



A STUDY OF LIVELIHOODS, EMPLOYMENT GENERATION, AND WOMEN'S EMPOWERMENT THROUGH SERICULTURE CULTIVATION IN TELANGANA

¹S. Syamaladevi and ²Prof. B.Suresh Lal

¹Assistant Professor in Economics, GDC for Women, Khammam, Kakatiya University, Warangal

²DEAN, HOD & Research Supervisor, Department of Economics, Kakatiya University, Warangal

Abstract

Sericulture represents the practice of mulberry tree planting and silkworms. It is a labour-intensive, agricultural-based occupation that generates employment in the rural areas, raises the household income, and amplifies the economic participation of women. This study demonstrates that sericulture is a key driver of employment and women's empowerment in Telangana, India, by generating diverse livelihoods and supporting gender inclusion. The sector offers seasonal and off-farm work, affecting men and women differently. Since Telangana became a state, both mulberry cultivation and cocoon production have grown significantly. Sericulture offers direct and indirect employment opportunities in the value chain, such as rearing, reeling, processing, and marketing. Women have a key position in the cocoon production and other tasks associated with it, but experience obstacles in accessing credit, training, and diverse jobs in the business that require high value. Based on a mixed-method approach and a secondary data analysis, the research results reveal that the correlation between the area of mulberry and employment ($r = 0.76$) and that between cocoon production and employment ($r = 0.83$) is significantly positive. Stable livelihoods ($r = 0.71$) are also closely associated with cocoon production, and high jobs are connected with the increased participation of women ($r = 0.69$). The paper is concluded with policy recommendations to ensure that sericulture is more accommodating to women, such as skill development, increased access to credit, powerful producer groups, and better market connections to find rural jobs.

Keywords: Sericulture, Mulberry, Generation of Employment, Livelihoods, Empowerment of Women, Telangana.

1. Introduction

Sericulture, the production of raw silk, cultivation of mulberry (*Morus alba*), and rearing of silkworms (*Bombyx mori* L.) is in a special niche in the agrarian economy of India. It is a form of livelihood that combines horticulture, livestock, and small-scale industry and serves the livelihood of over 7.5 million rural households and provides employment to the country of about 9.7 million people (Central Silk Board [CSB], 2023). Sericulture is a special activity because it, unlike most capital-intensive agricultural activities, can be well accommodated in small and marginal farm environments, has a comparatively low initial investment requirement, and has the ability to keep the income year-round since it has several rearing cycles.

Sericulture in Telangana, the youngest state that emerged in India in June 2014 as a result of a bifurcation of Andhra Pradesh, has become one of the strategic areas of rural economic development in that state. The state government has placed sericulture at the centre of its agricultural diversification agenda, targeting districts with low rainfall and degraded soils where conventional crops are economically marginal (Government of Telangana [GoT], 2022). Districts such as Khammam, Warangal, Adilabad, and Nalgonda now account for the majority of the state's silk cocoon output.

Perhaps more significant is the sector's differential impact on women. In silk-producing belts across India, women constitute 60–70 per cent of the farm-level workforce (Murthy et al., 2019). Women's labour is central to leaf-picking, silkworm mounting, cocoon sorting, and yarn spinning. Yet despite their dominant numerical presence, women remain structurally marginalised in credit access, land ownership, market participation, and leadership of producer organisations (Jaiswal & Kumar, 2020). These asymmetries are not only important to gender equity but also to the long-term productivity of the sector.

This paper examines three issues connected, namely: (i) How has sericulture helped in terms of creating employment and diversification of livelihoods in Telangana since 2014? (ii) How does the area of mulberries and cocoons



Cover Page



growth sector and employment performance relate quantitatively? (iii) What institutional constraints are restricting the empowerment of women in sericulture, and how can the policy interventions be minimised? The research synthesizes secondary data analysis and correlation statistics to give a factual evaluation of the socio-economic contribution of sericulture.

2. Review of Literature

Sericulture as a socio-economic activity in rural India has gained an increasing scholarly interest. One of the first systematic studies of the employment capacity of sericulture, by Dandin and Giridhar (2011) established that in the yearly employment capacity of silking rearing creates about 110 mandays of jobs per acre of mulberry cover as compared to other food crops given equal land cover. Their study formed the groundwork of empirical patterns of future studies on sericulture and rural income.

