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## A study on the influence of socio-economic factors on knowledge and technology adoption of sericulture farmers of Aizawl district of Mizoram

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### ABSTRACT

*Sericulture has been playing a vital role in developing the economic condition of the poor farmers of Mizoram. It has been a sustainable livelihood for last three decades. The recent new and improved sericulture technologies and their adoption at farmers' level have increased the quantity and quality of raw silk production to a new height. However, the productivity of raw silk in Kg per hectare of the State and productivity of raw silk at national levels still very wide. There is also a wide gap between present production and potential production. Hence, the present study is aimed to know the influence of socio-economic factors such as farmers' education, experience, age, extension participation, extension contact on knowledge and adoption of improved sericultural technologies among three sericultural villages of Aizawl District of Mizoram. The study revealed that education, experience, farm size and extension contact have a positive relationship with knowledge and adoption level, leading to significant increase in cocoon yield and productivity. Hence, the findings of the study concluded that for the dissemination of new technologies, farmers' socio-economic conditions and factors must also be considered for successful and effective adoption.*

**Keywords:** Sericulture, Improved technologies, Adoption, Impact, Cocoon.

### 1. INTRODUCTION

Sericulture is an art of rearing silkworms for the production of cocoon which is the raw material for the production of silk. Mulberry sericulture is a land-based eco-friendly economic activity which is labor intensive and provides a good return to the farmers. It plays a very important role in the socio-economic upliftment of rural population [1]. In recent years many new and improved technologies have been developed by the Research Institutes which bring sericulture industry to a new level of the cocoon and raw silk production. It can provide full-time employment to entire family offering high income and a better standard of living. The practice of sericulture consists of two major activities viz., (i) Mulberry cultivation and (ii) Silkworm rearing [2]. In the last three decades, there were many improved and new technologies developed in order to overcome the constraints and increase the production of cocoon at farmers' level. The State of Mizoram, owing to its diverse topography, offers a tremendous complex variety of habitat and ecosystem. This region is rich in seri-biodiversity and known for its natural abode for a number of serigenous insects and their host plants. The region has the unique distinction of producing all the four kinds of silk, viz., Mulberry, Eri, Muga, and Tasar. Mulberry silkworm, *Bombyx mori* (Lepidoptera: Saturniidae), the producer of Mulberry silk is an inhabitant of the State. Its predominance in this region is perhaps due to the availability of the distinctive ecological requirements of Mulberry silkworm.

Presently, 4009 hectares of land is covered under cultivation of Mulberry plantation and more than 5000 families are actively involving in the culture in Mizoram producing 65 MT of mulberry raw silk. Hence it can be estimated that the productivity of raw silk in Mizoram is only 16.2 Kg per hectare whereas the productivity at the national level is estimated at 98.11 Kg per hectare. So there is sufficient scope to increase the productivity of the State [3].

The desired productivity depends on the acceptance of new technologies and also the extent to which farmers adopt these technologies. The adoption of a new technology is not a simple and one-time process but a number of social, economic, psychological, physical and biological factors influence the process to a considerable extent [4]. Improved technologies even when sound by scientific standards, are of limited value if they are not adopted due to their inappropriateness to suit the agro-climatic and socio-economic condition in which the farmers operate.

Hence, an attempt has been made in this paper to study the influence of socio-economic factors on knowledge and technology adoption among the mulberry farmers.

## 2. METHODOLOGY

For the present study, three sericulture villages viz., Muanna veng, Sesawng, and Kanghmun were selected from Aizawl District of Mizoram and from each village, 20 farmers were selected randomly.

The data on various factors such as age, educational status, family size, farm size, experience, social participation, extension contact, level of knowledge and adoption with respect to mulberry cultivation and silkworm rearing technologies and its impact on production were collected through personal interview method by the aid of a Questionnaire as followed by Mech *et al.* (2004) [5].

## 3. RESULT AND DISCUSSION

The results obtained from the linear regression analysis of the data are presented in Table 1. The values of the coefficient of multiple determination ( $R^2$ ) were 0.551, 0.498 and 0.363 respectively for the models fitted for farmers of Muanna veng, Sesawng, and Kanghmun. It implies that variables included in the model put together explained 0.551, 0.498 and 0.363 percent of the variation in the data with respect to adoption.

