

Research Article

## Constraints in adoption of recommended sericulture production technology in Korba district of Chhattisgarh

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**SUMMARY :** The present study was undertaken to investigate the constraints faced by sericulture farmers in Korba district of Chhattisgarh. Data collected from 120 households revealed that lack of knowledge about training and pruning of host plant was the main constraint faced by 83.33 per cent of respondents in adoption of recommended host plant cultivation technology for sericulture. Lack of knowledge about timely brushing of silkworm in chawkie garden was main constraints faced by 87.50 per cent respondents in chawkie and late state rearing, Frequent and high incidence of disease and pest (like prebine, ants, birds, etc.) was the main constraints faced by 79.16 per cent in disease and pest control, Non availability of protected storage house in village was the main constraints faced by 90 per cent respondents in storage of cocoon, Lack of market regulation was the main constraints faced by 90.83 respondents in marketing of cocoon, Lack of technical guidance was the main constraints faced by 95.83 per cent respondents in processing of cocoon. Considering above facts, 95.83 per cent of the respondents suggested that knowledge about training and pruning in host plant in proper time should be provided, 91.67 per cent respondents suggested disease free laying (DFLs) should be available in desired quantity on time from government sources and specific training should be organised to identification and control of insect pest and disease, etc.

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Adoption, Constraints, Sericulture, Korba, Chhattisgarh

### BACKGROUND AND OBJECTIVES

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 per cent 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 per cent (Mattigatti and Iyengar, 1995). Sericulture plays an important role in transformation of rural economy as it

assures regular employment and periodic returns round the year (Lakshmannan *et al.*, 1998).

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, Uttar Pradesh and some pockets of Rajasthan (Dhane and Dhane, 2004). Of late, the sericulture industry has started taking root in the state of Chhattisgarh, particularly in tribal parts of Chhattisgarh, providing round the year income to marginal and small farmers. The farmers however, are found to face manifold of problems during host plant cultivation and silkworm rearing. A critical study regarding problem faced by the farmers would certainly provide an insight and facilitate the concerned officials to come up with feasible solution, so as to obtain higher returns from the enterprise. The present study

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was, therefore, undertaken to determine the problems faced by the sericulturists in Tasar silkworm rearing.

## RESOURCES AND METHODS

A survey was conducted in Korba district of Chhattisgarh to find out the constraints faced by sericulture farmers in adoption of recommended sericulture technologies. Total 120 farmers from 12 villages spread over four blocks *viz.*, Katghora, Podi, Upora and Pali were selected using multistage random sampling technique. Primary data were collected using well structured and pre-tested interview schedule by personal interview. Frequency, percentage and rank were used as statistical measures to analyze the data. The major constraints taken into consideration were related to host plant cultivation and silk worm rearing.

## OBSERVATIONS AND ANALYSIS

The results of the present study as well as relevant discussions have been presented under following sub heads:

### Constraints in adoption of recommended host plant cultivation technology :

The sericulture farmers were enquired regarding the constraints they face in the adoption of the recommended host plant cultivation technologies for sericulture. The responses by them are enlisted in Table 1. Majority (83.33%) of the respondents were of opinion about lack of knowledge about training and pruning of host plant. While, other constraints faced by the respondents were high incidence of pest and disease (81.67%), unable to manage the plant height (70.83%), lack of knowledge about identification of disease and pest (68.33%), non availability of plants for propagation (61.66%), high cost of manure, fertiliser, insecticide, and fungicide (58.33%), lack of irrigation facilities (55.83%),

unavailability of insecticide and fungicide on proper time (37.50%), unavailability of farm implements (30%) and small size of land holding (20.83%). The present study is also supported by Panda (1990) and Roychoudhary (1992) who found non-availability of irrigated land and irrigation facilities as a major constraint in mulberry cultivation. Under the present study marketing of cocoon was also emerged as a problem to adopt sericulture enterprise.

### Constraints in adoption of recommended silkworm rearing technology :

As regards to silk worm rearing in adoption of recommended sericulture technologies some important constraints were received from the farmers. The responses received from them were categorised in to following major head chawkie and late stage rearing, disease and pest control, storage of cocoon, marketing and processing of cocoon. The results are presented in Table 2.

Under chawkie and late stage rearing constraints, the majority (87.50%) of the respondents were of opinion that the lack of knowledge about timely brushing of silkworm in chawkie garden. While, other constraints faced by the respondents were improper disinfection of egg masses (83.33%), improper temperature and humidity during incubation time of eggs (80.33%), non availability of equipments for silk worm rearing (79.16%), lack of supply of disease free laying from government sources (74.16%), unavailability of timely supply of egg masses (62.50%), inadequate silk worm rearing equipment (45.83%) and difficulty in maintaining freshness and quality leaves for feeding of larvae (35.83%).

