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Study on Technology Adoption by Silkworm Rearers in Kashmir

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ABSTRACT

The study was conducted in four districts of Kashmir valley wherein 75 respondents from each district were selected by adopting multistage sampling followed by purposive sampling with a total sample size of 300. Three categories of sericulturists viz. full adoption,partial and non-adoption were made. The results indicated that none of the stakeholders fully applied FYM to nursery. Majority of the farmers to the extent of 99% were not adopting recommended practices like length of cuttings to be used, number of healthy buds/cutting, spacing and fertilizer application. 37.33% of farmers did not attach any priority to the variety of mulberry planted by them. A meagre percentage of beneficiaries Viz. 16% dug pits of recommended size for mulberry plantation. The results also revealed that 81% and 52% did not adopt plant protection measures and recommended spacing respectively. 95.33% of them used disinfectants and fully adopted the technology pertaining to disinfection of larvae/rearing beds. About 71.33% of respondents practised fully the disease management of silkworm larvae while as only 5% of them adopted fully the pest management of cocoons.

Key words: *Sericulture, Technology adoption, Moriculture, Silkworm rearing, Kashmir.*

INTRODUCTION

Sericulture occupies a unique position in Indian economy and assumed more importance in alleviating the problems of rural people.It is highly suitable in the context of diversification of farm enterprises and integration of farming system with other enterprises and has the capacity to generate attractive income[11]. The valley of Kashmir has a peculiar temperate climate where bi-voltine silk of high quality is produced. In Kashmir valley, 900 villages are associated with this industry involving about 7500 families, thus contributing approximately 35% of total silk production[2]. Development of sericulture requires both vertical as well as horizontal growth to achieve the future silk demand in the country[5]. Hence, in view of involvement of marginal farmers having fractured land holdings with sericulture, it may not be possible to go for horizontal expansion. The best and cognisable alternative as such is to adopt new technologies for increasing produce/cocoon production at farmers level. The stakeholders who do not adopt such technologies would generally lose higher income in sericulture and as such fetch low dividends[4].

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With this background, a study was conducted regarding technology adoption by silkworm rearers in Kashmir.

MATERIALS AND METHODS

The study was carried out during 2011-12 in 4 districts namely Kupwara, Baramulla, Budgam and Pulwama representing northern, central and southern parts of the Kashmir valley respectively. A pre-tested interview schedule was prepared with three main parts viz. part A, part B and part C. The part B consisted of questions regarding various technologies generated by TSRI Mirgund and CSRTI Pampore and issued by Directorate of Extension Education SKUAST-Kashmir[1] and was sub-divided into three headings.

a) Nursery raising:- Here five questions regarding level of technology adoption were formulated.
b) Mulberry leaf production:- Here also, five questions about the level of technology adoption were formulated.
c) Silkworm rearing technology:- This part contained nine questions about levels of adoption.

The levels of adoption were based on Three Point Continuum i.e. 'full', 'partial' and 'n adoption'. The sampling used in the study was based on multistage sampling followed by purposive sampling. 75 respondents were selected from each district, thereby making a total sample size of 300.

