



## RESEARCH PAPER

## OPEN ACCESS

## Involvement in sericulture: Does it matter in the socio-economic improvement of Rural Women?

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### Abstract

Sericulture matters most in improving the socio-economic lives of rural women being very effective and operational in creating job opportunities and family income and in intensifying sustainable development. This investigation explores the involvement of rural women in Sericulture and how it affects their socio-economic lives. The findings indicated how significant sericulture is in employment generation opportunities; improvement of housing conditions and intensified interpersonal relationships between and among family members. Greening and rehabilitation of unutilized land was found essential to include reduction of soil erosion with the planting of mulberry. The organization of sericulture women's association and regular meetings done were reflected as contributory factors for more successful sericulture enterprise. Educational attainment and farming experience of the rural women are factors for higher socio-economic improvement in Sericulture.

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## Introduction

In the Philippines, women are said to be the most vulnerable members of the society. Hence, to give due consideration to their vulnerability, Republic Act 9262 which is the “Anti-Violence Against Women and Their Children Act” of 2004 was created to address violence committed against women and children which was further guaranteed in the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW). This treaty is a legal instrument for the promotion of workplace rights and economic empowerment of women.

Female population in the country was reported at 49.75% in 2020 which is almost half of the total population. Their contribution to society has not been recognized, and the gaps are clearly seen between the fulfillment of their needs and the services and protections provided to them. In the national scenario, the modern Filipina has that passionate heart for her family (Soriano. 2016). She is still an epitome of a loving and nurturing woman but now she is much more able to respond to increasing challenges because of opportunities given by the different regulations on women. As stipulated in the goals set in the Philippine Development Plan (PDP), the country has to enhance the productive capacity of women to have an equal role in achieving these goals for development. The first key documents for the promotion of women’s welfare in the country include the 1987 Philippine Constitution which further emphasizes the equality of men and women before the law. The Philippine Council on Women (PCW) is also one of the lead champions for women empowerment in the country that works for gender equality and rights. It calls for the active partnerships with different economic agencies and other relevant groups and institutions (government and private) to collaborate and provide a business environment for women’s economic empowerment.

Through gender mainstreaming, the government also requires the allotment of at least five percent of the General Appropriations Act of all agencies to gender and development.

The Sericulture industry can be very effective in creating new job opportunities to achieve the goal of rural women’s economic empowerment and decreasing rural poverty. Sericulture is the art of rearing domesticated silkworm *Bombyx mori* L. for the production of Reelable silk. It involves the production of mulberry as sole food for silkworm, rearing of silkworms, production of silkworm eggs, cocoon and silk processing and silk weaving. The end product is silk - one of the native natural fibers which is said to be the “Queen of Textiles”; a beautiful and valued material because of its exquisite luster, resilience, and great elasticity.

Several researches showed how women progressed in the Sericulture industry. In the study conducted by Chanotra (2019), it was found that sericulture is an appropriate income generating activity for every section of society including men and women, a big farmer or a landless aged person. Sharma & Kapoor (2020) asserted that women participate in the activities of sericulture and these provided them the opportunity for development through awareness and capacity building. It was emphasized in the study of Sengupta *et al.* (2020) that enhancement of socio-economic status of women in India while working for sericulture was one of the goals of their development programs. It is also interesting to note that in the study conducted by Rani (2018), it underscored the employment and income generation of women in sericulture activities which can be easily performed by them and further suggested for the development of sericulture in the area.

Rural women have to be made economically self-dependent through the application of appropriate technologies to uplift the socio- economic condition of the rural areas. Suitable programs like Sericulture are to be selected to enable women to do productive work along with their other family responsibilities. The local situation in the area of this study shows that these rural women still perform the usual responsibilities of a house wife and as a housekeeper. But given the opportunity to work outside their homes without neglecting their household works

would make them more empowered. Hence, they opted to adopt Sericulture for them to derive additional income for their families.

The Sericulture Research and Development Institute (SRDI) is the national centers for silk industry in the Philippines and it is mandated to conduct researchers extend sericulture technologies and train sericulturists. Extension programs include technical assistance, trainings, farm input subsidies and other extension services which were provided by SRDI to these women beneficiaries who served as respondents of the investigation. Thus, this study has been conducted as a way of assessing the extent of which the sericulture projects has improved the socio-economic conditions of rural women.

Specifically, this study sought answers to the following specific objectives: to determine the levels of involvement of women in Sericulture activities as to mulberry production, silkworm rearing for cocoon production, and silk fabric production; to find out the socio-economic improvement of the rural women in sericulture as to social (knowledge gained, health, education, community participation, values formation), and economic (income, assets, employment); and to find out the relationships between the personal characteristics and the socio-economic improvement of women in sericulture.