Regarding disease and pest control, lack of regular technical guidance was the major constraints faced by majority (85.50%) of the respondents. The other important constraints regarding disease and pest control faced by the respondents were frequent and high incidence of disease and

**Table 1: Technological constraints faced by the respondents in the adoption of recommended host plant cultivation technology for sericulture (n=120)**

Constraints	Frequency*	Percentage	Rank
Lack of irrigation facilities	67	55.83	VII
Small size of land holding	25	20.83	X
Non availability of plants for propagation	74	61.66	V
Unavailability of farm implements	36	30.00	IX
Lack of knowledge about training and pruning of host plant	100	83.33	I
High cost of manure, fertiliser, insecticide and fungicide	70	58.33	VI
Unable to manage the plant height	85	70.83	III
Lack of knowledge about identification of disease and pest	82	68.33	IV
Unavailability of insecticide and fungicide on proper time	45	37.50	VIII
High incidence pest and disease like stem borer	98	81.67	II

\* Frequency based on multiple responses

pest (79.16%), lack of knowledge about identification of disease and pest (70.83%), high worm mortality due to residual effect of fungicide and pesticide (45.83%), high cost of insecticide and pesticide (35.83%) and unavailability of insecticide and fungicide on proper time (30%). More or less similar findings were reported by Nikhode *et al.* (1997),

Verma *et al.* (2003), Singh (2007) and Sakthivel *et al.* (2012).

As regards to storage of cocoon, majority of the respondents (90%) were of opinion about non availability of protected storage house in village as major constraints, followed by 74.16 per cent of the respondents were having lack of storage house, loss of cocoon in storage by rates

**Table 2: Technological constraints faced by the respondents in adoption of recommended silkworm rearing technology for sericulture (n=120)**

Constraints	Frequency*	Percentage	Rank
Chawkie and late stage rearing			
Unavailability of timely supply of egg masses	75	62.50	VI
Lack of knowledge about timely brushing of silkworm in chawkie garden	105	87.50	I
Inadequate silkworm rearing equipment	55	45.83	VII
Lack of supply of disease free laying (DLFs) from govt. Sources	89	74.16	V
Non availability of equipments (nylon net, brushing beg) for silk worm rearing	95	79.16	IV
Improper disinfection of egg masses	100	83.33	II
Improper temperature and humidity during incubation time of eggs	97	80.83	III
Difficulty in maintaining freshness and quality leaves for feeding of larvae	40	35.83	VIII
<b>Disease and pest control</b>			
Lack of knowledge about identification of disease and pest	85	70.83	III
Unavailability of insecticide and fungicide on proper time	36	30.00	VI
High cost of insecticide and fungicide	43	35.83	V
Frequent and high incidence of disease and pest (like prebina, ants, birds, etc.)	95	79.16	II
Lack of regular technical guidance	55	85.50	I
High worm mortality due to residual effect of fungicide and pesticide	45	45.83	IV
<b>Storage of cocoon</b>			
Lack of own storage house	89	74.16	II
High cost of storage house	45	37.50	V
Difficulties in grading of cocoon	56	46.67	IV
Loss of cocoon in storage by rates	87	72.50	III
Non availability of protected storage house in village	108	90.00	I
<b>Marketing</b>			
Lack of market regulation	109	90.83	I
Long distance of trading units for slae of cocoon	58	48.33	V
Involvement of mediator in marketing	35	29.16	VII
Non availability of suitable and big market nearby village	105	85.50	II
Fluctuation in price of cocoon	95	79.16	IV
High cost of transportation	50	41.66	VI
Non-availability of market information in village	100	83.33	III
Delay in payment of produce	25	20.83	VIII
<b>Processing of cocoon</b>			
Lack of technical guidance	115	95.83	I
High remuneration of skilled reeler	25	20.83	III
Lack of improved reeling machines	25	20.83	III
Lack of technical man	22	18.33	VI
High cost of reeling machine	100	83.33	II

\* Frequency based on multiple responses

(72.50%), difficulties in grading of cocoon (46.67%), and high cost of storage house (37.50%).

Marketing is the final dispose of the produce. Regarding constraints in marketing the majority of the respondents (90.83%) were of opinion about lack of market regulation was major constraint. While, other constraints in the marketing of cocoon is faced by the respondents were non-availability of suitable and big market nearby village (85.50%), non-availability of market information in village (83.33%), fluctuation in price of cocoon (79.16%), long distance of trading units for sale of cocoon, high cost of transportation (41.66%), involvement of mediator in marketing (29.16%) and delay in payment of produce.

