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Extent of adoption of improved sericulture production technologies by farmers of Bidar district of North Karnataka

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Abstract
The study was conducted to know the adoption of improved sericulture production technologies by farmers in Bidar district of north Karnataka during the year 2016-2017. The findings revealed that, majority of the respondents (52.00%) belonged to medium adoption category with respect to sericulture production technologies. Whereas 32 percent of respondents were belonged to low adoption category and only 16 percent of respondents were belonged to high adoption category. With respect to mulberry cultivation technologies more than half of the (58.00%) of the respondents had fully adopted the technologies like high yielding varieties and methods of late age rearing & spacing followed by intercropping (48.00%), irrigation management (37.00%) and preparation of nursery bed and management (22.00%). The variables namely education, land holding, annual income, extension participation, extension contact, scientific orientation and risk orientation were found important in influencing the adoption of mulberry sericulture production technologies by farmers.

Keywords: Adoption, improved sericulture production technologies

Introduction
The Sericulture is a multidisciplinary programme. It involves the cultivation of mulberry to produce leaf, rearing of silkworm to convert leaf to cocoon, reeling of the cocoon to obtain silk yarn and waving to convert yarn to fabrics. In India, sericulture is not only a tradition but also a living culture. It particularly suits rural based farmers, entrepreneurs and artisans, as it requires low investment but, with potential for relatively higher returns. It provides income and employment to the rural poor especially farmers with small land-holdings and the marginalized and weaker sections of the society. India is the second largest producer of silk in the world next only to China. Karnataka is the leading sericulture state which contributes around 50 percent of the total silk production in India. Sericulture has a complementary effect on other agricultural enterprises. It is estimated that the indirect effect of sericulture to the farm income is about 25 percent. Sericulture plays an important role in transformation of rural economy as it assures regular employment and periodic returns round the year. Sericulture industry as a major income generating and labour intensive industry is mainly confined to the state of Andhra Pradesh, Karnataka, Tamil Nadu and West Bengal, with a very little production in Jammu and Kashmir,

In the context of rural development, mulberry sericulture serves the social objectives like providing off-farm employment and preventing migration of rural people. Inspite of all the positive features, mulberry sericulture is still not adopted by the farmers up to the desired level. There is a wide gap in productivity of the cocoon between lab to land due to non or partial adaptation of improved sericulture technologies. As a result farmer's are getting low returns due to low productivity and poor quality of cocoon in comparison to other agriculture and looking for other crops or avenues for better income and proportionate return of their labour. To plans a suitable intervention strategy, to bridge this gap, it is necessary to understand extent of adoption of improved practices at farmer's level and constraints faced by the farmers in non-adoption of sericulture production technologies. It is, therefore, present study was conducted to know the extent of adoption of improved sericulture production practices by farmers of Bidar district of north Karnataka

Methodology
The study was conducted in Bidar districts of north Karnataka state during the year 2016-17. The two tehsils i.e. Humnabad and Balki from Bidar district were selected for the study. Thereafter, 5 villages were selected from each tehsil. 10 respondents were selected randomly from each village. 100 respondents were selected from the selected 10 villages by adopting

simple random sampling. Ex-post facto design was employed for conducting the study. Data was collected by using a detailed interview schedule employing personal interview method. In the light of the objectives set for the study, the variables *viz.,* adoption on sericulture production tecnologies were the main items of investigation. In order to measure the adoption quantitatively, important improved practices recommended for mulberry sericulture practices were considered. There were twenty six technologies for the adoption of mulberry sericulture technologies by the respondents.

To measure level of adoption, recommended important production technologies were listed and responses for the adoption of each technology were obtained. A numerical score of 2 was assigned for full adoption, while a score 1 was assigned for partial adoption and 0 was assigned for non adoption. Scores of all identified practices were summed up. This sum total was indicative of adoption level of that particular individual respondent. The maximum and minimum adoption score that could be obtained by individual was 52 and 0 for mulberry sericulture technologies. A pre-tested interview schedule was used to collect the data through personal interview method. The data collected were tabulated and analyzed by using suitable statistical measures.

Results and Discussion

1. Overall Adoption Level of farmers about improved production technologies of sericulture

The distribution of the sericulture farmers according to their overall adoption behavior of recommended sericulture production practices given in Table 1. It is clear from Table 1 that, majority of the respondents (52.00%) belonged to medium adoption category with respect to mulberry sericulture technologies. Whereas 32 percent of respondents were belonged to low adoption category and only 16 percent of respondents were belonged to high adoption category. This indicated that there is a great scope for improvement in bridging the gap in adoption of improved mulberry sericulture production technologies for higher production among the sericulture farmers. The above results are in line with the findings of Lakshmanan, S. and Geethadevi, R. G. (2007) [3] and Meenal, R. and Rajan, R. K. (2007) [5].

Table 1: Distribution of respondents in different categories of adoption level about improved production technologies of sericulture. (n=100)

Sl. No.	Categories	Frequency	Percent
1	Low (< 8.08)	32	32
2	Medium(8.08-20.62)	52	52
3	High (>20.62)	16	16
	Total	SD=6.27	Mean=14.35

2. Adoption level of farmers about improved production technologies of sericulture

The results presented in the Table 2 revealed that, with respect to mulberry cultivation technologies more than half of the (58.00%) of the respondents had fully adopted the technologies like high yielding varieties and methods of late age rearing & spacing followed by intercropping (48.00%), irrigation management (37.00%) and preparation of nursery bed and management (22.00%). Whereas, 31 percentage of respondents had partially adopted the practices like irrigation management followed by recommended fertilizer application (23.00%), use of bed disinfectants (22.00%) and high yielding varieties (19.00%). This was proved in many studies conducted earlier for sericulture technologies Kushwaha and Singhvi (2013) [2] and Dolli *et al*. (1993) [1].

