

Adoption of Improved Sericultural Technologies among Farmers of Mizoram State

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Abstract

The state of Mizoram is endowed with a very pleasant and conducive climatic condition for silkworm rearing along with fertile soil and abundant rainfall giving a favourable atmosphere for sericulture activities. Mulberry silkworm Bombyxmori is an inhabitant of the State. Mulberry is cultivated in 4094 hectares in approximately 175 villages and Mizoram occupies the third place in producing mulberry raw silk (75 MT) among the northeastern states of India. The gap between the potential and actual yield in mulberry sericulture is very wide. One major factor is attributed to be ignorance and non-adoption of improved recommended technologies. The productivity depends on the extent to which farmers adopt new technologies. With this background the present study was conducted to assess the adoption of improved technologies, with 60 sericulture farmers of three districts in Mizoram. The findings reveal that 100 percent of the respondents adopted the tray rearing method and plastic collapsible mountage and have a separate rearing house. Low level of adoption was found in integrated pest management (60 % partial and 40 % no adoption) and integrated nutrient management (75% partial adoption). Hence there is a scope for the extension agency to conduct training programs on integrated pest management and integrated nutrient management in the study area.

Keywords: Adoption, Mulberry, Sericulture, NERTPS and Mizoram State

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Introduction

Sericulture is an eco-friendly labour intensive agro-based cottage industry providing subsidiary employment to rural farmers especially the weaker sections of the society. It is the cultural heritage in the north-eastern region and is one of the most promising income source of the north-eastern region without spending much for its cultivation (Ananda Kumar 2006). The state of Mizoram is endowed with a very pleasant and conducive climatic condition for silkworm rearing along with fertile soil and abundant rainfall giving a favourable atmosphere for sericulture activities (Choudhury et al., 2013). Mulberry is cultivated in 4094 hectares in approximately 175 numbers of villages and occupies the third place in producing mulberry raw silk (75 MT) among the northeastern states of India. It has generated employment for about 4197 farmers, most of them being marginal, women and weaker sections in the society (CSB, 2019). The gap between the potential and actual yield in Mulberry sericulture is very wide. One major factor is attributed to be ignorance and non-adoption of improved recommended technologies. The productivity depends on the extent to which farmers adopt new technologies (Vijaya Kumari et al., 2015). Hence an attempt has been made in this paper to assess the adoption level of improved technologies among sericulture farmers of Mizoram state.

Methodology

The present study was conducted in three districts i.e. Aizawl, Champhai and Lunglei which were selected for the study based on the highest cocoon production in Mizoram. A total 60 sericulture farmers were selected for the study based on snowball sampling technique. The interview schedule was prepared for collecting data from the respondents. Data were collected through personal interview method; the data collected from selected sericulture farmers were coded and tabulated keeping in view the objective of the study.

Adoption among sericulture farmers was measured on a three point continuum as 'Full adoption', 'Partial adoption' and 'No adoption' by assigning the scores of 2, 1 and 0, respectively (Pramod Kumar, 2018). The important sericulture management practices were selected in the major areas like mulberry cultivation, silkworm rearing and other supportive technologies for sericulture by consulting with sericulture specialists of CSR&TI, Berhampore and review of literature. Based on total scores, the respondents were classified into three categories i.e., low, medium and high by using mean and standard deviation as a measure of check.

Results and Discussion

Adoption of Improved Sericulture Technologies in Mizoram

Adoption of improved sericulture technologies was categorised into three categories viz. Mulberry cultivation, silkworm rearing and other technologies.

Table 1. Distribution of the Respondents based on Adoption of Improved Mulberry Technologies in Mizoram (n: 60)

S.N	Statements	Full	Partial	No
Adoption of Mulberry technologies				
1.	Adoption of improved mulberry varieties (S-1635)	60 (100 %)	-	-
2.	Planting of mulberry with recommended spacing	58 (96.67%)	2(3.33%)	-
3.	Providing irrigation at the time of critical growth stage	-	-	60(100%)
4.	Integrated Pest Management practices	-	36(60.00%)	24(40.00%)
5.	Integrated Nutrient Management practices	10(16.66%)	45(75.00%)	5(8.34%)
Adoption of Silkworm technologies				
6.	Keeping only highly productive hybrids/cross breeds	60(100%)	-	-
7.	Practicing disinfection at frequent time interval (room, bed)	56(93.33%)	4(6.67%)	-
8.	Bed cleaning	46(76.67%)	14(23.33%)	-
9.	Separate rearing house	60(100%)	-	-
10.	Improved mounting practices	60(100%)	-	-
Other technologies				
11.	Usage of modern farm implements or equipments	-	27(45.00%)	33(55.00%)
12.	Vermi-composting/ Composting	2(3.33%)	58(96.67%)	-
13.	Preservation of leaf with wet gunny bags / Wet cloth	50(83.33%)	10(16.67%)	-