Regarding processing of cocoon, the majority of the respondents (95.83%) were lack of technical guidance for processing of cocoon faced as major constraints, followed by 83.33 per cent of respondents facing problems due to high cost of reeling machines, high remuneration of skilled reeler lack of improved reeling machines (20.83%) and lack of technical guidance (18.33%). Geetha and Geetha Devi (2008) also reported almost similar findings in their study. It has also been reported that lack of knowledge is the primitive factor for non-adoption of improved packages of practices (Shinghvi *et al.*, 1994 and Puttaswamy, 1977).

As regards to personal constraints, majority of the respondents (62.50%) were having low level of education, followed by involvement in other occupation (45.83%) and

large size of family (3.33%).

Under the socio-economic constraints, the majority (79.16%) of the respondents were of opinion that high cost of recommended sericulture production technology. While, other socio-economic constraints faced by the respondents were scarcity of labour during harvesting of cocoon (70.83%), high cost of rearing equipment (63.33%), high labour wages (51.67%), lack of sufficient loan facility on lower interest rate (50.83%), high cost of planting material and their management (45.83%) and unavailability of sufficient subsidy for rearing of silkworm (33.83%).

In case of other constraints, majority (76.67%) of the respondents were of opinion that the lack of frequent contact with extension personnel was the major constraints, followed by non-availability of information on proper time (72.50%), lack of timely guidance (62.50%) and lack of proper incentives.

The results of the present investigation find support with the findings of Singh *et al.* (1998) who reported problems such as irrigation of mulberry plants, marketing of cocoon and unavailability of family labour to adopt this enterprise. This was in confirmation with the findings of Rajashekaraiah (1979) who also reported that marketing of cocoon is a main problem faced by the farmers. Therefore, there is a great need that Government agencies should develop a sound marketing system for silk cocoon and develop irrigation facilities to promote the sericulture industry in rural areas

**Table 3: Personal, socio-economic and other constraints faced by the respondents in adoption of improved sericulture production technology (n=120)**

Constraints	Frequency*	Percentage	Rank
<b>Personal constraints</b>			
Low level of education	75	62.50	I
Large size of family	04	03.33	III
Involvement in other occupations	55	45.83	II
<b>Socio-economic constraints</b>			
Scarcity of labour during harvesting	85	70.83	II
High labour wages	62	51.67	IV
High cost of recommended sericulture production technology	95	79.16	I
High cost of rearing equipment	76	63.33	III
Lack sufficient loan facility on lower interest rate	61	50.83	V
Unavailability of sufficient subsidy for rearing of silkworm	40	33.33	VII
High cost of planting material and their management	55	45.83	VI
<b>Other constraints</b>			
Lack of proper incentive	60	50.00	IV
Insufficient training facilities	55	45.83	IV
Non availability of information on proper time	87	72.50	II
Lack of frequent contact with extension personnel	92	76.67	I
Lack of timely guidance	75	62.50	III

\* Frequency based on multiple responses

of Rajasthan. Sujatha *et al.* (2006), Mallikarjuna (2009), Shukla (2010) and Shukla (2011) found more or less findings in their studies.

#### Suggestions to overcome the constraints faced by the sericulture farmers :

As regards suggestion given by the respondents to overcome the constraints in respect of sericulture technology, the findings are presented in Table 4. The data

revealed that the majority (95.83%) were of the opinion that intervention of Government in marketing of cocoon/ silk and fixation of price of cocoon/ silk, followed by 95 per cent of the respondents were of the opinion that credit facilities should be provided on subsidised bases for purchase of eggs and other maintenance, 91.67 per cent of the respondents were of the opinion that host plant for silk worm rearing should provided easily by govt. and establish irrigation devices, disease free laying (DFLs) should be available in

**Table 4: Distribution of respondents regarding suggestions given by sericultural farmers in respect of sericulture technology (n=120)**