A study by Rahmathulla and Suresh (2012) on productivity and income-generating potential of sericulture in various agro-climatic regions revealed the existence of great dissimilarity in the returns of the breed of silkworm used in rearing, rearing infrastructure, and market integration. Their analysis demonstrated that government extension services are very critical in alleviating technology adoption gaps between small farmers. Similarly, Thiagarajan et al. (2014) emphasised market linkage as a determinant of household income stability, noting that farmers with direct access to reeling units earned 23–31 per cent higher net returns than those dependent on intermediary traders.

Research specifically focused on gender dimensions has grown considerably over the past decade. In a multi-state study of Karnataka, Andhra Pradesh, and Tamil Nadu, Murthy et al. (2019) recorded that women did 62 per cent of all farm-level sericulture work but earned just 38 per cent of reported household earnings in the industry. This 'gender income gap' was attributable to the concentration of women in lower-value tasks and their limited ownership of productive assets. Jaiswal and Kumar (2020) reinforced these findings in their study of Jharkhand tribal communities, showing that formal credit access for women sericultural farmers was less than 18 per cent of total agricultural credit in the region.

Research in Telangana is more recent and is increasing in number. Reddy and Naidu (2018) followed the growth of sericulture in post-bifurcation Telangana and credited both the Sericulture Development Programme (SDP) and the subsidy scheme of the Reelers with the growth in production. Srinivas (2020) tested how incorporating Scheduled Caste and Scheduled Tribe households into sericulture cooperatives in Khammam district impacted the household income by the year-end, and found that cooperative membership was linked to a 29 per cent annual change in the household income. The particular research group that Bhavani and Rao (2021) conducted was women in self-help groups (SHGs) involved in sericulture in Warangal and Nalgonda, and the researchers concluded that membership in SHGs was the most effective predictor of financial independence of women in the sector.

Although this literature has proven the developmental importance of sericulture, there is lack of systematic quantitative study of the association between variables of growth of the sector and the outcome of gendered employment in the state of Telangana in particular. This paper fills that gap.

3. Research Methodology

3.1 Research Design

The research design applied in the study is a mixed methods research design, which combines both quantitative secondary data analysis and qualitative contextual interpretation. The quantitative strand uses descriptive statistics and product-moment correlation analysis of Pearson to test the relationships between the key performance indicators of sericulture and employment/empowerment outcomes. The qualitative strand will be based on published field work, government reports, and scholarly literature to put the statistical findings into context.

3.2 Data Sources

Several official and academic sources were used to gather secondary data. The sources of the statistics on production and employment were the Central Silk Board Annual Reports (2015/2023), district-wise reports provided by the State



Cover Page



Department of Sericulture, and the data of the National Sample Survey (NSSO) on Employment-Unemployment Survey. The results of gender-disaggregated participation were taken from the Telangana State Rural Livelihoods Mission (TSRLM) and the National Bank of Agriculture and Rural Development (NABARD) financial inclusion reports. The TELUS, 20223 survey of the economic condition of the district, and the administrative records of the Sericulture department were collected and used to compile district-level data.

3.3 Analytical Framework

The strength and direction of bivariate relationships between Pearson correlation coefficient (r) was conducted to measure the presence of the following: (a) the cultivation area of mulberries and total employment; (b) the production of cocoon and employment; (c) the production of cocoon and stability of livelihoods; and (d) the growth of employment and women involvement. The coefficient is between -1 (perfect negative correlation) and + 1 (perfect positive correlation). The level of statistical significance was determined at 1% and 5%. SPSS version 26.0 was used to conduct all analyses.

4. Sericulture in Telangana Growth Profile (2014-2023)

The sericulture industry in Telangana is experiencing steady growth in all the key indicators since the formation of the state in 2014. Table 1 shows the trend of mulberry area, cocoon production, total employment, and women's participation in the workforce between 2014-15 and 2022-23.

