Impact of Double Hybrid Silkworm Rearing Technology and Knowledge of IVLP Farmers in Madanapalli Cluster

P. M. Muniswamy Reddy¹, M. Ramesh², D. Mohan Rao³, B. Ravi Naik⁴ & P. Jayaprakash⁵

¹, ², ³ Silkworm Seed Production Centre, NSSO, Central Silk Board, Madanapalli-517325, A.P
⁴Department of Sericulture Govt. of Andhra Pradesh, Madanapalli- 517325, A.P
⁵National Silkworm Seed Organization, Central Silk Board, Bangalore-560068

Abstract: Sericulture is one of the most important rural industries practiced since several decades. It has certain inherent advantages of generating regular income throughout the year by raising silkworm cocoons of traditional cross breeds under IVLP programme bivoltine double hybrids rearing technology has been introduced for improved cocoon production both qualitatively and qualitatively in Madanapalli area of chittoor district, A.P. The programme has been introduced at central silk board and state DOS level to educate sericulturists, still a wide gap exists between the recommended technology and actual adoption by Sericulturists. To plan a suitable intervention strategy, to bridge this gap, it is necessary to understand the present knowledge and adoption level for improved technologies, so also existing mulberry leaf yield package of practices, disease and pest management, integrated nutrient management, leaf harvesting and quality of cocoon production level. It is, therefore, present study was conducted to know the extent of adoption of improved practices at farmer’s level in selected areas of Madanapalli B- Kothakota, PTM, Thambalapalli, Mulkalacheruvu, covering Five locations with purpose of finding whether or not by adopting the improved sericultural technologies are transferred meticulously and adopted sincerely. A gain to the extent of 65Kg to 70 Kgs in cocoon yield over the adaptation of new technologies and Knowledge level improvement (77.6% & 74.2%, 72.8%, 55.8% & 53.1% respectively) (78.1%). The details of the sericulture technologies demonstrated and their cumulative impact are discussed.

Keywords: IVLP, Bivoltine double hybrids, Silkworm Rearing, Mulberry variety.

INTRODUCTION

Andhra Pradesh is the second largest producer of silkworm cocoons in the country and sericulture is an important activity in the drought prone chittoor district in Madanapalli. The productivity depends on the extent to which farmers adopt the new technologies. Adoption of new technologies by farmers leads to increased production and sericultural development. Almost all-commercial silk is made from cocoons spun by silkworms of the genus Bombyx. Bivoltine silkworm rearing is a very complicated process, which requires various technical aspects, specific management skills, due understanding and experience. The practice of sericulture consist of two major activities viz., cultivation of mulberry plants for producing leaf to the silkworm larvae and the rearing of silkworm larvae to produce the quality of cocoons, which is the raw material for the silk reeling industry. Silkworm is an economical and helpful insect and is reared by many farmers throughout world. It was decided to adopt the villages for Sericultural development through Institute Village Linkage Programme (IVLP) a participatory approach of scientists, extension functionaries and farmers [4]. The main objective of the programme was to improve the socio-economic condition of the sericultural farmers of selected villages through improvement in productivity level of mulberry and cocoon yield in a sustained manner and to distribution of chemicals in free of cost to farmers through IVLP programme in Madanapalli. The present study was undertaken to assess the impact of silkworm rearing impact on knowledge and adoption level of double hybrid silkworm rearing technologies Introduction of commercial double hybrid bivoltine rearing practices in India is revolutionizing the bivoltine silk production in South India [10, 11].

MATERIALS AND METHODS

The Institute Village Linkage Programme will be implemented during the current 12th plan period for 100 farmers per each programme. Central Office, Bangalore has fixed a target of one programme for the Institute which will be implemented through Andhra Pradesh of Madanapalli areas, Chittoor Distract (B-Kothakota/ PTM / Molakalacheruvu/
Selection of villages, farmers and benchmark survey has already been completed in association with local State Govt. Department of Sericultural (DOS). [7, 8].

In the present study the beneficiary farmers were compared before and after the intervention and popularization through the IVPL programme bivoltine double hybrid silkworm rearing new technologies and knowledge level.

TECHNOLOGIES TO BE IMPLEMENTED IN THE SELECTED PROJECT AREA:

- **Maintenance of Mulberry Plantation:**
  Necessary steps to be taken up in maintenance of mulberry plantation specially plant spacing and irrigation system etc., would be imparted to the farmers for self-sufficiency with regard to the mulberry wealth.

- **Integrated Nutrient Management (INM):**
  The basic concept of nutrient management is to promote and maintain soil fertility for sustained mulberry leaf production through application of fertilizers based on soil testing report and manures, bio fertilizers, vermicomposting and green manures in an integrated manner. The main purpose of the integrated method is to utilize all the available sources of plant nutrients in a judicious, effective and efficient manner.

- **Pruning / leaf harvesting, Leaf transportation and preservation techniques:**
  Under tropical condition, proper pruning methods, leaf harvesting techniques, transportation and preservation techniques will be adopted for better crop performance.

