

Adoption of Improved Practices in Sericulture -A Study On Tree Mulberry in Karnataka India

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ABSTRACT

Sericulture is an agro based labour intensive industry providing gainful employment for rural people. It is one of the promising enterprises supporting agriculture which may substantiate the income of small and large farmers. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. This study was undertaken to study the adoption of improved practices and the problems faced in tree type mulberry and to identify reasons for shifting to tree type cultivation of mulberry over row system among Sericulturists. The present study was conducted in Chikkaballapur and Kolar districts of Karnataka, in India during 2017-18. The sample selected for the study was 120 respondents. The statistical tools used were Frequency, Percentage, Mean, Standard deviation, Correlation and Multiple regression analysis. The results of the study indicated that more number of sericulture farmers constituted under medium level of overall adoption followed by high and few farmers had low level of overall adoption of improved sericulture practices. Out of several improved cultivation practices in tree mulberry, majority of sericulture farmers had adopted mulberry variety, method of pruning, method of planting etc. The major constraints perceived by the sericulture farmers were scarcity of labourers, lack of knowledge on correct dose of NPK, shortage of irrigation water and lack of knowledge on pests and diseases control etc. The constraints in silkworm rearing were high fluctuation of prices, high transportation cost, lack of information on market price, etc. Majority of the sericulturists expressed reasons for shifting to tree type mulberry cultivation over row system include drought tolerant, good cocoon yield, less labour requirement, less susceptible to diseases and pests, less chemical fertilizer requirement and high water use efficiency (1:3). Hence, farmers can be educated on improved practices including wider spacing through on farm trainings in large scale to raise mulberry under dry land conditions. So, those farmers can learn to survive under rain fed conditions in sustainable manner.

Key words: Sericulture, tree type mulberry, cocoon, improved practices and adoption

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INTRODUCTION

Sericulture is an agro based labour intensive industry providing gainful employment mostly for rural people. Sericulture is one of the promising enterprises supporting agriculture which may substantiate the income of small and large farmers. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. Mulberry is an economical important tree, being cultivated for its leaves, to rear silkworms *Bombyx mori*. Sericulture in Karnataka (South India) has been practiced mainly in southern part of the State for many decades. Sericulture is being considered as a boon to many farmers in the drought prone areas in southern part of Karnataka like Kolar and Chikkaballapur districts. In recent years the role of mulberry tree in the prevention and control of desertification, water and soil conservation, saline land management and forage for livestock.. Being rural based labour intensive industry sericulture is ideally suited for improving the social and

economic standards of the poor. Sericulture serves as an important tool for rural reconstruction, benefiting the weaker sections of the society. Sericulture provides not only periodical return within short period of time but also assures own family employment opportunities around the year [1-5].

A number of new technologies have been developed by the scientists of research institutes which are boon for the development of the Sericulture industry. Unless all these innovations reach the field the development would not takes place. By realizing the need of extension activities to create awareness on the new innovations to the farmers, extension activities are being conducted regularly by the sericulture extension personnel. Since knowledge on the improved sericulture practices and their adoption are influenced by various socio-economic and psychological characteristics of the farmers.

Kolar stands first in the production of mulberry (sericulture) in Karnataka. Farmers of Kolar and Chikkabalapur districts are depending on sericulture as a major occupation for their lively wood. Farmers of Kolar and Chikkabalapur districts are digging bore wells upto 1200 to 1500ft for irrigation. Even then they are not getting sufficient water. Under such circumstances farmers can be educated on improved practices including wider spacing through on farm trainings in large scale to raise mulberry under dry land conditions. So, that farmers can learn to survive under rain fed conditions in sustainable manner and also to avoid suicide conditions of farmers [6].

Hence, this study was undertaken to know the impact of the extension educational activities on adoption of improved practices in tree type mulberry and to study the problems faced by sericulture farmers and to identify reasons for shifting to tree type cultivation of mulberry among Sericulturists in Kolar and Chikkaballapur districts of Karnataka in India

MATERIAL AND METHODS

The present study was conducted in Siddlagahatta and Chintamanitaluks of Chikkaballapur district and Bangarpet and Srinivasapur taluks of Kolar district during 2017-18 in Karnataka India. These taluks were purposefully selected for the study. A list of all the mulberry growing villages in each taluk was prepared in consultation with the respective sericulture extension officers of the state department of sericulture. From this list 3 villages from each taluk were selected based on the highest area under mulberry cultivation. Further ten sericulture farmers were selected from each village randomly for the study. Thus a total sample for the study was 120 respondents from both the Districts.