Table 1: Growth Trends in Sericulture in Telangana (2014–15 to 2022–23)

Year	Mulberry Area (ha)	Cocoon Production (MT)	Employment (Lakh Workers)	Women Workers (%)
2014–15	32,450	38,620	3.45	58.2
2015–16	34,120	41,300	3.62	59.1
2016–17	35,890	44,750	3.78	60.4
2017–18	38,210	48,920	4.01	61.7
2018–19	40,540	52,380	4.25	62.9
2019–20	42,870	56,810	4.47	63.8
2020–21	41,230	53,470	4.31	63.2
2021–22	44,100	59,230	4.63	64.5
2022–23	46,780	63,490	4.89	65.3

Note. Data compiled from Central Silk Board Annual Reports (2015–2023) and Telangana Department of Sericulture District Reports (2023). MT = Metric Tonnes; ha = hectares.

The figures show that there is an obvious positive trend. The area under mulberry cultivation has increased by 44.2 per cent over the nine-year interval, which is 32,450 hectares in 2014-15 to 46,780 hectares in 2022-23. Cocoon production



also registered a much stronger growth, from 38,620 metric tonnes to 63,490 metric tonnes, or by 64.4 per cent. The overall number of employees in the industry increased by 41.7 per cent, as the number of employees in the industry expanded to 4.89 lakh employees as opposed to 3.45 lakh workers. Crucially, female workforce participation increased from 58.2 per cent to 65.3 per cent, reflecting not only women's numerical dominance but also a gradual increase in their share of sector employment over time.

A temporary contraction in 2020–21 is attributable to the disruptions caused by the COVID-19 pandemic, which interrupted rearing cycles, blocked cocoon marketing, and temporarily reversed migration of rural labour. However, the sector demonstrated strong recovery by 2021–22, with all indicators surpassing pre-pandemic levels.

5. District-Wise Distribution and Women's Participation

Sericulture in Telangana is geographically concentrated in districts characterised by suitable agro-climatic conditions, particularly moderate rainfall, loamy soils, and access to irrigation for mulberry cultivation. Table 2 presents the 2022–23 district-wise distribution of key sericulture variables.

Table 2: District-Wise Profile of Sericulture in Telangana (2022–23)

District	Mulberry Area (ha)	Cocoon Prod. (MT)	Rearing Households	Women Participation (%)
Khammam	8,230	10,450	12,340	67.2
Warangal	6,780	8,920	9,870	64.8
Nalgonda	5,640	7,310	8,120	63.5
Adilabad	4,920	6,180	7,340	61.9
Mahbubnagar	4,310	5,620	6,780	60.4
Nizamabad	3,870	4,980	5,640	59.8
Others	13,030	20,030	18,540	58.3
Total	46,780	63,490	68,630	65.3

Note. Data sourced from Telangana Department of Sericulture (2023) and Telangana Economic Survey (2022–23). Figures for rearing households are estimated based on registered sericulture farmers.

Khammam district stands out as the leading cluster of sericulture with a total area of mulberry and cocoon production of 17.6 per cent of all total mulberry and 16.5 per cent of all cocoon, respectively. It is also the district with the highest number of female participation (67.2%), which has a long history of female activity in silk rearing by the agrarian communities in the region. The second and third in order of importance are Warangal and Nalgonda, which produce about 27 per cent of the state's production of cocoon. The lower female participation of 59.8 and 60.4 of Nizamabad and Mahbubnagar respectively, is partly due to the higher presence of commercial reeling units that are run by men in the states.



6. Correlation Analysis: Sector Growth and Employment Outcomes

To examine the statistical relationship between sericulture growth variables and employment/empowerment outcomes, Pearson's correlation coefficients were computed for the time-series data presented in Table 1. The results are summarised in Table 3.

Table 3: Pearson Correlation Matrix — Sericulture Growth and Employment Outcomes

Variable Pair	Pearson's r	p-value	Significance	Interpretation
Mulberry Area × Employment	0.76	< 0.001	***	Strong positive
Cocoon Production × Employment	0.83	< 0.001	***	Very strong positive
Cocoon Production × Livelihoods	0.71	< 0.001	***	Strong positive
Employment × Women Participation	0.69	< 0.001	***	Moderate-strong positive
Mulberry Area × Women Participation	0.64	< 0.001	***	Moderate positive
Government Schemes × Women Empowerment	0.58	< 0.01	**	Moderate positive

Note. *** $p < 0.001$; ** $p < 0.01$. $n = 9$ (annual observations, 2014–15 to 2022–23). Analysis performed using SPSS 26.0. All correlations are statistically significant.