## Materials and methods

### *Research Design*

The study made use of the descriptive-correlational method of research. This is used to describe the nature of a situation as it exists at the time of the study and to explore the causes of particular phenomena. It is also designed to determine the extent to which different variables are related to each other (Sevilla, 1992).

### *Population of the Study*

The 78 sericulture farmer-cooperators and silk weavers assisted by SRDI from different municipalities of La Union, Ilocos Sur, and Abra Provinces in the Philippines were the respondents of

this investigation. These were the sericulture women beneficiaries who had undergone silkworm rearing and fabric production for the last three years and the administration of questionnaire and conduct of interview was carried out from January 6 to November 15, 2019. The study included the rural women involved in SRDI-assisted sericulture projects specifically the women-farmer cooperators, the wives and female-children of farmers, and silk weavers. The purposive sampling was used in determining the sample size of this study. Only those women working in sericulture for a minimum of three years were included in this investigation.

### *Data Gathering instrument*

The major data collection instrument used in gathering the needed information was the survey questionnaire which was supplemented with in-depth interviews and personal observation of the respondents. The contents of the questionnaire were gathered from related literature on impact assessment of agricultural projects, roles of women in sericulture, and other related researches. The survey questionnaire consisted of three parts namely: the farming characteristics of the respondents; levels of involvement of the respondents on sericulture activities on mulberry production, silkworm rearing, and fabric production; and the socio-economic improvement of rural women through their involvement in sericulture.

### *Data Collection Procedure*

As the first part of this study, a desk review was undertaken by the researchers for the collection of background literature from books, researches, published papers and other related studies. This helped the researcher in the conceptualization and preparation of the questionnaire which was personally administered by the researchers.

Prior to the administration of the questionnaire, an informed consent was obtained from the respondents. In depth personal interview was done with direct, extensive participant observation of the different sericulture activities of the farmers to get the real

picture of the situation. Assurances of confidentiality and the purpose of the interview were given at the outset to avoid fears that any sensitive information be known by neighbors or other individuals. To ensure successful gathering of data, the interview schedule was translated by the researchers in the vernacular (Ilocano) as it is the common dialect used in the area. This allowed the farmers to understand better the questionnaire and enhance a speedy gathering of information.

#### *Treatment of Data*

Data were gathered, tallied, tabulated, and statistically treated, and the choice of statistical tools used was based on the types of variables in the study. Descriptive statistics such as frequency, percentages, weighted mean and ranking were used in treating data on the levels of involvement of women in sericulture and the socio-economic improvement in sericulture. As to the inferential treatment of data, correlation analysis was utilized in finding the relationships between personal characteristics and the socio-economic improvement in Sericulture.

### **Results and discussion**

#### *Levels of Involvement of the Respondents on Sericulture Activities*

Sericulture is one of the sustainable industries for countryside development which can serve as an effective and equitable indicator to achieve inclusive growth in the county. SRDI, being the national center for silk industry in the Philippines is tasked to perform its crucial role in the dissemination of sericulture technologies in the countryside.

Table 1 shows the levels of involvement of the respondents on Sericulture activities. As to mulberry production, a very high level of involvement was recorded in terms of harvesting of mulberry leaves (2.88), weeding and intercultivation (2.79), and uprooting, preparation and disinfection of saplings (2.65), which rated first in ranks by the respondents. Land preparation, pruning of mulberry and fertilization were ranked last with ratings of 1.20, 1.19 and 1.34 respectively. The finding indicates that lighter farm works were done by women, while the

other activities like land preparation, pruning of mulberry and fertilization were seldom done because these require more physical strength which are suited for men. The result jibes with the findings of Kasi (2013), which found that women are actively engaged in the mulberry fields for the removal of weeds and in leaf plucking. Leaf plucking is a skilled and delicate operation and women are more inclined to do gentle and subtle job which are equally similar to their domestic works like child care.

