family size

**Table 3**

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Family size	Small	N	48	41	20	109
		%	60.00%	51.20%	25.00%	45.40%
	Medium	N	25	20	31	76
		%	31.20%	25.00%	38.80%	31.70%
	Large	N	7	19	29	55
		%	8.80%	23.80%	36.20%	22.90%
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

The results shown in Table 3 indicate that the majority of the farmer's family size is small (45.40%), followed by medium (31.70%), and large (22.90%). In the category of farmers, more than half of the marginal farmers have small families (60%) followed by small (51.20%) and large farmers (25.20%). 25% of small

farmers have a medium-sized family, followed by marginal farmers (31.20%) and big farmers (38.80%). Whereas, 36.20% of large farmers have large families, followed by small farmers (23.80%) and marginal farmers (8.80%).

## 4. Farming Experience in Sericulture

**Table 4**

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Farming experience in Sericulture	3-5 years	N	9	9	18	36
		%	11.20%	11.20%	22.50%	15.00%
	5-10 years	N	32	16	15	63
		%	40.00%	20.00%	18.80%	26.20%
	10-20 years	N	12	24	20	56
		%	15.00%	30.00%	25.00%	23.30%
	20-30 years	N	27	31	27	85
		%	33.80%	38.80%	33.80%	35.40%
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

With regard to the farmer's experience (Table 4), in sericulture, 35.40% of sericulture farmers have 20–30 years of experience. 26.20% of farmers have 10–20 years of experience, and 15% of the farmers have 3–5 years of experience. 22.50% of large farmers and 11.20% of marginal and small farmers each have 3–5 years of sericulture experience. The majority of marginal farmers (40%) have 5–10 years of experience,

followed by small and large farmers (20% and 18%). In terms of 10–20 year experience, the majority of the small farmers (30%) have 10–20 year experience, followed by the large (25%) and marginal farmers (15%). In the 20–30 years of experience category, 38.80% of small farmers and 33.80% each of large and marginal farmers have 20–30 years of sericulture experience.

## 5. Annual Income in Sericulture/acre

Table 5

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Annual Income	0.50-0.75 lakhs	N	44	19	10	73
		%	55.00%	23.80%	12.50%	30.40%
	0.75-1 lakhs	N	16	29	15	60
		%	20.00%	36.20%	18.80%	25.00%
	1-1.5 lakhs	N	12	22	18	52
		%	15.00%	27.50%	22.50%	21.70%
	above 1.5 lakhs	N	8	10	37	55
		%	10.00%	12.50%	46.20%	22.90%
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

The data in Table 5 indicate that 30.40% of farmers earned around 0.50-0.75 lakh rupees per acre per year, 25.00% of sericulture farmers earned around 0.75-1 lakh rupees per acre per year, 21.70% of sericulture farmers earned around 1–1.5 lakh rupees per acre per year, and 22.90% of farmers were earning around 1.5 lakhs in the total number of farmers. In the three categories of farmers, 55% of marginal farmers earned 0.50-0.75 lakh rupees per acre per year, followed by

small farmers (23.80%) and large farmers (12.50%). 36.20% of small farmers earned around 0.75–1 lakh, followed by marginal (20%) and large farmers (18.80%). 27.50% of small farmers earned between 1 and 1.5 lakh rupees per acre per year. The majority of large farmers (46.20%) earned above 1.5 lakh rupees per acre per year, followed by small (12.30%) and marginal farmers (10%).

## 6. Information seeking Behaviour

Table 6

Variables	Category	N/%	Farmers			Total
			Marginal	Small	Large	
Information seeking Behaviour	Never	N	25	20	11	56
		%	31.20%	25.00%	13.80%	23.30%
	Rare	N	15	13	26	54
		%	18.80%	16.20%	32.50%	22.50%
	Occasionally	N	26	10	17	53
		%	32.50%	12.50%	21.20%	22.10%
	Regularly	N	14	37	26	77
		%	17.50%	46.20%	32.50%	32.10%
Total	N	80	80	80	240	
	%	100.00%	100.00%	100.00%	100.00%	

The data in Table 6 indicate that 32.10% of farmers had information seeking behaviour, 22.10% of farmers showed information seeking behaviour occasionally, 22.50% showed information seeking behaviour rarely, and 23.30% of farmers showed no information seeking behaviour in the total number of farmers. 31.20%, 25.00%, and 13.80% of marginal farmers, small and large farmers, do not have the information-learning nature, respectively. The majority of large farmers

(32.50%) have information-seeking behaviour rarely, followed by marginal and large farmers. A high percentage of marginal (32.50%) farmers have information seeking behaviour occasionally followed by large and small farmers. Regular information-seeking behaviour was recorded with small (46.20%) farmers, followed by large (32.50%) and marginal (17.50%) farmers.