When the independent factors were regressed against knowledge and technology adoption, it was found that socio-economic factors such as age, family size, social participation, mass media etc. were related negatively and non-significantly to cocoon productivity. However, the variables like education, farm size, experience, extension contact, extension participation, cocoon yield, and cocoon price were positively related to knowledge and technology adoption among all the three categories of farmers.

The education level of farmers of all the three villages had highly positive and significant influence on the adoption of knowledge and technologies. Similarly, experience had a significant influence on the adoption level of the knowledge and technologies in all the three villages, although significance at 1% in Sesawng. Extension contact, cocoon yield and cocoon price had a significant influence on the adoption level of the knowledge and technologies, irrespective of the villages. Extension participation registered significant influence on the adoption level of knowledge and technologies with the Muanna veng but non-significant influence on adoption levels of other two villages. Overall, the adoption levels among the farmers of different villages were in the order of Muanna veng > Kanghmun > Sesawng.

**Table 1. Socio-economic factors influencing knowledge and adoption of improved sericulture technologies among the farmers of three villages of Aizawl district of Mizoram**

Sr. No.	Independent Variables	Selected Villages								
		Muanna veng (n=20)			Sesawng (n=20)			Kanghmun (n=20)		
		Regression Co-efficient	SE	t-value	Regression Co-efficient	SE	t-value	Regression Co-efficient	SE	t-value
	Constant	43.889	16.690	2.851	40.372	17.205	2.347	35.497	16.279	2.344
1	Education	0.850	0.121	1.706**	0.937	0.584	1.746**	0.944	0.462	1.646**
2	Age	-0.485	0.463	-0.209	-0.332	0.480	-0.477	-0.278	0.485	-0.222
3	Family size	-0.137	0.410	-0.262	-0.153	0.481	-0.372	-0.122	0.436	-0.289
4	Farm size	2.012	0.675	2.117**	1.851	0.437	1.186	1.569	0.872	1.699**
5	Experience	1.553	0.683	1.824**	1.051	0.481	1.632*	1.007	0.148	1.726**
6	Extension contact	0.961	0.693	2.431**	0.792	0.393	2.242**	0.857	0.730	2.590**
7	Extension participation	1.787	1.530	2.255**	1.226	1.124	1.433	1.184	1.238	1.120
8	Social participation	-1.416	0.542	-1.839	-1.202	0.978	-1.649	-1.103	0.775	-1.260
9	Mass media	-8.144	0.348	-0.660	-0.958	0.439	-0.161	-1.010	0.781	-0.133
10	Cocoon yield	0.377	0.227	1.662**	0.263	0.245	1.772**	0.437	0.286	1.725**
11	Cocoon price	0.883	0.304	1.801**	0.310	0.205	1.876**	0.638	0.542	1.761**
12	No. of DFLs	-0.342	0.080	-0.243	-0.693	0.301	-0.832	-0.194	0.449	-0.514
	$R^2$	0.551			0.498			0.363		
	F-Value	1.684**			0.782**			1.362**		

\*significance at 1%; \*\*significance at 5%.

There were some comparative results available from the earlier studies of the influence of socio-economic factors on the adoption level of new sericultural technologies [1, 6-20]. However, there were no sufficient reports available on Mizoram. So our data were compared and analyzed on the basis of other available reports only.

It has already been discussed that many factors directly or indirectly contribute to higher adoption index and cocoon productivity. The results indicated that education, experience, extension contact etc. played a crucial role in the adoption of knowledge and technologies in sericulture in Mizoram. The literacy percentage of Mizoram is very high and it might contribute to the productivity in sericulture. It is obvious that an educated and experienced farmer will be more inclined towards the adoption of new technologies and that may surely increase his production. The reasons for partial/non-adoption of recommended new technologies are lack of knowledge, education and proper labor force; continuing on traditional practice and beliefs by the aged farmers and financial constraints for poor farmers.

However, in the present study, it was found that extension contact was significantly contributing towards cocoon productivity among the less educated and illiterate farmers also. This might be due to the fact that technical guidance provided by the extension personnel helps the rearers to overcome the barrier of illiteracy and change their mind for adopting improved technologies in a scientific way. This is in conformity with the findings of Geetha *et al.* (2001) [6] and Srinivasa *et al.* (1996) [21] who reported that formal education had not influenced the degree of adoption significantly.

