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Constraints in mulberry and cocoon production in Krishnarajpet taluk of Mandya district (Karnataka state)

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Abstract
An investigation through survey has been conducted in Krishnarajpet taluk of Mandya district of Karnataka state, India, to know the constraints in mulberry and cocoon production among the sericulture farmers. Information pertaining to the current investigation was collected from 50 farmers in seven villages through formal discussion using pre-structured interview schedule. The study revealed that, in respect of mulberry production, all the farmers (n=50, 100%) are facing constraints in non-availability of mulching material and lack of knowledge about integrated management of pests. In cocoon production, all the farmers are facing constraints in shortage and high wage of rate for labourers, lack of knowledge in maintenance of temperature and humidity for late-age worms and lack of separate mounting hall for spinning cocoons and non-availability of adequate mountages. Among financial constraints, all the farmers are facing constraints in non- availability of finance on time. In institutional constraints, all the farmers are facing lack of service personal for efficient transfer of technologies, demonstration of recent technologies and fluctuation in price of cocoons. In respect of managerial constraints, all the farmers are facing lack of ability to utilize resources efficiently and effectively and untimely adoption of mulberry cultivation and silkworm rearing operations. Despite all the constraints, the area has great potential for silk production. Therefore, farmers of the study area can be provided with adequate knowledge in both mulberry and cocoon production to enhance the production and productivity of cocoons.

Keywords: Mulberry production, cocoon production, financial constraints, institutional and managerial constraints

Introduction

Sericulture is an art and science of rearing of silkworms to produce cocoons and silk. This activity, apart from the rearing of silkworms, also involves growing of mulberry, reeling of silk filament from cocoons, weaving. The silk yarn is further processed to produce the silk fabric. Sericulture is an important means for the socio - economic development of the rural sector. It is highly labour intensive, profit oriented, low input, indoor activity that gives frequent periodicity of economic returns. It also well suits for the women folk of rural sector. Sericulture is an agro based industry excellence with its agricultural base, industrial super structure and labour intensive nature.

Constraints are hidden hurdles, which come in the way of cultivation of any crop/adoption of any technology in an enterprise. As in any other crop/enterprise, sericulture enterprise too has constraints, which may hinder the production process. Knowledge of such constraints are very much essential to develop the models of depicting the degree of appropriateness of sericultural technologies and it would help the extension agencies to take suitable measures and research scientists to modify the technology in solving the constraints, Hence, there is a need to identify the constraints experienced in adoption of sericultural technologies by the farmers (Madhu Prasad, 2002) [7].

As per Singhvi *et al.* (1994) [11], lack of knowledge about disease control, lack of capital, high cost of fertilizers, shortage of trays and non-availability of quality chemicals were the main reasons identified for non-adoption of sericultural technologies. The adoption rate of improved sericultural practices has been lower with the rainfed farmers due to poor social and economic conditions. Extension contact and mass media play an important role in educating the farmers about adoption of improved technologies. The study revealed that the intensified extension efforts would bear desired results in popularizing the improved rainfed sericultural practices (Kumaresan *et al.*, 2005) [6].

Deepa and Sujathamma (2007) [3] recorded the reasons for non-adoption of improved practices in sericulture in semi-arid conditions of Chittoor district of Andhra Pradesh were lack of economic resources, indifference on the part of the rearers, lack of effective extension activities, lack of proper coordination between farmers and extension workers, non-availability of quality layings, lack of water facilities and supply of electricity. The main constraints with the farmers

in adoption of new technologies in Kolar district were multiple cropping system and land allocation, plant spacing, non-availability of irrigation, fertilizers and labour, assessment of mulberry leaf for quality and yield (Rao and Kamble, 2009) [10]

Methodology

Details of Study Area

The investigation has been conducted in Krishnarajpet taluk of Mandya district, Karnataka state, India. In Krishnarajpet taluk, 115 villages are practicing sericulture in an area of 298.34 ha under mulberry with a cocoon production of 136.231 MT (2017-18). The villages selected for the present investigation are Arebuvanahalli, Hariharapura, M. Koplu, Ballekere, Kamanahalli, Appanahalli and Nargonahalli taluks. The study was formulated based on the preliminary field survey and in consultation with Technical Staff of the State Department of Sericulture in Krishnarajpet taluk of the Mandya district.

Source and Method of Data Collection

Data pertaining to the constraints faced by the farmers in mulberry and cocoon production were collected using pre-structured interview schedule through formal discussion.

Constraints in Mulberry and Cocoon Production

Technical Constraints: These are categorized into constraints in mulberry and cocoon production. Non-availability of technical information and inputs on time for production of mulberry and cocoons.

Financial Constraints: Inadequate working capital and availability of credit in time for production of mulberry and cocoons.

Institutional Constraints: Lack of service personnel for efficient transfer of technologies, credit facilities, market facilities, input supply system, *etc.*

Managerial Constraints: Lack of awareness in forecasting of different operations in mulberry and cocoon production, lack of awareness in estimation of inputs required and financial requirement for mulberry and cocoon production, lack of ability to make rational decisions, coordinated activities and rational marketing, *etc.*

Analysis of Data

The analysis of data was carried out adopting the statistical tools like frequencies, percentages and mean.

