Awareness through Training Programs among Sericulture Entrepreneurs of weaker sections- a study in Anantapur district of Andhra Pradesh

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Abstract

Agriculture based Sericulture industry can be seen as an effective socio-economic tool for inclusive growth and for creation of gainful employment to the rural and unemployed youth which helps to uplift the socio-economic status of small and marginal farmers. Compared to agricultural crops, sericulture provides round the year employment and higher income to the rural entrepreneurs. Most of the families in silk industry practice it traditionally without undergoing any specific skill development training programme. As a result, farmers lose their crops and even with lesser cocoon yield, the crop stability and quality is not assured. To make it a more viable, economic and profitable enterprise skilled / trained human resource is very essential. Training provides a systematic improvement in knowledge and skills which in turn helps the trainees to function effectively and efficiently in their given task. The feedback from training organised especially for weaker sections in Anantapur district of Andhra Pradesh covering 211 farmers suggests that the training was quite useful for the farmers in mulberry cultivation and rearing of silkworms on scientific lines to ensure successful crops with higher yield.

Keywords: Sericulture, Training Anantapur, Andhra Pradesh

Introduction

Sericulture as an agriculture based industry can be seen as an effective socio-economic alleviation tool for creation of gainful employment to the rural and

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unemployed youth and helps to uplift the status of small and marginal farmers. Sericulture, a rural-agro based cottage industry, occupies the major portion of silk production, constitutes about 75 per cent of the total silk production. The economic advantages of the Sericulture industry lie in its high employment potential with low investment. Owing to the nature of back-end operations of raw silk production, women have been found to be proactive in silk production. Studies have revealed, that silk production gives higher returns compared to other commercial crops. The silk industry in India involves both on-farm and non-farm sector participation and provides employment to seven million families, from rural as well as urban populations. Compared to agricultural crops, sericulture provides year round employment and higher income to the rural entrepreneurs.Sericulture is a sustainable and commercial viable socio-economic activity requiring proper support and caring hands aimed at creation of an environment conducive to its healthy development. Most of the families in the silk industry practice it traditionally without undergoing any specific skill development training programmes. As a result, the crop stability and quality is not assured. At farmers'level crop yield and cocoon quality vary a lot from crop to crop and farmer to farmer. This variation then reflects into the reeling performance and quality of reeled yarn. To make it a more viable, economic and profitable enterprise skilled / trained human resource is very precious.

Human resource is the most precious resource for any country in general and any enterprise in particular and it is however, not the numerical but the qualitative strength of the people, which forges a country ahead towards progress and prosperity. It is basically the development of human resources that brings about socio-economic or political-cultural transformation of any society. Today the farmers are responsive to new ideas and are willing to take up improved practices. The trained human resources are more useful in ensuring success and managing the enterprise in a successful manner. Farmer training is directed towards improving their efficiency in farming. The kind of education we call as training is not only for knowing more but for behaving differently.

Training plays an important role in the advancement of human performance in a given situation. Training provides a systematic improvement of knowledge and

skills which in turn helps the trainees to function effectively and efficiently in their given task on completion of the training. Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into a vocation or improving ones productivity in an organization or enterprise. Effective training requires a clear picture of how the trainees will need to use information after the training in place of local practices which they have adopted before in their situation. It is worthwhile to mention the statement of Lynton and Pareek (1990) that training consists largely of well organized opportunities for participants to acquire necessary understanding and skills.

The target population have been imparted with practical knowledge so as to make them well versed with the new technologies, rectification of common mistakes, preventive and curative measures and motivation through effective demonstrations. Such participants are expected to adopt correct and innovative practices to optimize the quantity and quality of their produce. Further, these trained personnel in turn transferred the technologies to other members and contributed to overall increase in sericulture productivity in the state of Andhra Pradesh.

Importance of Training in Sericulture

Andhra Pradesh has achieved distinct progress in sericulture industry and stands second in silk production in India. Adequate attention is being given to this vital socio-economic component in Government sponsored developmental activities as also in various other programmes. It 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 the 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, byproduct utilization etc. so as to enable them to harvest sustainable cocoon crop with higher income.

Sericulture can be promoted as a viable livelihood option among the weaker sections in Anantapur district of Andhra Pradesh. As per Directorate of Economics and Statistics in 2016, East Godavari, West Godavari, Nellore, Guntur, Prakasam and Chittoor have registered over one lakh per capita income while, Kadapa (Rs. 91,888), Anantapur (Rs. 89,084), Kurnool (Rs. 88, 308), Vizianagaram (Rs. 86,223) and Srikakulam (Rs. 74,638) were lagging with below one lakh income. Thus the training area, Anantapur district remains one of the poorest districts in Andhra Pradesh based on per capita income despite being rich in natural resources. There is a high incidence of poverty in the districts that are primarily agriculture- based economies. To make most out of the existing natural resources in agriculture, as the monsoon is becoming more and more erratic over the last 10 years, the struggles of small farmers who cannot survive on the staple crop based agribusiness have increased manifold. This is resulting in farmers abandoning farming even though there is no adequate capacity in other secondary and tertiary sectors to absorb them in gainful employment. This exacerbates the case of underemployment and unemployment leading to increased incidence of poverty.