**Table 1.** Levels of involvement of the respondents on sericulture activities.

Particulars	Weighted Mean	Description	Rank
A. Mulberry production			
1. Land preparation	1.20	Low	10
2. Uprooting, preparation and disinfection of saplings	2.65	Very High	3
3. Transplanting of mulberry	2.11	High	4
4. Intercropping	2.09	High	5
5. Replanting of mulberry	1.50	Low	8
6. Weeding/intercultivation	2.79	Very High	2
7. Fertilization	1.34	Low	9
8. Irrigation	1.76	High	7
9. Mulching	1.98	High	6
10. Harvesting of mulberry leaves	2.88	Very High	1
11. Pruning of mulberry	1.19	Low	11
Average weighted mean	1.95	High	
B. Silkworm rearing			
1. Disinfection of rearing house and rearing implements	1.00	Low	5
2. Feeding of silkworms	2.95	Very High	1
3. Bed cleaning	1.87	High	4
4. Mounting of silkworms	2.50	Very High	3
5. Harvesting of cocoons	2.68	Very High	2
Average weighted mean	2.20	High	
C. Fabric production			
1. Preparing the warp	2.28	High	4
2. Dressing the loom	3.00	Very High	1
3. Weaving	2.88	Very High	2
4. Finishing	2.71	Very High	3
Average weighted mean	2.72	Very High	

In terms of silkworm rearing, feeding of silkworms, harvesting of mulberry leaves and mounting of silkworms were very highly participated by women with ratings of 2.95, 2.68 and 2.5 respectively. Silkworms are domesticated animals and very sensitive in nature. Sarkar (2018) affirms that women qualities like maternal instincts and loving care prove to be very helpful in the successful breeding of silk worms. Disinfection of rearing house and rearing implements was rated the lowest with an average mean value of 1.00.

The use of a knapsack or power sprayer in the disinfection process requires more physical strength which is more suited to men rather than women. This finding confirms with the study of Pathare (2016) that women perform different types of works such as harvesting of cocoon and mounting of silkworm, cutting of leaves from plant, feeding of larvae, and preservation of leaf.

Almost all activities in fabric production were participated by women particularly in dressing the loom which was rated the highest with the highest mean value of 3.00.

The “promotion of rural and value chain development toward increasing agricultural and rural enterprise productivity” is one of the 10-point socio-economic agenda of the Duterte administration, and this includes Sericulture. And the high involvement of the respondents in Sericulture as a source of gainful employment in the rural areas plays an important role in the anti-poverty programs of the country. This gives the rural women more opportunities to improve their living standards thereby preventing them from migration to urban areas.

#### *Socio-economic Improvement in Sericulture*

In Table 2, social and health improvement in sericulture were highly achieved at the average as manifested by the very high ratings given by the respondents in terms of improved housing conditions and social cohesion in the family. Sericulture is considered as a family enterprise of which young and old alike can participate, hence, interpersonal relationships between and among family members can be enhanced. The finding jibes with that of Roy (2015) that sericulture gives a wide opportunity where women can carry all their contributory work even after attending to their own regular household chores. Thus, sericulture is ideally suited for family women in the rural areas.

Farm women have certain unique attributes, which are of special relevance to sericulture development and that these characteristics mark the female dominance in sericulture to be indispensable. In the conducted by Sarkar (2018), women have patience, perseverance; caring attitude and adaptability to new technologies have made their activities more dominant in sericulture and silk production.

**Table 2.** Socio-economic, institutional and environmental improvement of sericulture.

Particulars	Weighted Mean	Description	Rank
A. Social/Health			
1. Increased recreation	1.20	Low	7
2. Social cohesion in the family	2.65	Very High	2
3. Improved affordability in sending children to school	2.11	High	3
4. Higher availment of health service	2.09	High	4
5. Increased consumption of nutritious food	1.50	Low	5
6. Improved housing conditions	2.71	Very High	1
7. Improved self-worth	1.34	Low	6
Average weighted mean	1.94	High	
B. Economic			
1. Increase in household income	2.00	High	3
2. Provision of employment to neighborhood	2.95	Very High	1
3. Increased crop yield	1.87	High	4
4. Increased crop area	1.67	High	5
5. Increase in investment	2.13	High	2
Average weighted mean	2.12	High	
C. Institutional			
1. Savings are mobilized	2.28	High	3
2. Regular meetings were done	3.00	Very High	1
3. Loans are repaid on time	2.00	High	4
4. Women's associations are organized	2.40	Very High	2
Average weighted mean	2.42	Very High	
D. Environmental			
1. Reduction on the use of inorganic fertilizers and chemicals	2.11	High	2
2. Reduction of soil erosion			
3. Rehabilitation of degraded lands	2.43	Very High	1
4. Greening of the environment	1.50	Low	5
5. Reduction of pollutants and other non-degradable wastes	2.00	High	3
	1.98	High	4
Average weighted mean	2.00	High	

For the economic improvement in sericulture, the respondents rated the “provision of employment to neighborhood was ranked number 1 with a rating of “very high”, followed by “increase in investment” and increase in household income”. It could be inferred from this finding that sericulture is a labor intensive industry of which can provide employment of up to 9 persons for one-hectare mulberry production area. It is underscored in the study of Chanotra (2019) that sericulture generates more employment opportunities when compared to other industry, especially in rural and semi- urban areas. In the study conducted by Pathare (2016), it was found that sericulture has changed the economic lifestyle of rural women together with their family members. This finding is enforced further through the work of Rani (2018) which emphasized the higher income generation of women in Sericulture as compared to other crops. In the same way, Connor and San (2021) asserted that rural women in Myanmar use their extra income to invest in farming, nutrition and in enabling their children to acquire formal education.