Suggestions	Frequency*	Percentage
Host plant for silk worm rearing should provided easily by govt. and establish irrigation devices	110	91.67
Manure and fertilizer for host plant cultivation should be supplied by govt. in cheapest cost	30	25.00
Disease free laying (DFLs) should be available in desired quantity on time from government sources	110	91.67
Skill oriented specific training should be provided about timely brushing of silkworm rearing in chawkie garden and main field	50	41.67
Regular training programme should be organised on host plant cultivation and silk worm rearing techniques	70	58.33
Desired equipment for host plant cultivation and silk worm rearing should be available on low cost and subsidised basis	40	33.33
Specific training should be organised for identification and control of insect pest and disease	110	91.67
Regular visit of sericulture scientist and extension worker in village	100	83.33
Insecticide and fungicide should be available in chetra rate on time	95	79.16
Knowledge should be provided for proper use of equipment for diseases and pest control	75	62.50
Knowledge should be provided about grading and storage of cocoon	83	69.16
Community storage house should be available in the village	65	54.16
Training should be organised for construction of storage house from low cost/ no cost basis	95	79.16
Knowledge and facilities for disinfection of storage house should be provided	23	19.17
Intervention of govt. in marketing of cocoon/ silk and fixation of price of cocoon/ silk	115	95.83
Establishment of local cocoon market	80	66.67
Declaration of floor/ support price of cocoon	98	81.67
Low cost of transport charge	53	44.16
Lack of mediator disturbance	30	25.00
Establishment of reeling unit on co-operative basis	85	70.83
Government should provide on subsidy in reeling machine	97	80.83
Training programme should be organised regularly to improve sericulture practices	101	84.17
Social encouragement should be available	73	66.36
Extension agent or agency should convey right information at right time	87	72.50
Sericulture officer should be available in nearby villages	107	89.17
Credit facilities should be provided on subsidised bases for purchase of eggs and other maintenance	114	95.00
Government should provide the insurance facilities/ compensation against the loss of cocoon due to predators/ pest, disease	102	85.00
Subsidized transport facilities should be provided for carry the cocoon/ silk to the market	43	35.83
Information materials like leaflets, pamphlets and bulletins etc. on sericulture production technology should be provided in the village	66	55.00
Regular extension services should be available to create awareness and provide technical knowledge about improved sericulture practices	98	81.67

\* Frequency based on multiple responses

desired quantity on time from government sources and specific training should be organised for identification and control of insect pest and disease, 89.17 per cent of the respondents were of the opinion that sericulture officer should be available in nearby villages, 85 per cent of the respondents were of opinion that government should provide the insurance facilities/ compensation against the loss of cocoon due to predators/ pest, disease, 84.17 per cent of the respondents were of opinion that training programme should be organised regularly to improve sericulture practices, 83.33 per cent of the respondents were of opinion that regular visit of sericulture scientist and extension worker in village, 81.67 per cent of the respondents were of opinion that declaration of floor/ support price of cocoon and regular extension services should be available to create awareness and provide technical knowledge about improved sericulture practices, 80.83 per cent of the respondents were of opinion that government should provide on subsidy in reeling machine, 79.16 per cent of the respondents were of opinion that insecticide and fungicide should be available in chetra rate on time and training should be organised for construction of storage house from low cost/ no cost basis, 72.50 per cent of the respondents were of opinion that extension agent or agency should convey right information at right time, 70.83 per cent of the respondents were of opinion that establishment of reeling unit on co-operative basis, 69.16 per cent of the respondents were of opinion that knowledge should be provided about grading and storage of cocoon, 66.67 per cent of the respondents were of opinion that establishment of local cocoon market, 66.36 per cent of the respondents were of opinion that social encouragement should be available, 62.50 per cent of the respondents were of opinion that knowledge should be provided for proper use of equipment for diseases and pest control, 58.33 per cent of the respondents were of opinion that regular training programme should be organised on host plant cultivation and silk worm rearing techniques, 55 per cent of the respondents were of opinion that information materials like leaflets, pamphlets and bulletins etc. on sericulture production technology should be provided in the village, 54.16 per cent of the respondents were of opinion that community storage house should be available in the village, 44.16 per cent of the respondents were of opinion that low cost of transport charge, 41.67 per cent of the respondents were of opinion that skill oriented specific training should be provided about timely brushing of silkworm rearing in chawkie garden and main field, 35.83 per cent of the respondents were of opinion that subsidised transport facilities should be provided for carry the cocoon/silk to the market, 33.33 per cent of the respondents were of opinion that desired equipment for host plant cultivation and silk worm rearing should be available on low cost and subsidised basis, 25 per cent of the

respondents were of opinion that manure and fertilizer for host plant cultivation should be supplied by Government in cheapest cost and lack of mediator disturbance and only 19.17 per cent of the respondents were of opinion that knowledge and facilities for disinfection of storage house should be provided. Sakthivel *et al.* (2012) found almost similar suggestions for control of disease and pest in their study.

### Conclusion :

From the above findings it can be concluded that the lack of knowledge about training and pruning of host plant was the main constraint faced by sericulturist in adoption of recommended host plant cultivation technology for sericulture, followed by lack of knowledge about timely brushing of silkworm in chawkie garden, frequent and high incidence of disease and pest (like prebina, ants, birds, etc.) was the main constraints, etc. Considering above facts, majority of the respondents suggested that knowledge about training and pruning in host plant in proper time should be provided, 91.67 per cent respondents suggested disease free laying (DFLs) should be available in desired quantity on time from government sources and specific training should be organised to identification and control of insect pest and disease, etc.

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