

Teaching Technical Skills in Sericulture

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Introduction

The Central Sericultural Research and Training Institute, Mysore, Karnataka offers a training course for extension staff to effectively transfer the technology in the field and the sericulturists to set up and look after their own silkworm rearing programmes. The course generally consists of 50 per cent of theory inputs and 50 per cent of practical inputs (teaching skills / practical sessions). During the course, the participants have to attend to silkworm rearing under the supervision of experienced trainers in the morning and evening hours for a period of one hour in the early stages of silkworm to 2 hours in the later stages. They may have to spend the entire day sometimes during silkworm spinning stage to deliver the matured larvae to mountages for spinning. The participants also attend the theory classes, which enable them to blend their skills learnt during rearing.

About 25 to 30 candidates attend in each batch, making it a total of 250 to 300 per year and about 1000 participants have undergone the training in the last 5 years. These numbers are more than the expected, suggesting that the programme is well drawn and meets the clientele requirements. This has created a significant demand for similar training programmes in the country. Such programmes will have positive impact on rural economic development.

During the training programme, the technical and extension skills of the field extension staff are sharpened through a structured schedule of topics covering subjects viz., mulberry cultivation, silkworm rearing, economics, extension techniques and management. The course is focused on training the participants to take up the extension work independently and also improve their leadership styles and communication skills and the farmer trainees to take up cocoon production independently.

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Farmers can become good managers if they have better technical skills. Good managerial and extension skills including leadership styles and communication skills can help extension staff. The trainees are involved in developing and updating knowledge on mulberry and silkworm rearing technology, developing or modifying the syllabus / curriculum according to the needs of the group, identifying the weak points in the knowledge and skill level of participants, formulating the most suitable topics, selecting and finalizing suitable faculty for each of the topics, imparting knowledge on extension methods and profitability of sericulture, measuring the impact of training programmes. The course has a focus on planning and implementing new sericulture projects independently.

In order to help the participants grasp the relevance of teaching, focus is on practicing silkworm rearing independently by all the participants. The curriculum addresses various topics including planning, management, budgeting, mulberry technologies and silkworm technologies. Apart from classroom teaching the participants are also involved in field studies during which they are exposed to the available infrastructure and government support that is available for the sericulture industry. They are also exposed to marketing of cocoons and quality assessment of cocoons and to earlier participants who have achieved success. The farmer participants are asked to formulate a project / plan indicating how they plan to go about starting their own cocoon production unit.

Assessing the Impact of the Training

To assess the impact of the course, the trainees were given a pre test and final test, after the completion of the training. These tests measure the trainees' competency in technical information. A questionnaire was also circulated to obtain their opinion about the facilities and the way the course was implemented. The data thus collected, were tabulated, scored and analyzed. The following indices were calculated to draw some meaningful conclusions. The data pertains to the trainee participants who attended the course (Intensive Bivoltine Programme) during the years 2001-2005.

Training Facility (TF) indicates the trainee's satisfaction about the facilities that were provided to them during the course

$$TF = \frac{\text{Score obtained}}{\text{Total score obtainable}} \times 100$$

Training Efficiency (TE): This index indicates efficiency of the training programme. This index is calculated by using the formula

$$TE = \frac{\text{Score obtained}}{\text{Total score obtainable}} \times 100$$

Training Utility (TU): This refers to the usefulness of the course content to the participants after the training programme

$$TU = \frac{\text{Score obtained}}{\text{Total utility score obtainable}} \times 100$$

$$\text{Training Management Index} = \frac{\text{Training facility} + \text{Training efficiency} + \text{Training utility}}{3}$$

To assess the impact of training on knowledge and adoption of the participants, a questionnaire was circulated before and after the training programme and the improvement in knowledge level was measured [Anastasi, 1961] by using the formula

$$\text{Improvement in knowledge} = \frac{\text{Post test score} - \text{Pre test score}}{\text{Pre test score}} \times 100$$

The performance of the trainees, in rearing, was also studied by using the data from their practical training. The indicators like cocoon yield, cocoon characters, etc., were used to assess the capability of the participants to apply the technology,.