RESULTS AND DISCUSSION

The results indicated that none of the sericulturists fully applied FYM to nursery, instead 4.33% partially did so where as 95.67% did not apply at all (Table 1-A).Similarly none of the stakeholders fully adopted the recommended technologies related to nursery raising like length of cutting used (0%), spacing (0%) and quantity of N, P and K added to nursery (0%) as shown in Table 1-A. This may be due to lack of knowledge about the use of various propagation technologies which in turn might be as a result of very low extension contact with research institutes. Regarding mulberry leaf production, the results indicated that major percentage *viz.* 37.33% of the farmers did not attach any priority to the variety of mulberry planted by them. However, 30.33% and 32.33% of farmers adopted the recommended technology fully and partially respectively (Table 1-B). The probable reason being that people still adopt traditional practices and do not come forward for planting mulberry saplings at right time. It was also noticed that only meagre percentage of beneficiaries viz. 16% dug pits of recommended size for planting mulberry where as 46.33% of them did not do so (Table 1-B). This might also be due to the fact that lack of extension contact coupled with least exposure to mass media resulted in the adoption of traditional methods depending upon their convenience. The results also revealed that the majority of respondents *viz.* 81% and 52% did not adopt plant protection measures and recommended spacing for mulberry during planting respectively. The results further revealed that negligible percentage of farmers *viz.* 1% applied fertilizers and manures to established mulberry plantation as per recommended dosage (Table 1-B). High cost and spurious fertilizers, fungicides and pesticides are considered to be responsible for non/partial adoption of fertilizer application and plant protection measures for mulberry respectively. Similar findings were also made by Singhvi *et al*[8], Singh *et al*[9], Ganapathy *et al*[3] and Munikrishnappa *et al*[6] who reported that high cost was major constraint for non-application of recommended dose of fertilizers to mulberry plantation. Furthermore, lack of awareness about physical and biological control was found the main reason for non-adoption of disease and pest management of mulberry as 81% of respondents under study were not following the plant protection measures at all and only 19% of them adopted it partially. These results are in conformity with the findings of Mallikarjuna *et al*[7] who reported that none of the respondents adopted the biological control for mulberry pests and diseases (Table 1-B). Regarding recommended spacing, only 12% respondents had fully

adopted it due to the lack of knowledge and strong belief that less spacing gives more yield. These results are contrary to the findings of Sujatha *et al*[10] who reported that 94% respondents adopted the recommended spacing fully. Regarding level of technology adoption for silkworm rearing, it was found that maximum respondents fully adopted disinfection of rearing houses and silkworm larvae and rearing beds with a value of 96% and 95.35% respectively (Table 2). The reason being that these disinfectants are supplied free of cost to them by State Sericulture Development Department (J&K). Most of the respondents (86%) did not practise chawki rearing at all due to lack of knowledge and unavailability of controlled conditions at their rearing houses. Regarding method for late age rearing and type of mounting material used, it was found that only 21.33% and 23% of respondents adopted them fully respectively which clearly indicates that the sericulturists in Kashmir valley do not have enough exposure to these technologies due to lack of extension contact with the research institutions. Similarly 53% of respondents were not having standard gadgets to regulate temperature, humidity and light and were lacking standard charts in their rearing houses which might again be due to lack of knowledge (Table 2). Least availability of scientific cocoon dryers and lack of knowledge regarding harmful effects of direct sun drying are the main reasons for partial adoption of scientific cocoon drying by about 50.67% of respondents (Table 2). Regarding disease management of silkworm larvae, the data revealed that around 71.33% and 28.67% of respondents adopted it fully and partially respectively due to the reason that the disinfectants and other related material is supplied free of cost to the farmers. On the contrary, it was found that only 5% of respondents adopted the pest management of cocoons fully. The reason for low percentage is the fact that most of the respondents do not have good knowledge about post-harvest cocoon technology coupled with the delayed and inefficient marketing of cocoons.

Table 1: Level of technology adoption related to moriculture in selected districts