In the present study, the area under mulberry was found significantly contributing towards adoption. This may be due to the fact that farmers having large landholding under mulberry could invest more in sericulture leading to the high adoption of technologies which would ultimately result in higher productivity. These results are in conformity with the findings of Munikrishnappa *et al.* (2002) [22] who reported that total land holding and extension contact was having a significant association with adoption process among seri-farmers. The total land area was contributing positively to cocoon productivity, thus supporting the fact that more and more mulberry plantation could be raised if enough land was available and a package of practices was followed. Extension participation of Sesawng and Kanhmun, though not statistically significant, was found positively related to knowledge and technology adoption.

Age was not found to relate positively to the increase in cocoon productivity, which could be because of the fact that sericulture was an inherited occupation in most of the households [23]. Very old experience in sericulture contributed negatively and non-significantly. The reason might be that today new technologies have replaced the older ones at faster rates, thereby well contributing towards health and hygiene of the worms as well as in cut short of rearing procedures.

#### **4. CONCLUSION**

Based on the results of the present study, it can be concluded that the adoption levels of the knowledge and new sericultural technologies among the sericultural farmers of three villages in Mizoram are high with the farmers of Muanna veng in general, followed by Kanhmun and Sesawng. The adoption by farmers influenced greatly the cocoon price and cocoon yield. Experience, education, farm size and participation in various extension activities was seen to help significantly in productivity and its price. It was also noted with surprise that mass media couldn't provide a positive role in increasing the productivity. However, it can be recommended that farmers should be provided with more practical training and motivation towards adoption with dedication. The present study has also shown that the socio-economic factors of farmers were found important in determining the adoption of knowledge and recommended sericultural technologies. Hence, for the introduction of new technologies in sericulture in Mizoram, apart from other technical factors, the farmers' socio-economic characters and conditions must also be considered.

There is scope for the arrangement of practical training, motivational programs towards acceptance of new ideas/technologies and participation in various extension activities conducted by research personals. The farmers should be made aware of the various loans, subsidies (with low interest to the sericulturists) to overcome financial problems by the State and Central Government Agencies.

The findings of the study concluded that with the reliable adoption of new technologies through extension education programmes, the farmers can achieve a higher rate of cocoon production as well as the high price of the cocoons.

#### **5. REFERENCES**

- [1] Sreenivasa, B. T. & Hirianna. (2014). A study on the factors influencing adoption of new technologies in the non-traditional sericultural area of Chitradurga District, Karnataka. *Global Journal of Biology, Agriculture & Health Sciences*, 3(1), 239-243.
- [2] Shashi Kanta. (2017). Improved technologies and their impact on cocoon production of the adopted rearer. *Cibitech Journal of Bio-Protocols*, 6(1), 1-4.
- [3] Annual report – Part II-Central Silk Board, (2016-2017). <http://www.csb.gov.in/assets/Uploads/pdffiles/AR-1213-EN-II.pdf>
- [4] Singh, K. & Yadav, J. P. (1989). Gaps and constraints in wheat productivity: A system analysis. *Agricultural situation in India*, XLIV, 627-632.
- [5] Mech, D., Borah, A., Singh, K. C. & Suryanarayana, N. (2004). Adoption of improved technology package and its impact on production of Muga – a case study. *Indian Journal of Sericulture*, 43(1), 95-98.
- [6] Geetha, G. S., Srinivasa, G., Jayaram, H., Iyengar, M. N. S. & Vijaya Prakesh, N. B. (2001). Socio-economic determinants of farmers oriented technology packages for sericulture- A field study. *Indian Journal of Sericulture*, 40(1), 96-99.
- [7] Suneeldutt, J. & Chole, R. R. (2002) A study on adoption of sericultural practices by sericulturists. *Indian Journal of Sericulture*, 41(1), 1-5.

