
Impact of Training Programs among Sericulturists of Andhra Pradesh through Technology Demonstration and Validation

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Abstract

India, the largest consumer of raw silk in the world, has been mainly concentrating on production of large quantity of quality raw silk to avoid import of silk from China. Sericulture in Andhra Pradesh is a sustainable farm based economic enterprise positively favouring the rural poor in the unorganized sector because of its relatively low requirement of fixed capital and higher returns. The changes in employment and income opportunities in rural areas may be brought about by selecting a highly labour intensive and high income yielding cropping pattern and sericulture has been identified as one such sector which plays a vital role in generating gainful employment opportunities. The less skillful labour intensive activities in both cocoon production and reeling activities of sericulture compel sericulturists to hold subordinate status and hence are kept out of the interventions made for augmenting knowledge and skills and limited to lowly paid traditional activities. This scenario warrants the up-gradation of skills and knowledge of sericulturists through training on varying activities so as to enable them to harvest sustainable cocoon crop with higher income. Feedback / impact analysis carried out after the training, indicates that the training programs were quite useful and as such are to be frequently arranged for updating their knowledge and to help them gain confidence in sericulture.

Keywords: Sericulture, Training.

Introduction

Silk is the most elegant textile in the world with unparalleled grandeur, natural sheen, and inherent affinity for dyes, high absorbance, light weight, soft touch and high durability and is known as the “Queen of Textiles” the world over. India, the largest consumer of raw silk in the world, has been mainly concentrating on production of large quantity of quality raw silk to avoid import of bivoltine

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silk from China, the leading silk producer of the world. Indian silk industry has registered a phenomenal growth over the years, presently accounting for more than 18% of the global silk production. India has emerged today as the second largest producer of mulberry raw silk besides producing all the varieties of commercially exploited silks of the world. Andhra Pradesh is one of the traditional sericultural areas and its share in the country's raw silk production is substantial *i.e.*, around 20 per cent. Andhra Pradesh is known not only for its raw silk production, but also for its reeling and weaving sectors. Mulberry sericulture is a major cash crop along with peanut in the districts of Anantapur and Chittoor, which contribute 90 per cent of silk production.

Sericulture in Andhra Pradesh is a sustainable farm based economic enterprise positively favouring the rural poor in the unorganized sector because of its relatively low requirement of fixed capital and higher returns. The changes in employment and income opportunities in rural areas may be brought about by selecting a highly labour intensive and high income yielding cropping pattern and sericulture has been identified as one such sector which plays a vital role in generating gainful employment opportunities. The less skillful labour intensive activities in both cocoon production and reeling activities compel sericulturists to hold subordinate status and hence are kept out of the interventions made for augmenting knowledge and skills and limited to lowly paid traditional activities. In spite of the trust laid of late, the accrued benefits and opportunities could not reach the farmers. This scenario warrants the upgradation of skills and knowledge of sericulturists on varying activities *viz.*, handling of new silkworm hybrids including usage of new disinfectants formulated combined with Integrated Nutrient, Disease and Pest Management in mulberry cultivation, disinfection, incubation of eggs, young age silkworm rearing, late age silkworm rearing, silkworm disease management, by product utilization *etc.* so as to enable them to harvest sustainable cocoon crop with higher income. This study examines the impact of training programs among sericulturists.

The productive silkworm hybrids which have been developed by the Andhra Pradesh State Sericulture Research and Development Institute (APSSRDI) and Central Research institutes and as such these new hybrids need to be popularized among the farmers. The new breeds/hybrids, which have been released in the field, are high yielding and hold promise for producing international grade silk. This necessitates the up-gradation of technical skills and knowledge about forward and

backward linkages aimed at increasing per capita income to the farmers. Realizing the importance of socio-economic empowerment of sericulturists and overall growth of the sericulture industry, training was imparted among the sericulturists on technology demonstration and validation. During the training, bottlenecks in the field of cocoon production were identified and addressed. A training programme was organized in undivided state of Andhra Pradesh during 2012 – 13 and 2013 – 14 with the following objectives:

1. Demonstration of handling new silkworm hybrids and disinfectants developed by various research institutions
2. Integrated nutrient, disease and pest management in mulberry - organic farming approach
3. Disinfection of rearing house, Incubation and black boxing technology of eggs.
4. Innovations in silkworm rearing technology and silkworm disease management.