- **Disinfection of rearing house:**
  Before commencement of silkworm rearing destruction of disease causing germs to eradicate the disease will be followed. For said purpose disinfection of rearing houses and rearing equipment’s will be carried out by using bleaching powder, lime, Chlorine-di-oxide (Sanitech/Sericllore) and formalin solution to ensure successful crop. The same procedure will be followed after completion of each crop.

- **Chawki / late age rearing technologies:**
  The concept is to chawki rearing (young age) silkworms under ideal environmental conditions of temperature (26 - 28°C) and humidity (80 to 85%) feeding of good quality mulberry leaf. The specific package will make young larvae robust and healthy. During late age rearing the ideal temperature (24 to 25°C) and humidity 65% with good quality leaf will be followed. Use of plastic trays and paraffin paper for chawki rearing and shelf system (shoot rearing) for late age rearing will be advocated to bring down the cost of production of cocoons.

- **Use of Bed disinfectants:**
  To overcome the problem of outbreak of diseases, use of bed disinfectants will be ensured after every moult and on the fourth day of final instar. For the said purpose Vijetha, Ankush (VijethaGreen), and Lime etc., will be used as per the recommended dosages to ensure the successful crop [5].

- **Integrated management of mulberry pest and diseases:**
  Integrated pest management system will be adopted for effective control of mulberry pests and diseases.

  **Silkworm disease management:**
  All precautionary measures will be taken to control silkworm diseases and pests.

- **Cocoon harvesting and transportation techniques for better price:**
  Before sale of cocoons each farmer will be demonstrated about proper harvesting, sorting of flimsy, double and stained cocoons for fetching better price.

RESULTS & DISCUSSION

The productive bivoltine double hybrids had resulted in a linear improvement of cocoon yield and quality of raw silk. However, these productive hybrids could make much impact to the selected farmers who could able to provide required inputs and adopted new technologies and managerial skills and Knowledge level which were essential to realize the maximum, potential of these double hybrids silkworm rearing Table-1&2. (77.6% & 74.2%, 72.8%, 55.8% & 53.1% respectively) (78.1%). But whenever, there is an improvement in quantitative characters in double hybrid survivals significantly increasing trend to the extent of 65Kg to 70 Kgs in cocoon yield. In the present investigation, the IVLP farmers practiced both sericulture and agriculture crops for earning their livelihood and to increase the socio-economic conditions in their family [2, 6].
Impact of technological interventions:
It was observed that due to technological interventions mulberry plantation, leaf yield was increased by adopted wider spacing, high yielding mulberry variety of V1 in 3'x3'x5 (paired raw system) spacing was one of the reasons for increased quantity and quality of productivity (55.6%). Significantly increase in cocoon yield also observed which may be attributed due to quality leaf obtained from high yielding mulberry variety. Thus, the programme was successful in increasing the overall cocoon yield (65kgs -70kgs). The acreage under mulberry was also increased by adopting new technologies and study tour programmes arranged Karnataka progressive farmers it is well suitable mulberry gardens and rearing houses which was due to fundamental motivation of the farmers themselves after getting sustainable benefit through the IVLP programme [1, 2, 3, and 9].
Impact of technologies adopted by the selected farmers in each village would be assessed based on the knowledge they have before and after IVLP programme during the year 2015-2016. For assessing the quality, effectiveness and impact of the IVLP, regular evaluation will be done. Farmers received a good remuneration from this improvement. The gross and net income from bivoltine double hybrid silkworm rearing was increased a lot which indicated their improvement in economic standard. The disinfectants/chemicals, study tours and group discussions support under IVLP has enlightened the farmers and now they could handle the enterprise confidently with ensured application of technological inputs which is reflected from their income earning status from this avocation. Hence, similar type of programme should be emphasized for the overall development of Indian Sericulture farming.

OUTCOME:
After successful implementation of the IVLP project, the covered farmers shall be self-reliant in respect of sericulture new technologies and knowledge level, able to take up 5-6 rearing’s per annum and enhances their income for better livelihood. It will also have positive impact on the neighboring farmers and the entire area shall be benefitted.

Table 2: Impact of IVLP Programmes on Technologies Adoption of the Farmers

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Technologies / Practices</th>
<th>Technologies Adoption Level (2015-2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of participants</td>
</tr>
<tr>
<td>1</td>
<td>Maintenance of Mulberry Plantation</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Disinfection of rearing house</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Pruning / leaf harvesting, Leaf transportation and preservation techniques</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Chawki / late age rearing technologies</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Use of Bed disinfectants</td>
<td>100</td>
</tr>
<tr>
<td>6</td>
<td>Integrated management of mulberry pest and diseases</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>Silkworm disease management</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>Cocoon harvesting and transportation techniques for better price</td>
<td>100</td>
</tr>
</tbody>
</table>
REFERENCES


Fig: 1. IVLP, MULBERRY PLANTATION, DISINFECTION, GROUP DISCUSSION & STUDY TOUR PROGRAMMES