Nine characteristics of sericulture farmers (independent variables) viz., age, education, land holding, income, mass media participation, social participation, extension participation, level of aspiration and risk orientation were fixed for studying the relationship with their adoption level. These variables were measured by using appropriate scales and scoring procedures. A structured interview schedule was used for collection of the data. The statistical tools used in the study were frequencies, percentages, mean, standard deviation, simple correlation test and multiple regression analysis. The results are summarized as below

RESULTS AND DISCUSION

Overall adoption level of farmers regarding improved sericulture practices

It is seen from the table I that 61 percent of sericulture farmers possessed medium overall adoption followed by 22 percent had high adoption and 17 percent had low overall adoption level of improved sericulture practices.

Adoption level farmers regarding improved mulberry cultivation practices.

An examination of table II indicates cent percent of farmers adopted mulberry variety (100%), ideal age of mulberry cuttings (90%), kind of soil, method of pruning and suitable month and method of planting (87.50%), quantity of FYM to apply (80.00%), spacing (79.16%), method of irrigation to mulberry (75.00%) and time of application of FYM (66.66%), Disease in mulberry (55.00%), method of controlling weeds (54.16%) and Pests in mulberry (50.00%). The improved cultivation practices which were partially adopted by large number of farmers was fertilizer dose of NPK (75.00%).

Adoption level farmers regarding improved silkworm rearing practices.

It is seen from the table III that majority of farmers adopted time for transporting cocoons to the market (93.33%), disinfection of rearing materials, method of feeding

chawkiworms, No. of feedings to each instar, method of marketing of cocoons and average yield of cocoons (91.66%), disinfection of rearing house and method of feeding to 2nd instar (90.00%), direction of rearing house (88.33%), kind of silkworm rearing house and size of rearing house (87.50%), pests in silk worm and type of cocoons fetches higher price (86.66%), type of rearing house (83.33%), diseases of silkworm (50.00%). Further majority of farmers did not adopt silkworm rearing practices like recommended size of nylon mesh for bed cleaning (85.00%) ideal moisture content for leaf preservation (83.33%) and hormone for uniform maturity of silkworm (57.50%).

The correlation coefficient (r) presented in the table VI indicates that the variables namely education, mass media participation, Extension participation, Risk orientation and level of aspiration were significantly related to adoption of sericulture farmers. Whereas variables like age, income, Land holding and Social participation and were not significantly related to adoption level.

Multiple regression analysis indicated in the table V that all the nine independent variables fitted together in the regression model contributed to 61.30 percent of the variation in the adoption of improved cultivation practices of the sericulture farmers.

Problems faced by the farmers in tree type mulberry cultivation

An appraisal of table XIII reveals the fact that electricity problem (100.00%), lack of knowledge on correct dose of NPK (95.80%), scarcity of labourers and lack of knowledge on pest control in mulberry, (95.00%) shortage of irrigation water ((91.66%), lack of knowledge on diseases in mulberry (87.50%) were the problems as perceived by the farmers in mulberry cultivation.

Further, it can be inferred from table XIV that high fluctuation of cocoon prices (95.83%) high transportation cost (91.66%), lack of knowledge on the deflossing and sorting of cocoons (86.66%), lack of information on market prices and low price for the cocoons and lack of knowledge on uji fly (54.16%) were the problems as perceived by the farmers in silkworm rearing practices.