It is interesting to note that, the production and productivity levels in sericulture have remained low mainly for want of proper adoption of improved and scientific / technological interventions. Further, improved agriculture concepts like soil fertility management, soil health care, bio-waste recycling, inter and co-cropping systems, application of green manures and bio-fertilizers, soil pH

management etc., apart from various components pertaining to silkworm rearing practices are also recommended for overall improvement in productivity and sustainability.

Sericulture R & D efforts resulted in the development of several user friendly technologies, developed particularly with breeds suited to high temperature, high humidity and also to rear in adverse conditions. These silkworm breeds and Sericulture technology need to be transferred to the field much more rapidly through technological interventions and training associated with organized support for market growth and money flow so as to support empowerment of the sericulturists economically and socially with over all development of the industry and to uplift the living standards among the rural masses.Improvement in skill and knowledge of rural folk in sericulture along with resource management can bring in substantial improvement in productivity. This leads to seri-economic advancement, which is the need of the hour particularly in rural areas. There are certain areas where technological interventions and related skill up-gradation covering mulberry cultivation and young age silkworm (Chawki) rearing and late age silkworm rearing with supportive prophylactic activities play a vital role towards production and productivity improvement.

Tailored Training Programme

Need based training was given among the weaker sections of the society and or potential entrepreneurs in Anantapur district of Andhra Pradesh so that they emerge as active and powerful value chain participants in sericulture development. This was to ensure gainful employment and enhance the net household incomes of the target group. A value chain approach was adopted to not only engage the target group as beneficiaries but also to build their capacities.

Most of the sericulturists in general and Scheduled Caste / Scheduled Tribe farmers in particular have limited exposure to recent technologies relating to increased production and labour cost reduction including disinfection, hygiene maintenance and seri-waste management. Most of the families in silk industry practice it traditionally without undergoing any specific skill development

training programme. As a result, the crop stability and quality is not assured. At farmers level, crop yield and cocoon quality vary a lot from crop to crop and farmer to farmer. This variation then reflects into the reeling performance and quality of reeled yarn. Due to lack of quality of Indian reeled silk, China silk is preferred for use in warp during weaving of silk fabric.

The productive silkworm hybrids which have been developed by the Andhra Pradesh State Sericulture Research and Development Institute (APSSRDI) and Central Research institutes of Central Silk Board (CSB) 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, the training was imparted among the sericulturists on technology demonstration and validation. During the training bottlenecks in the field of Cocoon production,Mulberry cultivation, Diseases, Pests and their control measures were addressed to a great extent. Focus was on:

- Integrated nutrient, disease and pest management in mulberry - organic farming approach
- Demonstration of handling new silkworm hybrids
- Disinfection and hygiene maintenance.
- Incubation and black boxing technology of silkworm eggs, Innovations in silkworm rearing technology and silkworm disease management.
- Latest Sericulture technologies and financial assistance available from the government.
- Supply of required tool kits to each of the trainees.

During the year 2016, a total of 211 farmers belonging to Scheduled Caste (SC) / Scheduled Tribes (ST) were specially trained for two days in five batches and tool kits were also distributed during the training programme. To upgrade the knowledge of all including progressive, middle and marginal farmers, APSSRDI is continuously making concerted efforts for the update of latest technologies and to convert the farmers on scientific lines so as to ensure financial empowerment. In almost all the cases, a need was felt to support farmers in terms of technical guidance and financially to uplift their status and their continuity in Sericulture and in turn contribute to Rural development. The activities involved in sericulture require proper time-to-time attention fitting into the instinctive qualities of rural folk. Up gradation of knowledge on certain important activities of sericulture especially covering the new and scientific technologies for cocoon production and related activities of silk production is the need of the hour.

Training programmes were conducted for the farmers of Anantapur district of Andhra Pradesh for adopting new technologies and utilizing their professional skills in different aspects of sericulture. 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. Since the farmers are traditional in nature with respect to sericulture, most of them have knowledge on sericulture, however their awareness was updated on the latest technologies. Particularly for these farmers, an integrated approach towards success in Sericulture Industry was taught. Simultaneously the training programmes were also focused on the improvement of professional skills in different aspects of sericulture to optimize the productivity. Besides, it was also focused on crisis management in sericulture during summer and adverse environmental conditions.