Results and Discussion

The data generated during the training programmes was analysed and presented in a tabular form using simple percentages.

The results indicate that, improvement in the knowledge level of the participants ranged between 5.73 per cent and 47.86 per cent (table 1). The highest improvement in knowledge was found during 2001-02 which later on decreased as the participants attended other training programmes on sericulture where in only part of the curriculum was covered. More over the curriculum was modified batch by batch based on the training needs of the participants. The post-test score obtained by the participants was above 80 per cent in all the years of study, indicating the stability and quality of the curriculum and training imparted.

Table – 1 : Impact of training on improvement of knowledge level of participants

n = 1000

Sl.No.	Year	Pre test score (%)	Post test score (%)	Improvement (%)
1.	2000-01	56.58	82.49	45.80
2.	2001-02	58.50	86.50	47.86
3.	2002.03	63.33	84.25	33.03
4.	2003-04	75.65	89.22	17.93
5.	2004-05	76.19	81.92	5.73

From table 2, it can be observed that according to the feedback received from the participants, the training efficiency ranged from 80.11 % to 95.64 % over the study period. The training facility ranged between 73.44 % and 92.24% indicating that the hospitality provided during the training programme including the residential facilities were in line with the expectation of 90 per cent of the participants and there was not much change over the years. Regarding the usefulness of the training programme, the participants opined that the training inputs are highly useful to their job requirements (ranged between 76.44 % and 93.22 %). The management index indicated the average of efficiency, utility and facility. In no year under consideration was the management index

Table – 2: Opinion of the participants on indicators of training

n = 1000

Sl. No.	Year	Training			
		Efficiency (%)	Facility (%)	Utility (%)	Management Index (%)
1.	2000-01	95.64	90.92	86.91	91.15
2.	2001-02	80.11	85.66	76.44	80.74
3.	2002-03	85.45	73.44	93.22	84.04
4.	2003-04	87.14	89.22	85.12	87.16
5.	2004-05	89.65	92.24	91.54	91.14

obtained less than 80 per cent, thus indicating that 80 per cent of the participants who underwent training were satisfied about the training programme and the way it was managed and coordinated.

The data provided in table 3 are the annual average figures for various parameters selected and expected to determine the quality of cocoon produced by the participants over the years. From the table it is clear that the parameters have improved over the years under study in relation to the curriculum prepared and advocated. The Shell Ratio, which is considered to be the most important

Table - 3: The silkworm rearing performance indicators used during the training programme

Year	Single cocoon wt. (gm)	Shell Ratio (%)	Effective Rate of Rearing(No.)	Yield / 100 Dfls	Price (Rs/kg.)
2000-01	1.64	21.23	8145	73.44	198.83
2001-02	1.72	21.49	8248	77.98	204.23
2002-03	1.91	23.10	8516	78.47	143.85
2003-04	1.71	23.16	9164	77.80	171.17
2004-05	1.92	22.67	9111	81.78	156.30
Mean	1.78	22.33	8637	77.89	174.87

character to determine cocoon quality, has increased over the years and is comparable with any of the international standard race. The cocoon yield per 100 dfIs (i.e., 50000 silkworm larvae) was found to increase over the years with an average of 78 kg. This is a clear reflection of the silkworm rearing skills practiced by the trainee participants over the years. The ERR, which indicates the survivability of silkworms averaged to 8637 out of 10000 silkworms brushed, ranging between 8145 and 9164.

Conclusion

The training programmes which involve both crop production activity (e.g. mulberry cultivation the food plant of silkworm (*Bombyx mori*) and a zoological activity (e.g. silkworm rearing) can choose a similar type of curriculum wherein the theoretical and practical (skill oriented) inputs go hand in hand. This method proved to be effective as indicated by the feed back of the trainees.

References

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