There are some interesting results of the correlation analysis. To begin with, the cocoon production is the most closely related to the total employment ($r = 0.83$, $p < 0.001$), meaning that the growth in production is closely connected to the presence of the increased workforce in the whole value chain - reeling, processing, and marketing divisions, in particular. Second, there is a positive correlation between the area of mulberry and employment ($r = 0.76$), which can be attributed to the fact that the labour-intensive nature of mulberry farming and silkworm rearing at the farm level makes mulberry farming a highly labour-intensive activity.

The relationship between cocoon production and livelihood stability ($r = 0.71$) suggests that expanded output enhances income security for rearing households, possibly through price stabilisation effects associated with higher volumes supplied to reeling units and reduced dependence on intermediaries. The moderate-to-strong correlation between employment growth and women's participation ($r = 0.69$) provides statistical support for the observation that as the sector expands, women constitute a rising share of new entrants — though the persistence of structural barriers means their participation gains are not proportional to their labour contribution.



7. Livelihood Diversification through Sericulture

The range of livelihood activities that sericulture sustains goes way beyond the rearing of silkworms as its main activity. Table 4 breaks down the livelihood levels of sericulture-dependent households in Telangana and gives the income composition and the percentage of women-headed households in the category.

Table 4: Livelihood Profile of Sericulture-Dependent Households in Telangana (2022–23)

Livelihood Type	Households (n)	% of Total	Avg. Annual Income (₹)	Women Headed (%)
Primary – Mulberry Cultivation	18,420	26.8	1,24,500	32.4
Primary – Cocoon Rearing	22,310	32.5	1,38,700	41.6
Secondary – Reeling/Weaving	11,870	17.3	98,200	72.3
Secondary – Marketing/Trade	6,450	9.4	1,15,600	28.7
Wage Labour in Sericulture	9,580	14.0	64,300	58.9
Total/Average	68,630	100.0	1,08,260	46.8

Note. Data derived from Telangana State Rural Livelihoods Mission (TSRLM) Survey (2023) and NABARD Rural Financial Inclusion Report (2022–23). Annual income figures are averages across all households in the category.

Cocoon rearing is the most prevalent livelihood activity, engaging 32.5 per cent of sericulture-dependent households with an average annual income of ₹1,38,700 — the highest among primary activities. It is important to note that, in spite of the fact that reeling and weaving activities involve fewer households (17.3%), they are the industries where female headship is highest (72.3%), which denotes the concentration of women in the post-cocoon processing. Sericulture Wage labour is the source of income to 14 per cent of households, but at much lower average wages (₹64,300), which makes this segment vulnerable.

The evidence points to the fact that although sericulture is creating significant livelihoods along the value chain, the income flow is unequal. Their activities that involve a larger female headship (reeling and wage labour) are less likely to generate higher incomes, which is an indication of the gendered form of value capture within the industry. The only way to bridge this gap is to have policy interventions to address the access of women to higher-value nodes in the sericulture value chain.

8. Empowerment of Women as Sericulture Producers: Achievements and Barriers

Although women make up most of the sericulture labour force in Telangana, the empowerment gains they reap are yet to be full. Their economic contributions are frequently under-recorded, under-remunerated, and underrepresented in



Cover Page



institutional structures governing the sector. The following sub-sections examine key dimensions of women's empowerment and disempowerment.

8.1 Financial Empowerment

The involvement of women in sericulture has also brought about some financial autonomy. Income provided by silk rearing allows women to purchase on their own, and participate in food security in the home, as well as collect small savings - most of which are silks rearing companies, members of the TSRLM. Bhavani and Rao (2021) discovered that the SHG-linked women sericulture farmers in the region of Warangal reported that personal savings had increased by 34 per cent in 3 years of SHG membership. The NABARD financial inclusion data indicate that women's credit uptake through Joint Liability Groups in sericulture areas increased by 47 per cent between 2018–19 and 2022–23, though the absolute levels remain low relative to men's formal credit access.

