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SOCIO-ECONOMIC FACTORS INFLUENCING THE ADOPTION LEVELS OF NEW SERICULTURE TECHNOLOGIES BY DIFFERENT FARMING GROUPS IN ANANTAPUR DISTRICT OF ANDHRA PRADESH

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A B S T R A C T

Recent Indian sericultural technologies revolutionized the Indian sericulture, shifting from cross-breed to bivoltine hybrid sericulture; aiming at higher production and productivity. A study, through personal interview method, on socio-economic factors influencing the adoption levels by different farming groups was conducted in three Mandals viz., Lepakshi, Penukonda and Hindupur of Anantapur District, Andhra Pradesh, covering 120 sericulture farmers (40 farmers randomly selected from each Mandal; n = 40) and finally grouping them into three categories viz., large, medium and small based on their mulberry acreage holding. Results on multiple regression coefficient values indicated that the large farmers are more progressive in adoption of new sericultural technologies, followed by small and medium group of farmers. The socio-economic factors like education, experience , extension contact, cocoon yield and cocoon price of all categories of farmers had positive and significant influence on the adoption level of technologies. Mass media participation had significant influence on the adoption level of technologies with the large but non-significant influence on adoption levels of both small and medium farmers. Socio-economic factors such as age, family size, social participation and number of DFLs consumption per acre had no significant influence on the adoption level of technologies among all the three categories of farmers. The results suggest that the farmers should be provided with more practical training and inputs to accelerate the rate of adoption of technologies for furthering the production and productivity in sericulture..

Keywords: Adoption, socio-economic factors, new sericulture technologies.

INTRODUCTION

Sericulture is an eco-friendly agro-based labour intensive and commercially attractive economic activity, falling under cottage and small-scale sector. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. India stands second in silk production, next to China (Annual report, CSB, 2013-2014). Total raw silk production in India was 26.5 MT, out of which mulberry raw silk production was 19.5 MT (73.55%) during 2013-2014 (Annual report, CSB, 2013-2014). Sericulture plays a key role in the uplift of rural population both socially and economically (Sreenivasa and Hiriyanna, 2014), best suited to both marginal and small scale landholders because of its low investment, high assured returns, short gestation period, rich opportunities for enhancement of income and creation of family employment throughout the year (Raveendran *et al.,* 1993; Srinivasa *et al*., 1998, 2014; Hajare *et al*., 2005). In recent times, India progressed tremendously on developing various technologies on production and protection of both mulberry and silkworm, aiming at drastic shift from cross-breed silk production to bivoltine hybrid silk production (Meenal, 2008). Unless all/most of these innovations reach the field and adopted, the development would have not been take place.

Andhra Pradesh occupies the second position in the country, next to Karnataka in silk production. Raw silk production in Andhra Pradesh was 6911 MT (Annual

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report, CSB, 2013-2014). Andhra Pradesh state has the unique distinction of growing three varieties of Silk, viz., mulberry, tasar and eri. The state is endowed with suitable soils, temperatures and climate forte for development of sericulture industry. The mulberry sericulture activity though practiced in all 22 districts of Andhra Pradesh, three districts viz., Chittoor, Anantapur and West Godavari, contribute to around 75% (Satish Kumar and David Raja, 2015). Anantapur is the first traditional raw silk producing District in Andhra Pradesh. The mulberry acreage is around 21,665 acres, covering 18,750 numbers of farmers (Department of Sericulture, Andhra Pradesh., 2011-2012). The gap between the potential and actual yield is attributed to not fully exploiting and managing the resources by the farmers to achieve high yield. Hence there is a need to have new direction in planning for transfer of technology information by designing more effective linkages between scientists and farmers (Hiriyanna *et al*., 2009). The knowledge and adoption of recommended sericultural technologies are influenced by various socio-economic factors like age, education, economic condition of the farmers etc., (Priyadarshini & Vijayakumari, 2013). An attempt has been made in the present study to understand the socio-economic factors influencing the adoption of new sericultural technologies by different farming groups in Anantapur District of Andhra Pradesh towards increase in cocoon yield and cocoon rate.

METHODOLOGY

For the present study, three Mandals viz., Kuderu, Penugonda and Hindupur of Anantapur District were selected and from each Mandal, 40 farmers were selected randomly (n = 40). In total, 120 farmers were selected from the three selected Mandals. The farmers were grouped into large (>2.0 acres), medium (1-2 acres) and small (0.5-1 acres) farmers based on their mulberry acreage. The study was conducted through personal interview method by the aid of a pre-prepared and tested questionnaire. Data on various factors such as age, education, family size, experience, extension contact, extension participation, social participation, participation in mass media, cocoon yield, cocoon price, consumption of DFLs/acre, area under mulberry, level of knowledge and level of adoption with respect to production and protection of both mulberry and silkworm were collected and recorded. Data were subjected to statistical analysis using SPSS software. Regression functions were fitted to the data so obtained in the field to assess the influence of various factors on the rate of adoption of mulberry and sericulture technologies.

The improved technologies of mulberry and sericulture adopted by the farmers are tabulated in Table 1. The adoption scores were given to each technology adopted and adoption quotients were worked out (Hiriyanna, 2009). The influence of various factors on the adoption of technologies was assessed.

Table 1. Improved mulberry cultivation and silkworm rearing technologies selected for the study.