With respect to non-adoption, majority of the respondent not adopted practices like mulberry pest and disease control measures (79.00%), paired row system/ wider spacing (73.00%), recommended fertilizer application (69.00%), vermi composting (67.00%) and pruning and training schedule (62.00%)

In case of silkworm rearing technologies, more than half of the (52.00%) of the respondents had fully adopted the practices like method of late age rearing & spacing followed by separate rearing house (32.00%), time of cocoon harvesting and deflossing (32.00%), transportation and marketing (31.00%), disinfection of rearing appliances and rearing house (24.00%) and brushing of early age worms (21.00%). Whereas 31 percentages of respondents had partially adopted the practices like disinfection of rearing appliances and rearing house (27.00%) and bed disinfectants (22.00%). The results of the study are in consistency with Kushwaha and Singhvi (2013) [2] and Singhvi *et al*., (1993) [1].

With respect to non-adoption, majority of the respondent not adopted practices like separate chawki garden (95.00%), early stage (Chawki) rearing (92.00%), proper maintenance of environmental and hygienic conditions (90.00%), biological control of uzi fly (91.00%), incubation, hatching and feeding (79.00%), bivoltine rearing (84.00%), shoot rearing method (82.00%) silkworm disease management practices (79.00%), paired row system/ wider spacing (73.00%), recommended fertilizer application (69.00%), vermi composting (67.00%) and pruning and training schedule (62.00%)

Table 2: Improved mulberry cultivation and silkworm rearing technologies (n=100)

Sl. No	Name of technologies	Adoption level		
		Full adoption (Percentage)	Partial adoption (Percentage)	Non adoption (Percentage)
A.	**Mulberry cultivation technologies**			
1	High yielding varieties	58	19	23
2	Paired row system/ wider spacing	12	15	73
3	Recommended fertilizer application	11	23	69
4	Vermi composting	14	15	67
5	Preparation of Nursery bed and management	22	15	63
6	Irrigation management	37	31	32
7	Intercropping	48	14	38
8	Pruning and training schedule	16	22	62

9	Mulberry pest and disease control measures	10	12	79
B.	**Silkworm rearing technologies**			
10	Separate Chawki garden	5	00	95
11	Separate rearing house	32	18	50
12	Early stage (Chawki) rearing	6	00	94
13	Method of late age rearing & spacing	52	12	36
14	Bivoltine rearing	7	9	84
15	Use of bed disinfectants	15	22	63
16	Proper maintenance of environmental and hygienic conditions	4	6	90
17	Bed Cleaning	18	22	60
18	Brushing of early worms	21	16	63
19	Disinfection of rearing appliances and rearing house	24	27	49
20	Shoot rearing method	12	6	82
21	Incubation, hatching and feeding	6	10	84
22	Mounting techniques and use of rotary mountages	14	10	76
23	Silkworm disease management	10	11	79
24	Biological control of uzi fly	4	5	91
25	Time of cocoon harvesting and deflossing	32	40	28
26	Transportation and marketing	31	21	48

3. Relationship between selected independent variables and adoption level of sericulture farmers

The results presented in table 3, revealed that adoption of mulberry sericulture production technologies was found to be positively and highly significantly correlated with their education. This means that more educated sericulture farmers had greater adoption of mulberry sericulture technologies. The variables land holding and annual incomes from sericulture were found to have positive and highly significant correlation with adoption level. It implies that sericulture farmers having more land holding and annual income adopted more recommended package of practices as compared to those having less land holding and income. Similarly, the variables extension participation, extension contact, scientific orientation and risk orientation found positive and highly significant association with adoption level. Only one variable age was found to have negative and significant correlation with adoption level. The other variables such as occupation, farming experience and mass media participation were no significant relationship with adoption level of the respondents. That means these variables of the respondents not contributed for increase in their adoption of mulberry sericulture practices. The results of the study are in consistency with Lakshmanan and Geethadevi (2007) [3] and Vijayakumari and Rajan (2006) [8] reported in sericulture.

Table 3: Correlation between personal and socio-economic characteristics and adoption level of silkworm farmers about sericulture production technologies (n=100)

Sl. No.	Independent variables	'r' value
1.	Age	-0.388**
2.	Education	0.601**
3.	Occupation	0.080NS
4.	Land holding	0.344**
5.	Family annual income	0.442**
6.	Farming experience	0.130NS
7.	Mass media exposure	0.065NS
8.	Extension participation	0.592**
9.	Extension contact	0.505**
10	Risk taking behavior	0.356**
11	Scientific orientation	0.357**

* Significant at 0.05 level probability. **Significant at 0.01 level probability.
NS -Non-significant

Conclusion

The study revealed that in most of the improved technologies of sericulture, the adoption level of the respondents was low to medium level. The socio-economic characters like education, extension contact, extension participation, scientific orientation and risk orientation have a significant association with the adoption level of the respondents about improved technologies. Therefore, these factors may be taken in to consideration for creating more awareness about the improved technologies among the sericulture farmers to adopt the improved silkworm technologies.

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