Technology Component	Kupwara			Baramulla			Budgam			Pulwama			Overall		
	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non
Part – A Nursery raising															
Addition of FYM to nursery land	0.00	1.33	98.67	0.00	0.00	100	0.00	5.33	94.67	0.00	10.67	89.33	**0.00**	**4.33**	**95.67**
Length of cuttings used	0.00	0.00	100	0.00	0.00	100	0.00	1.33	98.67	0.00	5.33	94.67	**0.00**	**1.67**	**98.33**
Number of buds per cutting	0.00	1.33	98.67	0.00	0.00	100	0.00	0.00	100	0.00	5.33	94.67	**0.00**	**1.67**	**98.33**
Spacing	0.00	1.33	98.67	0.00	1.33	98.67	0.00	2.67	97.33	0.00	5.33	94.67	**0.00**	**2.67**	**97.33**
Quantity of N, P & K added to nursery	0.00	1.33	98.67	0.00	1.33	98.67	0.00	4.00	96.00	0.00	8.00	92.00	**0.00**	**3.67**	**96.33**
Part – B Mulberry leaf production															
Mulberry varieties planted	22.67	25.33	52.00	42.67	29.33	28.00	29.33	34.67	36.00	26.67	40.00	33.33	**30.33**	**32.33**	**37.33**
Pit dimension	9.33	38.67	52.00	20.00	48.00	32.00	14.67	44.00	41.33	20.00	33.33	46.69	**16.00**	**37.67**	**46.33**
Addition of FYM to prepared pits	2.67	40.00	57.33	12.00	52.00	36.00	2.67	46.67	50.67	14.67	38.67	46.67	**8.00**	**44.33**	**47.67**
Spacing	9.33	21.33	69.33	13.33	42.67	44.00	6.67	42.67	50.67	18.67	37.33	44.00	**12.00**	**36.00**	**52.00**
Manures and fertilizers	1.33	34.67	64.00	1.33	58.67	40.00	1.33	61.33	37.33	0.00	73.33	26.67	**1.00**	**57.00**	**42.00**
Disease and pest management of mulberry	0.00	13.33	86.67	0.00	18.67	81.33	0.00	17.33	82.67	0.00	26.67	73.33	**0.00**	**19.00**	**81.00**

Note: All values are expressed as %age of respondents

Table 2: Level of technology adoption related to silkworm rearing in selected districts

Technology component	Kupwara			Baramulla			Budgam			Pulwama			Overall		
	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non	Full	Partial	Non
Disinfectants used for rearing house	97.33	2.67	0.00	97.33	2.67	0.00	89.33	10.67	0.00	100.0	0.00	0.00	**96.00**	**4.00**	**0.00**
Disinfectants used for silkworm larvae/rearing beds	98.67	1.33	0.00	97.33	2.67	0.00	90.67	9.33	0.00	94.67	5.33	0.00	**95.33**	**4.67**	**0.00**
Method of chawki rearing	20.00	0.00	80.00	9.33	0.00	90.67	8.00	0.00	92.00	18.67	0.00	81.33	**14.00**	**0.00**	**86.00**
Method for late age rearing	20.00	65.33	14.67	25.33	66.67	8.00	17.33	81.33	1.33	22.67	68.00	9.33	**21.33**	**70.33**	**8.33**
Type of mounting material used	14.67	45.33	41.33	22.67	61.33	16.00	20.00	73.33	6.67	34.67	54.67	10.67	**23.00**	**58.33**	**18.67**
Use of standard chart	1.33	30.67	68.00	1.33	44.00	54.67	1.33	61.33	37.33	5.33	42.67	52.00	**2.33**	**44.67**	**53.00**
Method of drying	18.67	49.33	32.00	22.67	52.00	25.33	21.33	46.67	32.00	12.00	54.67	33.33	**18.67**	**50.67**	**30.67**
Disease management of silkworm larvae	77.33	22.67	0.00	68.00	32.00	0.00	70.67	29.33	0.00	69.33	30.67	0.00	**71.33**	**28.67**	**0.00**
Pest management of cocoons	6.67	93.33	0.00	2.67	97.33	0.00	5.33	94.67	0.00	5.33	94.67	0.00	**5.00**	**95.00**	**0.00**

Note: All values are expressed as %age of respondents

CONCLUSION

From the present study, it can be concluded that being a subsidiary occupation, most of the sericulturists in Kashmir valley do not adopt the sericultural technologies fully due to lack of knowledge and poor extension contact with research institutions coupled with least exposure to mass media. Further from the study, it can also be concluded that the overall level of non/partial adoption was more in case of moriculture than silkworm technologies due to the probable fact that the results of application of silkworm rearing technologies are immediate and technology items are cheaper than that of mulberry inputs.

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