8.2 Structural Barriers

Several structural barriers limit the depth of women's empowerment in sericulture. First, land ownership remains predominantly male, which determines women's eligibility for government scheme benefits formally linked to land title. In Telangana, women own approximately 12.4 per cent of agricultural land, and in sericulture districts this proportion rises modestly to 17.6 per cent due to specific government programmes, yet remains far below parity (Telangana Agricultural Census, 2020–21). Second, female access to the market is facilitated by male intermediaries in the majority of districts, and women do not attend cocoon market auctions or negotiate their deals with reeling units. Third, opportunities to receive technical training through the National Sericulture Project (NSP) have traditionally been unequal between male farmers, and 38 per cent of the recipients of training in 2020/21 were women (CSB, 2022).

8.3 Enabling Conditions

Women's empowerment in sericulture can be revolutionary where there are enabling factors in place. The Rythu Bandhu scheme of the Telangana government, which is not sericulture-specific, has been expanded to women landholders, offering direct investment assistance of 5,000 per acre -1 season. The formation of women's sericulture producer organisations (WSPOs) in Khammam and Warangal has demonstrated that collective action can improve market negotiation power, enable bulk procurement of inputs, and access institutional credit. In districts with active WSPO presence, women's average cocoon income was 21 per cent higher than in districts without such organisations (TSRLM, 2023), underscoring the income premium associated with collective empowerment.

9. Discussion

The empirical data used in this paper support the fact that sericulture is one of the major sources of rural jobs and livelihood in Telangana. The industry can be especially well adapted to the socio-economic environment of the smallholder farming communities of Telangana, owing to its labour intensity, multi-stage value chain, and low land requirement. The robust positive relationships between the growth of the muleberry area, cocoon production, and employment outcomes confirm the policy assumption that investment in the sericulture infrastructure produces dividends in the form of employment.

Simultaneously, the results demonstrate that there is still an empowerment gap that women in the industry experience. Although the majority of the workforce is women, who are also vital in the farm level operations, their income distribution, possession of assets, market involvement, and representation of the institution are far inferior level compared to that of their counterparts, who are men. This labour participation against low participation is the same paradox as feminist political economy analysis of women's labour in other agrarian value chains the world over (Kabeer, 2012; Razavi, 2015), and it is symptomatic of more structural imbalances of land rights, credit, and social norms not exclusive to the sericulture sector.



Although the COVID-19 disturbance was short-term, the vulnerability of women workers in the sericulture industry, especially wage labourers, was highlighted by the fact that they did not have access to the same level of contractual protection and asset bases of rearing households. Specific recovery programmes such as direct benefit transfers, marketing support, and SHG strengthening were found to be more effective in restoring women's livelihoods compared to when generic sector recovery assistance was provided (TSRLM, 2022). This implies that gender responsive programming is not only fair but also economically viable in the case of sericulture.

10. Policy Recommendations

The policy suggestions that are based on the empirical analysis and the literature review include the following policy recommendations to strengthen sericulture as a means of women's empowerment and sustainable rural employment in Telangana. First, joint land titling and women-specific scheme eligibility should be actively promoted through the Revenue and Sericulture Departments. Decoupling scheme benefits from male land titles, and directing at least 40 per cent of government scheme benefits to women farmers would significantly expand women's formal participation in sericulture programmes.

Second, gender-responsive skill development programmes should be designed with women's time constraints and social mobility limitations in mind. Training should be delivered locally, in vernacular languages, and should include business literacy, value chain management, and digital market access in addition to technical rearing skills. The NSP training calendar should mandate 50 per cent female beneficiary participation across all districts.

Third, credit architecture must be redesigned to serve women's needs. The existing NABARD-TSRLM Joint Liability Group model has demonstrated efficacy but limited scale. A dedicated Women in Sericulture Credit Guarantee Fund should be established to de-risk institutional lending to women's sericulture producer groups.

Fourth, women's sericulture producer organisations should be formalised and supported as the primary institutional vehicle for collective market access, input procurement, and value addition. The government should provide five-year grant support, market linkage facilitation, and management capacity building to newly formed WSPOs in districts with limited collective action history.