Training

Training programs were conducted for the farmers of undivided Andhra Pradesh in three regions for adopting new technologies and utilizing their professional skills in different aspects of sericulture. A total of 151 farmers were trained covering three regions of Andhra Pradesh in six batches. A total of 48 farmers were trained from Rayalaseema region followed by 45 from Telangana and 58 farmers from Coastal Andhra Pradesh (Table 1). Since sericulture is nontraditional in the regions of Telangana and Coastal regions, the farmers were trained on new technologies and their knowledge updated on mulberry cultivation and silkworm rearing particularly on new silkworm races and eco-friendly disinfectants developed by APSSRDI, incubation technologies and on organic farming approach.

The farmers from Rayalaseema region are traditionally in sericulture and most of them have knowledge on sericulture, however their awareness was updated on the latest technologies. An integrated approach towards success in sericulture industry was taught particularly to these farmers. Simultaneously, training programs were also focused on the improvement of professional skills in different aspects of sericulture to optimize productivity. Besides, focus was also on crisis management in sericulture in seasons like summer and in adverse environmental conditions.

Table 1. Details of Training Programs

Batch No.	No. of trainees (Region wise)			Total No. of farmers
	Rayalaseema	Telangana	Coastal AP	
I	26	0	0	26
II	16	0	1	17
III	0	0	27	27
IV	0	0	13	13
V	6	28	2	36
VI	0	17	15	32
Total	48	45	58	151

Education level of the trainees

The trainees who participated in the training programs are in the range of illiterate to Post Graduation. About 84 per cent of the trainees had education level of 6th – 10th standard and some participants in the age group of 25 – 40 years were post graduates. All the participants were actively involved in the training which has built up confidence among the farmers for successful running of the sericulture enterprise.

Sericulture profile of the trainees

- i. **Mulberry Acreage:** A total of 78 farmers had 2 – 3 acres of mulberry garden followed by 46 farmers in the range of 0.5 – 1 acre and 27 farmers having 3 acres and above. The training was focused on the production of quality leaf through IPM and INM packages by eco-friendly approach, compost making, vermi compost and green manure and their effective utilization in raising quality mulberry gardens for silkworm rearing.
- ii. **Mulberry variety:** A total of 138 farmers had high yielding mulberry variety *i.e.* V1 and remaining 13 had M5 variety. During the training, focus was on the importance of mulberry variety and their high yield through applying various manures. Further focus was also on the input supply of various fertilizers, their ultimate impact on the leaf quality and the importance of high yielding mulberry variety.
- iii. **Classification of trainees:** A total of 50 farmers are CB (cross breed) rearers followed by 31 new farmers taking up sericulture enterprise for the first time. During the training, focus was on skill up gradation covering productive aspects of sericulture including demonstration and handling of new hybrids for productivity, disease resistance, temperature tolerance,

hybrid with longer filament and fine denier. The trainees were sensitized on total sericulture scenario along with the importance of rearing bivoltines (BV) and care to be taken during silkworm rearing.