Table I: Categorization of sericulture farmers according their overall adoption level of improved cultivation practices (n=120)

Category	Sericulture farmers	
	No.	Percent
Low	20	17.00
Medium	73	61.00
High	27	22.00
Total	120	100.00

Table II: Adoption level of sericulture farmers regarding improved cultivation practices (n=120)

Sl. No.	Improved Mulberry cultivation practices	Full Adoption		Partial Adoption		Non-Adoption	
		No.	%	No.	%	No.	%
1	Kind of soil	105	87.50	0	0.00	15	12.50
2	Mulberry variety	120	100.00	0	0.00	0	0.00
3	Ideal age of mulberry cuttings	108	90.00	0	0.00	12	10.00
4	Suitable month for planting	105	87.50	0	0.00	15	12.50
5	Method of planting	106	83.33	0	0.00	14	11.66
6	Spacing in mulberry	95	79.16	20	16.66	05	4.16
7	Method of pruning	105	87.50	10	8.33	05	4.16
8	Quantity of FYM application	96	80.00	15	16.66	09	7.50
9	Time of application of FYM	80	66.66	33	27.50	07	5.83
10	Fertilizer dose NPK	20	16.66	90	75.00	10	8.33
11	Method of irrigation mulberry	90	75.00	25	20.83	05	4.16
12	Method of controlling of weeds	65	54.16	40	33.33	15	12.50
13	Disease in mulberry	66	55.00	35	29.16	19	15.83
14	Pest in mulberry	60	50.00	45	37.50	15	12.50

Table III: Adoption level of sericulture farmers regarding improved Silkworm rearing practices (n=120)

Sl. No.	Improved Silkworm rearing practices	Full Adoption		Partial Adoption		Non-Adoption	
		No.	%	No.	%	No.	%
1	Kind of silkworm rearing house	105	87.50	10	08.33	05	04.16
2	Type of rearing house	100	83.33	12	10.00	08	06.66
3	Size of rearing house	105	87.50	05	04.10	10	08.33
4	Direction of rearing house	106	88.33	10	10.00	02	01.66
5	Disinfection of rearing house	108	90.00	08	06.66	04	03.33
6	Disinfection of rearing materials	110	91.66	10	08.33	0	0.00
7	Breeds of silkworm to get high yield	105	87.50	10	08.33	05	04.16
8	Method of silkworm rearing	108	90.00	07	05.83	05	04.16
9	Method of feeding chawki worms	110	91.66	06	05.00	4.0	03.33
10	Method of feeding 2nd instar worms	108	90.00	08	06.66	04	03.33
11	No. of feedings in each instar	110	91.66	08	06.66	02	01.66
12	Diseases of silkworms	60	50.00	50	41.66	10	08.33
13	Pests of silkworms	104	86.66	10	08.33	06	05.00
14	Ideal moisture content for leaf preservation	15	12.50	05	04.16	100	83.33
15	Recommended size of nylon mesh for bed cleaning	12	10.00	06	05.00	102	85.00
16	Hormone for uniform maturity of silkworm	36	30.00	15	12.50	69	57.50
17	Method of marketing of cocoons	110	91.66	05	04.16	05	04.16
18	Ideal material for packing cocoons	95	79.16	10	08.33	15	04.16
19	Time for transporting cocoons to the market	112	93.33	06	05.33	02	01.66
20	Type of cocoons fetches higher rate	104	86.66	08	06.66	08	06.66
21	Average yield of cocoons(100DFL's)	110	91.66	04	03.33	06	05.33

Table IV: Relationship between adoption level and personal socio-psychological characteristics of sericulture farmers. (n=120)

Sl. No.	Variables	'r' values
1	Age	-0.077**
2	Education	0.586**
3	Land holding	0.070NS
4	Income	0.090NS
5	Mass media participation	0.377**
6	Social participation	0.005NS
7	Extension participation	0.226**
8	Risk or orientation	0.172**
9	Level of aspiration	0.473**

Table V: Multiple regression of adoption level of sericulture farmers with socio-psychological characteristics (n=120)

Sl. No.	Variables	Regression coefficient	't' values	'R square' value
1	Age	0.125**	1.304	61.30
2	education	4.032**	5.758	
3	Land holding	-1.012NS	-1.119	
4	Income	4.885**	1.278	
5	Mass media participation	0.713**	1.095	
6	Social participation	0.146NS	0.108	
7	Extension participation	0.012NS	0.019	
8	Risk or orientation	0.170NS	0.550	
9	Level of aspiration	0.076NS	0.334	

Table VI: Problems faced by sericulture farmers in Mulberry production (n=120)