The details of the training programme are as follows.

Table 1. Details of Training Programs

Batch No.	Total No. of Farmers		
	SC	ST	Total
I	24	16	40
II	23	17	40
III	26	14	40
IV	40	0	40
V	43	8	51
Total	156	55	211

Education Level of the Trainees

The trainees who participated in the training programs are in the range of illiterate to PG. About 84 per cent of the trainees were at the education level of 6^{th} – 10^{th} standard and certain participants are Post Graduates and are in the age group of 25 – 40 years. 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: In total, 105 farmers who attended the training programme in five batches have 1 – 2 acres of mulberry garden followed by 65 farmers in the range of 0.5 – 1 acre and 41 farmers having 3 acres and above (Table 2). The training, was focused on 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.

ii. Mulberry variety: 202 farmers are having high yielding mulberry variety i.e. V1 and 9 farmers are having M5 varieties. During the training, focus was on the importance of mulberry variety and their high yield through applying various manures. Further input supply of various fertilizers, their ultimate impact on the quality leaf and the importance of high yielding mulberry variety were also covered.

iii. Classification of trainees: 125 farmers who attended the training are CB rearers followed by 86 farmers rearing both CB and Bivoltine (BV). During the training, focus was on skill up gradation covering the productive aspects of sericulture including demonstration and handling of new hybrids, developed by APSSRDI for productivity, disease resistance and temperature tolerance. The common mistakes committed during silkworm rearing were taught along with the major steps to be followed during bivoltine silkworm rearing.

Table 2. SericultureProfile of the Individual Trainees

Batch No.	Mulberry acreage (acres)			Mulberry variety			Type of farmer	
	0.5 to 1	1 – 2	3 & above	M5	V1	Others	CB & BV	CB
I	7	25	8	0	40	0	12	28
II	18	17	5	2	38	0	9	31
III	13	15	12	1	39	0	20	20
IV	15	16	9	4	36	0	25	15
V	12	32	7	2	49	0	20	31
Total	**65**	**105**	**41**	**9**	**202**	**0**	**86**	**125**

As per the training schedule and objectives of the training programme, the resource persons having vast experience and practical sericulture knowledge were invited.Further, the practical demonstration of latest technologies pertained to silkworm rearing such as black boxing of silkworm eggs, disinfection of rearing house, recording and monitoring of temperature and humidity etc. A tool kit consisting of Secature (Big), Secature (Small), Poshan (Micronutrients for mulberry), Biofertilizer and *Trichodermaviridi* were distributed. After successful completion of the training programme, feedback was collected from the trainees about the usefulness of the training programme and the method of conducting training.

Feedback of the training programme

Feedback from the trainees was also obtained after the completion of the training programme during June – July, 2017. For this purpose a questionnaire

with relevant information was prepared and the identified team of Scientists / Extension personnel from the Department of Sericulture conducted the impact assessment. The survey revealed that most of the trainees have changed from a traditional to a more scientific way of doing things and harvesting successful crops which has improved their socio economic status to the extent possible. Still there is scope to improve their status by regular guidance and with financial support for certain items. Further the trainee farmers have felt the need for organizing such similar practical oriented training programmes to update their technical skills in Sericulture.

The feedback from the trainees was obtained during the favourable season of silkworm rearing and for this purpose a questionnaire with relevant information was administered. The resource persons interacted with the trainees at their work site with a structured questionnaire to obtain feedback on the training programme. The trainees expressed satisfaction over the technical improvement in sericulture activities. In case of mulberry cultivation, the farmers could realize the importance of soil testing and based on the testing results, the application of biofertilizers, and recommended dose of fertilizers and vermicompost along with green manuring is being taken up. The farmers have realized the importance of organic farming and application of bio-control agents for control of mulberry pests. Further, agriculture and sericulture waste is being properly recycled. The training on silkworm rearing includes the incubation of silkworm eggs, block boxing for uniform hatching, tips for management of chawki silkworm rearing and late age silkworm rearing which have helped the farmers to know their common mistakes committed during silkworm rearing. The importance of disease management made the farmers realize the need for surface disinfection of silkworm eggs and the disinfection of the rearing house including hygiene maintenance.

Further they realized that the quality and quantity of mulberry leaf is influenced by the application of Farm Yard Manure (FYM) and chemical fertilizers as per the recommendation based on the soil testing. During the training, the

information for skill up gradation covering the productive aspects of sericulture including demonstration and handling of new silkworm hybrids developed for productivity, disease resistance and temperature tolerance have helped them to improve their work efficiency in various activities of sericulture. More interestingly, many of the farmers have voluntarily converted from the rearing of Cross breed silkworms to Bivoltine silkworm rearing. In the present scenario, such a phenomenon is quite useful for production of quality bivoltine silk. In total, the information collected was compiled and categorized under opinion about the training programme and their level of knowledge before and after the training programme.