Table 2. Sericulture profile of individual trainees

Batch No.	Mulberry acreage (acres)			Mulberry variety			Type of farmer			
	0.5 to 1	2 - 3	3 & above	M5	V1	Others	New	CB	BV	Both
I	7	15	4	6	20	0	6	7	5	8
II	4	10	3	0	17	0	2	8	3	4
III	9	14	4	3	24	0	5	10	2	10
IV	5	5	3	0	13	0	2	5	3	3
V	9	22	5	2	34	0	8	14	6	8
VI	12	12	8	2	30	0	8	6	6	12
Total	46	78	27	13	138	0	31	50	25	45

Experienced scientists in specialized fields were invited from Andhra Pradesh State Sericulture Research and Development Institute and Central Silk Board, Bangalore for the training program. Very interestingly some of the progressive farmers were also invited to share their experiences with the trainees and during training, all the trainees were taken on an exposure visit to have direct interaction with the local farmers and to have practical demonstration of latest technologies in the field.

Impact/feedback of the training program

The impact analysis / feedback from the trainees was taken up during the favourable season of silkworm rearing and for this purpose a questionnaire was prepared and administered. The identified team of Scientists / extension personnel collected the information and during the personal visits, the resource persons interacted with the trainees at their work site with a structured questionnaire to obtain the feedback on the training program. The trainees expressed general satisfaction over the technical improvements in their sericultural activities after the training program. In case of mulberry cultivation, the significant change observed was in the application of biofertilizers, usage of recommended dose of fertilizers and vermicompost along with green manuring. Training on pest and disease management made the farmers realize the importance of surface disinfection of silkworm eggs and also the disinfection of rearing house including maintenance of hygiene during silkworm rearing. The chawki rearing concept, integrated pest management, self-mounting and shoot rearing reduced the workload or drudgery which in turn saved money.

Further they opined that the information on the input supply of various fertilizers, their ultimate impact on the leaf quality and the importance of high yielding mulberry variety helped them. They expressed that skill up gradation covering productive aspects of sericulture including demonstration and handling of new silkworm hybrids developed for productivity, disease resistance and temperature tolerance helped them to improve their work efficiency in various activities of sericulture. About 5 per cent of the trainees have left sericulture due to depletion in ground water level and increase in labour wages. In total, the information collected relating to their opinion about the training program and their level of knowledge before and after the training program was compiled and categorized.

Opinion about the training program

More than 90 per cent of the trainees expressed their satisfaction towards the overall training program and its usefulness for effective maintenance of sericulture enterprise. The trainees strongly felt that the objectives of the training program were quite clear and accordingly the day wise training schedule was well planned. Further they felt that most of the resource persons encouraged them to actively interact and participate during the training program. About 95 per cent of the trainees felt that, the training program was quite useful since most of the activities were focused on reducing the drudgery in sericulture which is the need of the hour. Almost all the trainees felt that the content of the training program was made easy to follow.

The resource persons were well versed with sericulture and experience sharing by some of the progressive farmers helped them to understand and correct their day to day sericulture activities. During training, all the trainees were taken for exposure visit to the field to have direct interaction with the local farmers. Most of the trainees felt that the facilities and the time allotted for the training program were sufficient. However some of the farmers felt that, a provision should be clearly made to demonstrate all the sericulture activities practically.

Knowledge level of the trainees before and after the training

Information about knowledge level before and after the training program and views on the training program were collected and are as follows.

- i. Most of the trainees expressed that, they were aware of a few mulberry and silkworm hybrids, but during the training, sufficient knowledge was gained particularly with regard to silkworm hybrids which helped them to choose silkworm hybrids based on different seasons. Further knowledge

on the input supply of various fertilizers, their ultimate impact on leaf quality and the importance of high yielding mulberry varieties helped them in harvesting successful crops.