The involvement of women in Sericulture as one of the sustainable countryside development projects in the Philippines, gives them the opportunity for employment and additional income for their families. Personal interviews conducted revealed that their income derived from their sales of cocoons and fabrics were used to purchase books and other school supplies for the children; gadgets like cellular phones; furniture and some house repairs. This finding indicates that Sericulture can create more employment and prompted more income generating activities for women so that they will no longer migrate to the urban areas and cities.

As to institutional improvement, the respondents gave “very high” ratings to “regular meetings were done,” and women’s associations are organized”, followed by “savings are mobilized”. Geetha (2017) stressed that participation in civic organizations in sericulture helped women in political decision making to a greater extent. Engaging in sericulture urged women to involve themselves in organizations and

cooperatives, and economic activities that widen their perspectives and cultivate their potentials for their development. With this backdrop, Lungelo (2021) underlined that women broadened their social capital through the formation of association which ensure their representation at a local and national level. Similarly, the study conducted by Doneys *et al.* (2020) on the social and economic empowerment of women experienced in farming groups emphasized those women empowerment enables them to gain control of their lives by increasing their economic participation and all levels of decision making. Consequently, Othman (2020) asserted that women farming-group members have improved their access to agricultural resources and shifted to better farming methods for higher productivity, income and, livelihood.

As a whole, the respondents rated environmental improvement as “high” with emphasis given to “reduction of soil erosion” as ranked number 1, while reduction on the use of inorganic fertilizers and chemicals was ranked second. Greening of the environment was also given importance with a rating of 2.11. It has been a standard operating procedure of the Institute to make use of unutilized lands for mulberry production so as not to compete with rice as staple food and some other root and fruit crops. In the study conducted by Gapuz and Gapuz, (2012), it underscored that sericulture is a good instrument for climate change adaptation and mitigation exhibited by its high rate of CO<sub>2</sub> sequestration, prevention of erosion, use of marginal lands combined with its income and labor generation potentials for women in almost all age levels.

#### *Relationships between the Personal Characteristics and the Socio-economic Improvement in Sericulture*

When the personal characteristics were correlated with the socio-economic improvement in Sericulture, Table 3 showed that only educational attainment and farming experience were significantly correlated with socio-economic impact in sericulture. Educational attainment is positively correlated with the economic impact of sericulture with a computed r-value of 0.618 which was found significant at .05 level.



This finding corroborates with that of Mubin, *et al.* (2013) when it was found that the calculated p-value of 0.60 indicated that at 10% level of significance, there exist a significant statistical association between education and income of the farmer.

**Table 3.** Summary table showing the relationships between the personal and farming characteristics and the socio-economic improvement of sericulture.

VariableS	Social/health	Economic impact
Educational attainment		$r = 0.618^{**}$
Farming experience	$r = 0.623^*$	$r = 0.510^*$

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Farming experience also showed significant relationship with social and economic improvement sericulture as evidenced by the computed r-values of 0.623 and 0.510 respectively. From this finding, it is implied that the longer that a farmer stays in farming, the more he learns to avoid and manage risks to make his farm more efficient and productive. This finding is further enforced by the study of Priyadarshini & Kumari (2015) which acknowledges that the sericulture farmers who had good education and experience have adopted all the improved technologies and were getting higher income. The sericulture farmers who had less education and experience were not adopting improved technologies resulting in poor income.

### Conclusion

The study concludes that women are highly involved in Sericulture particularly in harvesting of mulberry leaves, feeding of silkworm, and in dressing the loom, silk weaving and finishing which further contributes to the employment generation opportunities and household income at the rural areas. Improvement of their housing conditions and interpersonal relationships between and among family members were also highlighted in this research alongside with greening and rehabilitation of unutilized land found to be essential in the reduction of soil erosion with the planting of mulberry. The organization of sericulture women's association and regular meetings done were

reflected as contributory factors for more successful sericulture enterprise. Educational attainment and farming experience of the rural women are factors for higher socio-economic improvement in their sericulture livelihood projects. The findings infer that with the higher involvement of the rural women in Sericulture, it has created gainful employment and sustainable income for them at a lower risk because in most cases, their rearing houses, mulberry plantations and even the weaving center where weavers work are close to their habitation and this actual scenario even reduces the risk of getting infected with the ongoing pandemic on COVID 19. As a family initiative, interpersonal relationships were enhanced since sericulture encourages social cohesion whereby young and old alike can work and cooperate with each other in all the activities on silkworm rearing and mulberry production which make it contributory to family survival and prosperity.