- [8] Vijaya Prakesh, N. B. & Dandin, S. B. (2005). Factors influencing the adoption of bivoltine sericultural practices in Mandya District of Karnataka. *Indian Journal of Sericulture*, 44(1), 55-58.
- [9] Kumari, K. M. V. & Rajan, R. K. (2006). Knowledge and adoption level of technologies by commercial chawki rearing centre owners in Karnataka. *Indian Journal of Sericulture*, 45(1), 7-10.
- [10] Lakshmanan, S., & Geethadevi, R. G. (2007). Knowledge and adoption level of farmers of bivoltine and crossbreed sericulture technologies. *Indian Journal of Sericulture*, 46(1), 72-75.
- [11] Mallikarjuna, B., Lakshmanan, S., Munikrishnappa, H. M. & Geethadevi, R. G. (2008). An Economic analysis of sericulture vis-a-vis other selected agricultural crops under a rained condition in Chamarajanagar District of Karnataka. *Indian Journal of Sericulture*, 47(1), 115-117.
- [12] Hiriyanan, Kumerasan, P., Mahadevamurthy, T. S., Suma, A. S. & Quadri, S. M. H. (2009). Technological impact on productivity and profitability in mulberry silk cocoon production. *Journal of Agri. Extn. Management*, 10(2), 77-86.
- [13] Sujatha, B., Lakshminarayana Reddy, P., Sankar Naik, S., Vijayabhaskar Rao, A. & Sujathamma, P. (2009). A study on adoption behavior of Sericulturists and their characteristics in Anantapur District of Andhra Pradesh, In *Emerging trends in Biological Sciences*, Daya Publications, Delhi-110, 035, 90-99.
- [14] Srinivasulu Reddy, P., Sujatha, B., Kasi Reddy, B., Rao, T. V. S. S., Vijaya Naidu, B. & Sathyanarayana R. C. (2010). Knowledge and adoption of bivoltine sericultural technologies by farmers of Anantapur, Chittoor and Coastal Districts of Andhra Pradesh - A comparative study. *Indian Journal of Sericulture*, 49(1), 70-75.
- [15] Priyadarshini, B. M. & Vijayakumari, N. (2013). A study on the knowledge and adoption level of improved sericulture practices by the farmers of Chittoor district. *Indian Journal of Agricultural Science and Research*, 3(2), 43-46.
- [16] Goswami, N. K., Nath, P. & Saharia, D. (2015). A study on socio-economic assessment and adoption of scientific technologies by the muga rearers of Assam. *International Journal of Scientific Research*, 4(2), 349-353.
- [17] Choudhury, B. N., Das, S. C. & Ahmed, M. (2017). Studies on knowledge and adoption level of sericultural technologies among the farmers of Aizawl District of Mizoram. *Imperial Journal of Interdisciplinary Research*, 3(5), 1573-1578.
- [18] Priyadarshini B. M. & Vijaya Kumari N. (2017). A study on the adoption of improved Sericulture technologies and success of Sericulture in Chittoor and Kadapa districts of Andhra Pradesh, India. *International Journal of Applied Agricultural Research*, 12(1), 43-48.
- [19] Hadimani, D. K., Moulasab, Ashoka, J. & Manjunath (2017). An Impact Study on Sericulture Production Technologies by the Farmers of Bidar District in Karnataka, India, *International Journal of Current Microbiology and Applied Sciences*, 6(11), 2368-2374.
- [20] Mir, M. A., Baqual, M. F. & Hussan F. (2018). Study on technology adoption by silkworm rearers in Kashmir. *International Journal of Pure & Applied Bioscience*, 6 (1), 313-317.
- [21] Srinivasa, G., Dolli, S. S., Raveendra, M. & Iyengar, M. N. S. (1996). Socioeconomic factors and their relation to adoption of improved sericultural practices. *Indian Journal of Sericulture*, 35(1), 43-45.
- [22] Munikrishnappa, H. M., Jagadisha, K. & Srinivasa, G. (2002). Association of socio-economic characters with knowledge and adoption of improved sericulture practices by sericulturists in Mysore district. *Indian Journal of Sericulture*, 41(1), 89-91.
- [23] Srinivasa, G., Doddagadad, C. B., Jayaram, H. & Geetha Devi, R. G. (1998). Technological practices of sericulturists in non-traditional region of Karnataka. *Indian Journal of Sericulture*, 37(1), 57-60.