- ii. Among the trainees, about 45 per cent expressed that they were effectively following the production of quality leaf through IPM and INM packages through eco-friendly approach, compost making, vermi compost and green manure and their effective utilization in raising quality mulberry gardens for silkworm rearing. Before the training program the knowledge on this area of INM and IPM packages was not much but with the training program, they have gained sufficient knowledge.
- iii. About 90 per cent of the farmers opined that before the training, they knew the importance of chawki rearing but after the training awareness was developed on the scientific method of rearing chawki worms which in turn had an influence on the success of silkworm rearing. After the training, 30 per cent are maintaining separate chawki gardens with separate package and practices prescribed.
- iv. After the training program, the knowledge on new silkworm hybrids helped them in selection of particular silkworm hybrids and the knowledge on their special characteristic features helped them to harvest successful crops. With regard to disinfection practices, 70 per cent of the trainees revealed that before the training program they were having knowledge on the disinfection but after the training, the effective way of conducting disinfection program enlightened them in ensuring proper disinfection and meeting its purpose. Further they expressed that after the training, the emphasis on the environmental fluctuations during silkworm rearing made them maintain optimal conditions.
- v. All the trainees opined that, the emphasis on the various important sericultural aspects during silkworm rearing such as moulting, resumption from moult and spinning care have enlightened them to ensure the required optimal conditions. Further the practice of sorting the defective cocoons before the marketing and their proper transportation helped them to obtain maximum price for their produce in the market.
- vi. The training program has impacted much on enabling them to carry out their sericulture practices better which in turn has reflected in the increased cocoon yield of 5 to 7 kgs for 100 dfls besides stability in cocoon crops.

The most significant impact of the training program was that number of crops undertaken by them increased from 3 - 4 crops to 5 - 6 crops leading to an increase in the overall income per year/acre.

- vii. The feedback suggested that providing certain kits along with literature on sericulture would be very useful and further suggested providing more demonstration type training programs. All the farmers / trainees opined that similar type of training programs are to be taken up for updating their knowledge which will in turn help them in obtaining higher yields with assured crops.

Thus, sericulture as a remunerative crop can suit all the categories of farmers from small/marginal farmers with meager resources to large farmers. With short gestation periods, the returns are quick. Further if awareness programs are conducted regularly it would ensure success in sericulture industry and economic empowerment of rural people and in visualizing the vision of Sericulture Department “To achieve self sufficiency for meeting the domestic silk requirement and be the leading silk producing state in India which would lead to a vibrant rural economy by creating employment and income generating opportunities enabling poverty reduction and arresting rural to urban migration of the rural poor”.

References

- Goel, A.K., Chandrashekaraiah and S.V. Seshagiri (2003), Development of Sericulture in Andhra Pradesh, *Indian Silk* (November):13-15.
- Jayaram, H., Mallikarjuna, V., Lakshmanan, S., Ganapathi, Rao, R. and Geetha, Devi, R. G. (1998) Labour Employment Under Different Mulberry Farm Holdings - a Comparative Study. *Indian Journal of Sericulture*, 37(01), p52 - 56.
- Kumaresan, P (2011), Sericulture Industry in India – Retrospect and Prospect, Lead paper presented in Golden Jubilee National Conference on Sericulture Innovations: Before and Beyond on 28th – 29th January, 2011 held at CSR&TI, Mysore, India.
- Purushotham, S and Rama Mohan Rao, P (2009). Economics of sericulture in Anantapur district of Andhra Pradesh. *Agric. Sci. Digest*, 29(2).
- Rajagopal Reddy C., Rajasekhar Reddy P and Venugopal Reddy, L. (1999), Sericulture – Agro based cottage industry for employment and income generation, *Green Technology*, 2(1&2): 29 – 36.
- Raju, P.J. (2006), Socio economic empowerment of tribals through State of the art technologies in Sericulture. (Project completion report, Submitted to DST, Govt. of India, New Delhi.
- Seshagiri, S. V. and R. Ganapathi Rao (2002), Participation of Rural youth in Sericulture – A Case study in Andhra Pradesh. *Indian Silk* (April):12-14.
- Seshagiri, S. V., S. Misra, C. Rajagopal Reddy, D. Vineela, P. K. Kumar and C. Ramesh (2003), Rural youth empowerment through sericulture – A case study. *Bull. Ind. Acad. Seri.* 7(2): 113-117.