Social empowerment of women was further enhanced through sericulture because their membership to sericulture association and attendance to meetings further expands decision-making, and boost their confidence. It is worthy to note that since mulberry is a perennial plant, it conserves the environment by pruning but not cutting trees which may prevent soil erosion when planted in elevated areas prone to debris flows.

Women's level of education and farming experience likewise increase the chance of higher productivity and income in sericulture because these provide them better understanding of the processes and procedures for higher quality silk products. Formal and non-formal educations open the minds of the farmers to knowledge and skills while keeping them abreast with changing innovations and ideas. Attendance to formal schooling results to assimilation of discipline in terms of punctuality, teamwork, and timeliness.

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### Declaration of Interests

All the authors declare no conflicts of interest.

### References

**Chanotra S.** 2019. "Sericulture: An opportunity For The Upliftment of Rural Livelihood". Journal of Entomology and Zoology Studies **7(6)**, 1100-1103. [www.entomoljournal.com](http://www.entomoljournal.com)

**Connor M.** 2021. Sustainable rice farming and its impact on rural women in Myanmar, Development in Practice **31(1)**, 49-58,

**Doneys P.** 2020. "Seeing Empowerment as Relational: Lessons From Women Participating in Development Projects in Cambodia." Development in Practice **30(2)**, 268-280.

**Gapuz C, Gapuz F.** 2012. "Sericulture for Sustainable Environment and Income Generation: The Case of the CHED-DMMMSU Sericulture Project". IAMURE International Journal of Business and Management, **3(1)**.

**Geetha PGS.** 2017. "Women, Income Generation and Political Capital in the Silk Industry in Karnataka". Gender, Technology and Development Journal. <https://doi.org/10.1177/097185241001400307>

**Kasi E.** 2013. "Role of Women in Sericulture and Community Development: A Study from a South Indian Village (July 10, 2013)". Available at SSRN: <https://ssrn.com/abstract=2861012>

**Lungelo C.** 2021. "Empowerment and agricultural mechanization: perceptions and experiences of women tractor operators in Ghana", Development in Practice. DOI: 10.1080/09614524.2021.1937551

**Othman M, Oughthon E, Garrud G.** 2020. "Significance of farming groups for resource access and livelihood improvement of rural smallholder women farmers", Development in Practice. DOI: 10.1080/09614524.2020.1764502

**Pathare P.** 2017. "Participation of women in Sericulture Activities of Ahmednagar District (M. S) India. IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume **22**, Issue 8, Ver. **II**, PP 90-93 e-ISSN: 2279-0837, p-ISSN: 2279-0845. [www.iosrjournals.org](http://www.iosrjournals.org).

**Philippine Commission on Women.** 2009. Republic Act 7192 which is the "Women in Development and Nation Building Act". [www.pcw.gov.ph](http://www.pcw.gov.ph)

**Rani UJ.** 2017. "Employment Generation to Women in Drought-Prone Areas: A Study with Reference to the Development of Sericulture in Anantapur District of Andhra Pradesh". Journal of Social Sciences, <https://doi.org/10.1177/097185241001400307>

**Roy C.** 2015. "Inclusive Development in Sericulture through Female Empowerment. A Case Study in Malda District, West Bengal." <http://mpr.ub.uni-muenchen.de/64273/> MPRA Paper No. 64273.

**Sarkar S.** 2017. "Critical Analysis on Role of Women in Sericulture Industry, Department of Sericulture, Krishnath College, Berhampore, Murshidabad, West Bengal, India. International Journal of Social Science Citation: IJSS **6(3)**, 211-222.

**Sengupta M, Soma B, Pijush M, Soumen S.** 2020. "Women Participation In Sericulture Activities Of South 2, Parganas District, West Bengal: An Interim Report Of An Ongoing Study". <https://www.researchgate.net/publication>

**Sevilla C.** 1992. Research Methods. Revised Edition. Manila: Rex Printing Co. Inc.

**Sharma K, Kapoor B.** 2020 "Sericulture as a Profit-Based Industry-A Review". Indian Journal of Pure and Applied Biosciences. [www.ijpab.com](http://www.ijpab.com).

**UN WOMEN.** 2014. Human Rights of Women. <https://www.unwomen.org/en/news/in-focus/end-violence-against-women/rights>