A	Mulberry Technologies
1.	Mulberry variety – V - 1
2.	Spacing – 3'x3'
3.	Use of (Phosphate Solubilizing Bacteria (PSB) in mulberry cultivation
4.	Application of recommended dose of fertilizers
5.	Vermi composting
6.	Application of Farm Yard Manure (FYM)
7.	Mulberry protection
8.	Pruning
B	Silkworm rearing technologies:
1.	Separate rearing house
2.	Disinfection and hygiene
3.	Incubation
4.	Method of chawki rearing
5.	Method of late age rearing & spacing
6.	Bed disinfectants
7.	Silkworm protection
8.	Mounting techniques and use of Rotary mountages
9	Use of equipments and machineries

RESULT AND DISCUSSION

The regression coefficients computed from the model are presented in Table 2. The values of the coefficient of multiple determination (R2) was 0.65, 0.52, 0.61 respectively for the models fitted for large, medium and small farmers implying that variables included in the model put together explained 0.65, 0.52, 0.61 percent of the variation in the data with respect to adoption.

Table 2. Socio-economic factors influencing adoption of improved sericulture technologies among equal number (n = 40) of large, medium and small farmers. Sample size (n) = 120.

Sr. No	Independent variables	Large farmers (n=40)			Medium farmers (n=40)			Small farmers (n=40)		
		Regression Co-efficient	SE	*t*-value	Regression Co-efficient	SE	*t*-value	Regression Co-efficient	SE	*t*-value
	Constant	46.235	16.621	2.712	44.521	16.423	2.712	98.546	26.412	3.019
1.	Education	0.262	0.089	2.921*	0.417	0.212	2.082*	0.542	0.183	3.124**
2.	Age	-0.084	0.324	-0.258	-0.072	0.083	-0.878	0.027	0.143	0.193
3.	Family size	-0.061	0.282	-0.232	0.287	0.221	1.281	-0.514	0.316	-1.532
4.	Experience	0.352	0.021	9.872**	0.009	0.092	0.081	0.217	0.107	2.012*
5.	Extension contact	0.361	0.105	2.821**	1.293	0.482	2.962**	0.123	0.023	2.279**
6.	Extension participation	1.362	0.852	1.462	-0.319	0.281	-1.319	0.543	0.243	1.321
7.	Social participation	-0.323	0.436	-0.742	-0.263	0.392	-0.597	0.412	0.289	-1.316
8.	Mass media	-0.052	0.263	-0.212	-0.061	0.072	-0.862	0.223	0.512	-0.398
9.	Cocoon yield	0.020	0.005	3.724**	-0.009	0.028	-0.382	0.026	0.010	2.560**
10.	Cocoon price	0.021	0.004	3.857**	0.102	0.098	2.513**	0.089	0.049	-1.382
11.	No. of DFLs	-0.002	0.024	-0.076	0.017	0.019	0.923	0.019	0.054	-1.462
	R^2	0.652			0.526			0.610		
	F-Value	3.623**			2.216**			2.262**		

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

Perusal of the data (Table 2.), it is clear that socio-economic factors such as age, family size, social participation and number of DFLs consumption per acre had no significant influence on the adoption level of technologies among all the three categories of farmers such as small, medium and large farmers. Education level of all categories of farmers had highly positive and significant influence on the adoption of technologies. Similarly, experience has a significant influence on the adoption level of the technologies both in large and small farmers alone. However, experience did not show any significant influence on adoption level of the technologies with the medium farmers. Extension contact, cocoon yield and cocoon price had a significant influence on the adoption level of the technologies, irrespective categories of farmers. Extension participation did not register any significant influence on the adoption of the technologies amongst the categories of farmers. Mass media participation had significant influence on the adoption level of technologies with the large but non-significant influence on adoption levels of both with small and medium farmers. The adoption levels among different categories of farmers was in order of Large > small > medium farmers (Table 2.).

Studying the influence of socio-economic factors on the adoption level of new sericultural technologies in Karnataka, Geetha *et al*. (2001), Sunildutt and Chole (2002), Vijaya Prakesh and Dandin (2005), Kumari & Rajan (2006), Lakshmanan & Geethadevi (2007), Mallikarjun

et al. (2008), Hiriyanna *et al*. (2009), Sreenivasa and Hiriyanna (2014) reported parallel results. From the Andhra Pradesh State, limited references are available (Sujatha *et al*., 2009; Srinivasulu Reddy *et al*., 2010). The results of the present investigation added to the available limited knowledge on the lines of Andhra Pradesh in general and Anantapur District in particular. The reasons for partial/non-adoption of recommended new technologies are lack of knowledge, labour, continuing on traditional practice and beliefs and financial constraints for small and medium farmers. The solutions for those problems are to be provided to these farmer groups through practical training, motivation towards acceptance of new ideas/technologies and participated in various extension activities conducted by research personnel and extension agents. State and Central Government Agencies should provide loans, subsidies with low interest to the sericulturists to overcome financial problems. Drip irrigation facilities should be provided by the Government to all the sericultural farmers with subsidized cost that would minimize the water problems.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, it is concluded that the adoption levels of the new sericultural technologies are high with the large farmers in general, followed by medium and small farmers. The adoption of technologies by farmers greatly influenced the cocoon price and cocoon yield. Education and participation in various extension activities was seen to increase cocoon yield and its price. However, farmers should be provided with more practical training, apart from educating them on the need of their dedicated practice of new technologies accelerate the rate of adoption of technologies for furthering the production and productivity in sericulture. The present study also revealed that the socio-economic factors of farmers were found important in deciding about adoption of recommended sericultural technologies. Hence, for the introduction of new technologies in sericulture, the farmers' characters and conditions must also be considered apart from the technical factors. Finally the findings of the study concluded that the farmers can achieve higher rate of cocoon production with scrupulous adoption of new technologies through extension education programmes.

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