**Table 7: Correlation coefficient between knowledge in mulberry cultivation and personal, socio-economic characteristics of the Sericulturists.**

Sr. No.	Independent variables	correlation coefficient (Dependent Variables-Knowledge)		
		Marginal Farmers	Small Farmers	Large Farmers
1.	Age	0.751**	0.751**	0.006
2.	Education	0.699**	0.732**	0.775**
3.	Family size	0.036	0.004	-0.005
4.	Farming experience in Sericulture	0.482**	0.665**	0.529**
5.	Annual Income	0.432**	0.487**	0.348**
6.	Information seeking Behaviour	0.179	0.494**	0.442**

\*, \*\* = Statistically significant at 5% and 1% level of significance respectively  
NS – Statistically non-significant

The correlation between the personal and socio-economic characteristics of the sericulturists of marginal, small, and large farmers and their knowledge level of recommended sericulture practices in mulberry cultivation in Chittoor district is presented in Table 7. It is clearly evident that the dependent variable, i.e., knowledge, exhibited a significant relationship with the age of the sericulturists among marginal and small farmers and a non-significant relationship with large farmers. Education showed a significant relationship

between education and the knowledge level in mulberry cultivation among the three categories of farmers. There is no influence on the farmer's knowledge based on family size; it is non-significant for marginal, small, and large farmers. Experience in sericulture farming and annual income have shown significant influence on the three categories of farmers. It was clear that socio-economic factors are positively correlated with the knowledge level of the different categories of farmers selected for the study.

**Table 8: Multiple regression analysis of different independent variables with dependent variable technological gap on knowledge in mulberry cultivation.**

Sr. No.	Independent variables	Regression coefficient			t- Calculated Value		
		Marginal Farmers	Small Farmers	Large Farmers	Marginal Farmers	Small Farmers	Large Farmers
1.	Age	3.573	2.153	-0.305	4.855**	3.242**	0.637
2.	Education	1.478	2.684	3.279	3.716**	5.171**	7.009**
3.	Family size	-0.569	-0.154	-0.247	0.910	0.246	0.455
4.	Experience in sericulture	0.605	0.955	1.005	1.244	1.713	2.530*
5.	Annual Income	1.082	0.497	0.098	2.274*	0.932	0.229
6.	Information seeking Behavior	0.904	1.29	0.323	2.163*	2.854**	0.718
	Coeff. of Multiple Determination R <sup>2</sup> =	0.721	0.76	0.643			
	F Calculated value	31.462	38.434	21.946			

\*, \*\* = Statistically significant at 5% and 1% level of significance respectively  
NS – Statistically non-significant

The multiple regression analysis using a linear model was carried out between the personal and socio-economic characteristics of the sericulturists of marginal, small, and large farmers, and their knowledge level of recommended sericulture practices in mulberry cultivation in Chittoor district of Andhra Pradesh is presented in Table 8.

It was observed from the analysis that a set of 6 independent variables under study had indicated that 72 of percent variation in marginal farmers, 76 percent variation in small farmers, 64 percent variation in large farmers in technological gap in mulberry cultivation, whereas the ratio of variance of small farmers is 31.462 followed by 38.434 of variance ratio in marginal farmers and 21.946 in big farmers.

It was found that out of six independent variables, the regression coefficient for age in marginal, small farmers was significant at the 1% level; it is non-significant in large farmers. Education among marginal, small farmers showed significance at the 1% level in their knowledge level in mulberry cultivation. Family size is shown as non-significant in three categories of farmers; experience in sericulture in terms of their knowledge level is significant. Annual income was significant at the 5% level for marginal farmers, and it is non-significant for small and large farmers. Whereas information-seeking behaviours are significant at the 5% level in marginal farmers, small farmers are significant at the 1% level, as it is non-significant in large farmers in knowledge level of recommended mulberry cultivation practices.

The regression coefficient for six independent variables, namely age, was non-significant in large farmers; family size was non-significant in all the categories of farmers; and experience in sericulture was non-significant in marginal and small farmers. Annual income and area under mulberry cultivation were non-significant for small and large farmers. Information-seeking behaviour among large farmers was non-significant in terms of knowledge of recommended mulberry cultivation practices.

## CONCLUSIONS

Based on the results of the present study, it can be concluded that the knowledge levels of new mulberry cultivation technologies among the three categories of sericulture farmers in Chittoor district are high among marginal, small, and large farmers. The knowledge of farmers greatly influenced the mulberry yield parameters. Experience, education, farm size, and participation in various extension activities seemed to help significantly in productivity and quality parameters. However, it can be recommended to provide more practical training and motivation towards knowledge enhancement with dedication. The present study has also shown that the socio-economic factors of farmers were found to be important in determining the adoption of recommended sericultural technologies. Hence, for the introduction of new technologies in mulberry cultivation in Chittoor district of Andhra Pradesh, farmers's socio-economic conditions must also be considered.

The present investigation has been focused on understanding the impact of socio-economic parameters on the knowledge level of sericultural farmers in the Chittoor district of Andhra Pradesh. The study indicated that socio-economic factors like experience, education, farm size, and participation in various extension activities significantly improved the knowledge level of

three categories of sericulture farmers, resulting in an elevation of qualitative and quantitative yield parameters for the mulberry crop. Still, there is a gap in knowledge level in the package of practices for mulberry. Therefore, it is necessary to focus on motivating and creating awareness among sericulturists about recommended mulberry cultivation techniques. Therefore, extension activities should be designed in such a way, considering socio-economic factors, to convince sericulture farmers. Further, the extension system should be actively involved in motivating sericulture farmers by using relevant extension methods to elevate the mulberry leaf yield parameters.

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**How to cite this article:** A. Padmaja and G. Savithri (2023). Impact of Socio-Economic Parameters on Knowledge Levels of Mulberry Growers In Chittoor District of Andhra Pradesh. *Biological Forum – An International Journal*, 15(12): 390-395.