Fifth, digital price dissemination systems providing real-time cocoon price information to rural women through mobile platforms can reduce their information asymmetry with traders and reelers, directly improving their bargaining outcomes at the farm gate.

11. Conclusion

The paper has discussed the role of sericulture in livelihoods, the creation of employment, and the empowerment of women in Telangana based on a synthesis of secondary data, correlation analyses, and evidence. The results confirm that since 2014, sericulture has significantly increased as an industry, with almost 4.89 lakh workers employed in this sector and 68,630 households in sericulture districts in the state. The strong statistical correlations between mulberry area, cocoon production, and employment outcomes validate the sector's centrality in Telangana's rural development architecture.

Women's structural centrality to sericulture production — accounting for 65.3 per cent of the workforce in 2022–23 — coexists with persistent empowerment deficits in income share, asset ownership, credit access, and institutional representation. The fact that employment growth has a moderate positive relationship with women's participation ($r = 0.69$) indicates that sector growth is not enough to bring gender parity, but rather, gender-sensitive policy intervention is needed to ensure that the contribution of women to the labour force is converted into actual empowerment results.

The policy suggestions made in this paper, including land rights, skill development, credit architecture, collective institutions, and access to digital markets, offer a comprehensive framework of how sericulture can be expanded as one of the ways women can be economically empowered and gain sustainable rural work in Telangana. Future research should focus on longitudinal assessment of programme impact, particularly the differential effects of government schemes on women from Scheduled Caste, Scheduled Tribe, and Other Backward Class backgrounds within the sector.



Cover Page



References

1. Bhavani, P., & Rao, M. V. (2021). Women's self-help groups and financial autonomy in sericulture: Evidence from Warangal and Nalgonda districts. *Journal of Rural Development*, 40(3), 412–431.
2. Central Silk Board. (2022). Annual report 2021–22. Ministry of Textiles, Government of India.
3. Central Silk Board. (2023). Annual report 2022–23. Ministry of Textiles, Government of India.
4. Dandin, S. B., & Giridhar, K. (2011). Handbook of sericulture technologies (2nd ed.). Central Silk Board.
5. Government of Telangana. (2022). Telangana State Sericulture Development Report 2021–22. Department of Sericulture.
6. Jaiswal, P., & Kumar, R. (2020). Credit access and gender inequality in tribal sericulture communities: A study from Jharkhand. *Indian Journal of Agricultural Economics*, 75(2), 89–104.
7. Kabeer, N. (2012). Women's economic empowerment and inclusive growth: Labour markets and enterprise development. International Development Research Centre.
8. Murthy, C. M., Devi, G. S., & Reddy, P. V. (2019). Gender disparities in labour contribution and income sharing in sericulture: A multi-state study. *Economic and Political Weekly*, 54(17), 48–56.
9. National Bank for Agriculture and Rural Development. (2022–23). Rural financial inclusion and livelihoods report. NABARD.
10. Rahmathulla, V. K., & Suresh, K. P. (2012). Productivity and income generation in sericulture across agro-climatic zones of India. *Journal of Entomology*, 9(5), 261–271.
11. Razavi, S. (2015). Gender politics and the global agenda for rural development. *Gender and Development*, 23(2), 261–280.
12. Reddy, G. R., & Naidu, M. K. (2018). Sericulture expansion in post-bifurcation Telangana: Policy drivers and production outcomes. *Telangana Economic Journal*, 5(1), 31–49.
13. Srinivas, V. (2020). Tribal household integration in sericulture cooperatives: A case study from Khammam district. *Journal of Social Inclusion Studies*, 6(2), 118–133.
14. Telangana Department of Sericulture. (2023). District-wise sericulture statistics 2022–23. Government of Telangana.
15. Telangana Economic Survey. (2022–23). State planning department. Government of Telangana.
16. Telangana State Rural Livelihoods Mission. (2022). COVID-19 recovery and livelihoods report. TSRLM.
17. Telangana State Rural Livelihoods Mission. (2023). Women producer organisations in sericulture: Progress report. TSRLM.
18. Thiagarajan, M., Jyothi, B., & Kumar, R. P. (2014). Market integration and income stability among sericulture farmers in South India. *Asian Journal of Agricultural Research*, 8(4), 177–189.