Feedback from the Trained Sericulturists

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

The resource persons were well versed with sericulture with experience in their specialized fields and sharing the experiences of some of the progressive farmers helped them to understand and modify their day to day sericulture activities. During training, all the trainees were taken on field visits for exposure and to have direct interaction with the local farmers. Most of the trainees felt that the facilities and the time allotted for the training programme was sufficient. However some of the farmers felt that, a provision should be clearly made for practical demonstration of all the sericulture activities.

Impact Assessment: Evaluation of training programme is essential to judge its value or worth. Hamblin (1974) defined evaluation of training as an attempt to obtain information (feedback) on the effects of a training programme and assess the value of training in the light of the information. He felt that it is strictly impossible to measure the total value of a training programme in social as well as financial terms, as there are several levels of intermediate objectives in a training programme. However an attempt has been made in the present paper to analyze the collected information and to know the extent of meeting the objectives. The collected information about their sericulture knowledge level before and after the training and their views on the training programme were analyzed.

Technology / Knowledge Awareness level before and after the Training

1. The trainees expressed that, they were well aware of the mulberry varieties. Many of the farmers have expressed that they were hardly aware of silkworm hybrids and opined that during the training, sufficient knowledge was gained on silkworm hybrids particularly bivoltine varieties such as Single hybrids and Double hybrids which in turn helped them to choose silkworm hybrids according to different seasons.

2. Before the training programme theywere of an opinion that, usage of abundant chemical fertilizers would increase the mulberry leaf quality and yield. However, during the training, they learnt that Integrated Nutrient Management (INM) is the need of the hour not only to increase the mulberry leaf quality but also for leaf yield.

3. IPM is a sustainable approach to manage pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks.

4. Before the training programme their knowledge on INM and IPM packages was not much but during the training, they have gained sufficient knowledge. Among the trainees, about 78 per cent have expressed that they were

effectively following the production of quality leaf through IPM and INM packages by eco-friendly approach, compost making, vermi compost and green manures and their effective utilization in raising quality mulberry gardens for silkworm rearing.

5. Almost all the farmers have opined that before the training, they knew the importance of chawki silkworm rearing but after the training,more awareness was developed on the scientific method of rearing chawki worms. Further they learnt about the importance of procuring chawki silkworms from certified Chawki Rearing Centers (CRCs). After the training programme, most of the farmers are mandatorily bringing the chawki silkworms from the certified CRCs which has further ensured the success of silkworm rearing and also to obtain higher yields.

6. After the training programme, the knowledge on new silkworm hybrids helped them in selection of silkworm hybrids and the knowledge on their special characteristic features helped them to harvest successful crops.

7. With regard to disinfection practices, most of the trainees expressed that before the training programme they were having knowledge on the disinfection. However,after the training, they were enlightened on the effective way of conducting disinfection programme to ensure proper disinfection and to meet its purpose.

8. The trainees expressed that after the training, the importance of management of environmental fluctuations during silkworm rearing made them maintain optimal conditions which has led to harvest successful crops.

9. All the trainees opined that before the training they used to commit simple mistakes during silkworm rearing. After the training programme, the emphasis on the various important phases of silkworm rearing such as moulting, resumption from moult and spinning care have enlightened them to ensure the required optimal conditions.

10. The practice of sorting the defective cocoons and also removal of floss of bivoltine cocoons before the marketing and their proper transportation helped them to obtain maximum price for their produce in the market.

11. The most significant impact of the training programme was that the 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. Further the cocoon yield has gone up to an extent of 4 – 5 kgs per 100 Dfls besides crop stability.

12. The feedback also suggested that the distribution of kits along with literature used in sericulture was very helpful. Most of the farmers felt that the training programmes are to be continuously held to update their knowledge in the field of sericulture.

Since sericulture is a remunerative crop which suits all the categories of farmers from small/marginal farmers with meager resources to large farmers, and has a short gestation period, the returns are quick. Continuous training programmes are very much required to update the knowledge of the farmers which in turn ensures success in sericulture. Further it is believed that the training programmes are critical in bringing rural prosperity as training helps farmers to incorporate the latest scientific advances and technology tools into their daily operations. Further,conducting awareness programmes regularly can help ensure success in sericulture industry and economic empowerment of rural people to help realize the vision of the Sericulture Department. The results show that even though considerable efforts have been made in training of farmers in the common vocations and areas of interest, there still remains a gap which needs to be addressed. The study revealed that, training programmes help to develop a vibrant and sustainable farmer base by overall improvement in production, productivity and output quality through expansion of area under plantation in mulberry.

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