Adoption of Mulberry Technologies

All the respondents (100%) have adopted the improved mulberry variety S1635, as it is the recommended variety for Mizoram state. The State Department of Sericulture has been distributing the saplings of S1635 to the farmers hence all the respondents have adopted the improved variety. Regarding the spacing in hilly areas, mainly a spacing of 90cm × 90cm or 150cm × 150cm is followed in case of slope. Around 96.67 per cent of the respondents have fully adopted spacing of 90cm × 90cm or 120cm × 120cm according to the area of their field and only 3.33 per cent of them partially adopted, as due to the landscape of their mulberry field, few of the respondents find it difficult to follow the recommended spacing. However, regarding irrigation 100 per cent of the respondents did not provide irrigation at the time of critical growth stage; this is due to the fact that mulberry cultivation in Mizoram depends completely on rainfed cultivation. In addition, in the hilly areas due to the landscape, it is quite difficult for the farmers to establish improved irrigation facilities. Aswathanarayana, N. (1989) and Mattigatti R. (2001) have also come up with similar findings in their study.

Low level of adoption was found in integrated pest management practices, as the awareness about pest incidence and its management was not much known to the sericulture farmers of the study area. In addition, the knowledge about use of pheromone traps and bio-control agents in controlling of pests in sericulture is almost nil among the respondents. Majority of the respondents (65%) are under partial adoption category. Among the farmers surveyed, use of chemical fertilizer is not common. The main reason is lack of awareness about recommended dose of chemical fertilizers, due to which the respondents were very reluctant to apply chemical fertilizers. Use of organic, inorganic and bio-fertilizers together should be encouraged through creating awareness about economic and environmental advantage of integrated nutrient management practice in mulberry cultivation. Chikkanna et al. (1995) and Shinghvi et al. (1994) have also come up with similar findings in their study.

Adoption of Silkworm Technologies

A perusal of data in Table 1 shows that 100 percent of the respondents have adopted highly productive hybrid/cross breeds like Nistari × J112 for Multi × Bi and SK6 × SK7 and J112 for Bi-voltine. This is due to the fact that the State Department of Sericulture in

Mizoram has been distributing DFLs of these hybrids to the farmers hence almost all the respondents have adopted the highly productive hybrids. Regarding the practices of disinfection such as ankush, labex etc. the farmers are well aware about disinfection and its importance in silkworm rearing. Over 93 per cent of the respondents have fully adopted disinfection at regular intervals of time (four times after every moult and one at 5th instar' 4th day) and only 6.67 per cent of the respondents adopted partially. The data also revealed that 76.67 per cent of the respondents fully adopted bed cleaning practices at regular intervals of time and the remaining 23.33 per cent of the respondents have adopted partially. As the ongoing scheme like the North East Region Textile Promotion Scheme (NERTPS) and State Department of Sericulture are supporting farmers both financially and technically to build the rearing house, cent per cent of the respondents in the study area have adopted a separate rearing house. Respondents were very much aware of the requirement for a separate rearing house for harvesting a successful crop. Among the farmers surveyed, 86.67 per cent have fully adopted the improved mountage practices as the state department recommended and also provided, which were found effective due to dissemination of this technology by conducting various extension communication programs. However, 13.33 per cent are found to have adopted partially. (Philip, T. 2004; Ananda Kumar 2006 and Jagadisha, K. 1999).

Adoption of Other Technologies

Adoption of usage of modern farm implements was low among the respondents. Only 45.00 per cent of the respondents adopted partially while more than half (55%) of the respondents did not adopt modern farm implements. This is mainly due to the low economic status of the respondents due to which they could not purchase these high-cost equipment. Generally, the farmers adopt low or no cost technologies fully and those which are costly are adopted partially or may not be adopted at all (Geetha et al., 1993). This is also in agreement with the observation made by Shinghvi et al., (1994) and Dandin et al., (2004). Regarding the preparation of vermin-composting/composting a vast majority of the respondents (96.67%) adopted partially while only 3.33 per cent of them had fully adopted and were doing vermin-compost and composting. Generally, this is due to lack of awareness and in most cases farmers just dump the waste obtained from sericulture and let it decompose. The present study considers that as composting but vermin-compost is

adopted by only two respondents in the study area. Regarding preservation of leaves, most of the respondents (83.33%) have fully adopted the technology of using wet gunny cloth, which is also due to the various effective awareness measures and only 16.67 per cent have adopted partially though awareness was created. The success depends mainly on the attitude of the farmers towards the technology. (Gowda et al., 1992 and Parameswaranaik, J, 2019).

Conclusion

The adoption of any technology depends on different factors like social, cultural, economic, political and environmental. Mizoram state portrays the successful adoption of many of the improved sericulture technologies. Nevertheless the study depicts that the farmers in the study area have not been utilizing the complete resources available with them and adoption of integrated pest management and integrated nutrient management is not significant and also vermin-composting technology is not adopted by the farmers in Mizoram. Hence there is scope for the arrangement of practical training, on full utilization of available resources and also conducting extension communication programs on integrated pest management and integrated nutrient management and vermin-composting technique.

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