Sl. No.	Problems	Yes	%	No.	%
1	Lack of knowledge about selection of plant material	15	12.50	105	87.50
2	Lack of knowledge about improved varieties	05	04.16	115	95.80
3	Lack of knowledge about soil type	16	13.33	104	86.66
4	Lack of knowledge about time of planting	14	11.66	106	88.33
5	Lack of knowledge about method of pruning	15	12.50	105	87.50
6	Lack of knowledge about method of planting	15	12.50	105	87.50
7	Lack of knowledge on time of application of FYM	10	8.33	110	91.66
8	Lack of knowledge on correct dose of NPK	115	95.80	05	04.16
9	Shortage of irrigation water	110	91.66	10	08.33
10	Lack of knowledge on disease control in Mulberry	105	87.50	15	12.50
11	Lack of knowledge on Pest control in Mulberry	114	95.00	16	13.33
12	Scarcity of laboures	114	95.00	06	05.00
13	Electricity problem	120	100.00	00	00.00

Table VII: Problems faced by sericulture farmers in Silkworm rearing and marketing practices (n=120)

S. No.	Problems	Yes	%	No.	%
1	Lack of knowledge about size of rearing house	15	12.50	105	87.50
2	Lack of knowledge about direction of rearing house	12	10.00	108	90.00
3	Lack of knowledge about disinfection of rearing house	13	10.83	107	89.16
4	Lack of knowledge about methods of disinfection	14	11.66	106	88.33
5	Lack of knowledge about silkworm cross breeds	18	15.00	102	85.00
6	Lack of knowledge about chawki rearing methods	11	9.16	109	90.83
7	Lack of knowledge about latage rearing methods	10	8.33	110	91.66
8	Lack of knowledge about feeding of chawki silkworms	04	3.33	116	96.66
9	Lack of knowledge about feeding of lateage silkworms	12	10.00	108	90.00
10	Lack of knowledge about disease control in silkworm rearing	70	58.33	50	41.66
11	Lack of knowledge about uji control	65	54.16	55	45.83
12	Lack of knowledge about uniform silkworm maturity hormone	81	67.50	39	32.50
13	Lack of knowledge about the deflossing and sorting of cocoons	104	86.66	16	13.33
14	Lack of knowledge on market prices	90	75.00	30	25.00
15	High transportation cost	110	91.66	10	8.33
16	Low price for cocoons	80	66.66	40	33.33

Advantages for shifting to tree type mulberry cultivation over row system

Majority of the sericulture farmers expressed reasons / advantages for shifting to tree type mulberry cultivation includes drought tolerant (100%), good cocoon yield(81.66%), less water requirement(100%), less labour requirement(81.66%), less susceptible to diseases (80.00%), high quality and thickness of leaves(91.66%), reduces no. of feedings(75.00%), less chemical fertilizer requirement(83.33%) and high water use efficiency(96.66%) (1:3 row system to tree type mulberry cultivation).

Table VIII : Advantages of tree type cultivation of mulberry

Sl. No.	Advantages as expressed by sericulturists	Farmers	
		No.	%
1	Drought tolerant	120	100
2	Good cocoon yield	98	81.66
3	Less water requirement	120	100
4	Less labour requirement	98	81.66
5	Less susceptible to diseases	96	80.00
6	Higher quality & thickness of leaves	110	91.66
7	Reduces number of feedings	90	75.00
8	Less chemical fertilizer requirement	100	83.33
9	High water use efficiency (1:3) (row to pit system)	116	96.66

CONCIUSION

Studies have reported that tree type mulberry with wider spacing has got significant effect on leaf quality and high yield per unit area. The cocoon quality will be improved, when rearing is conducted on leaf collected from tree type mulberry. This study would help to know the adoption level of improved practices to enhance mulberry quality and silk cocoon productivity particularly in rural areas and to generate income, for small and medium farmers by improving their socio-economic status and over all sustainable development of sericulture farmers. Sericulturists can be educated on improved practices including wider spacing through on farm trainings in large scale to raise tree type mulberry under dry land conditions. So, that farmer can learn to survive under rain fed conditions in sustainable manner and also to avoid suicide conditions of farmers.

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