Results and Discussion

Constraints in Mulberry Production

The major constraints faced by the farmers in mulberry production are non-availability of mulching material and lack of knowledge about integrated management of pests (n=50, 100.00%) followed by problem of diseases (n=49, 98.00%), problem of weeds, lack of knowledge of integrated management of diseases and lack of knowledge about correct usage of pesticides (n=40, 80.00%), non- availability of bio-fertilizers, lack of knowledge about use of green manures, non- availability of green manures, lack of knowledge about use of oil cakes and non- availability of oil cakes (n=25, 50.00%). The farmers did not face any constraints on knowledge about soil sampling and testing, availability of planting material, knowledge about trenching and mulching, knowledge in identification of nutrient deficiency symptoms and knowledge about use of foliar nutrients (Table 1). According to Todmal *et al.* (2013) [14], shortage of irrigation water, lack of labour, insufficiency of capital, high cost of chemical fertilizers, lack of knowledge about of bio-fertilizers, lack of information about application of VAM, lack of information are the constraints faced by the farmers in Ahmednagar district of Maharashtra for cultivation of mulberry.

Constraints in Cocoon Production

Shortage and high wage of rate for labourers and lack of knowledge in maintenance of temperature and humidity for late-age worms and lack of separate mounting hall for spinning cocoons and non-availability of adequate mountages (n=50,100.00%) are the major constraints faced by the farmers followed by inadequate rearing appliances (n=25, 50.00%), lack of knowledge about hormones (n=10, 20.00%). The farmers do not face any constraints in possession of separate rearing house, availability of rearing room disinfectants, knowledge about silkworm diseases, availability of labourers for harvesting of cocoons and cocoon transportation facility (Table 2). The current results are in conformation with those of Srinivasulu Reddy *et al.* (2010) [12], who reported that the knowledge level of farmers with respect to disinfection and rearing hygiene, temperature and humidity in young-age rearing, separate rearing house and shoot rearing (52-96%) was almost full in Anantapur, Chittoor and Coastal districts of Andhra Pradesh The knowledge level of farmers on improved sericulture production technologies in Bidar district of north Karnataka revealed that more than half (54.00%) of the respondents belonged to medium knowledge category, while 20% each of the respondents possessed low and high levels of knowledge (Hadimani *et al*., 2017) [5]. Under irrigated condition in Chamarajanagar district, major group of farmers expressed lack of devices for preservation of mulberry leaf was a constraint (75.00%) and non-availability of labourers for harvesting of cocoons (3.330%) and lack of cocoon transportation (3.330%) were the least constraints. With respect to average, 56.41% of big farmers, 53.64% of medium farmers, 48.40% of small farmers and 53.88% of farmers expressed constraints in cocoon production (Raju, 2018) [9].

Financial Constraints

The major financial constraints faced by the farmers include non- availability of finance on time (n=50,100.00%), lack of support price by the government for cocoons (n=40, 80.00%), lack of knowledge about the agencies involved in financing sericulture (n=26, 52.00%) followed by lack of finance for digging of bore wells, inadequate financial assistance for purchase of inputs for mulberry production and cocoon production, high rate of interest by the financial institutions (n=25, 50.00%). The farmers do not face any financial constraints in subsidy for installation of drip irrigation system and establishment of mulberry garden (Table 3). Under irrigated condition in Chamarajanagar district farmers with high rate of interest by the financial

institutions (78.33%) was a major constraint. However, least number of farmers expressed inadequate financial assistance for purchase of inputs for mulberry production (17.50%) was a constraint. On an average, more number of small (71.97%), medium (58.67%) and big farmers (67.50%) have faced financial constraints. Overall, 62.43% of farmers come across financial constraints in taking up sericulture. (Raju, 2018) [9]. Mallikarjuna *et al.* (2001) [8] reported that non-availability of credit to the sericultural enterprise in Mysore district of Karnataka is one the main factor for non-adoption of technologies to the full scale. Lack of knowledge, lack of technical guidance, lack of finance, traditional practices, strong belief on own ideas and over confidence were the main reasons identified for non-adoption of technologies by farmers of Anantapur district of Andhra Pradesh (Sujatha *et al.*, 2006) [13].

Institutional Constraints

The major institutional constraints faced by the farmer are lack of service personal for efficient transfer of technologies, demonstration of recent technologies and fluctuation in price of cocoons (n=50,100.00%) followed by the delay in payment (n=41, 82.00%), inadequate input supply system (n=10, 20.00%). The farmers do not face any institutional constraints include intervention of middlemen in sanction of subsidies for sericulture, space in cocoon markets, middlemen in cocoon markets, practicing fixation of cocoon price and basic amenities in cocoon markets (Table 4). Under irrigated condition in Chamarajanagar district farmers opined problem of middle men in cocoon markets (90.83%) was a major constraint and least constraint was lack of service personal for efficient transfer of technologies (19.17%). On an average, large group of big farmers (73.34%) opined that they are facing institutional constraints followed by small (48.33%) and medium farmers (40.27%). Overall, 50.17% of farmers had expressed institutional constraints in the study area (Raju, 2018) [9]. According to Dhane and Dhane (2004) [4], high cost of rearing room (98%) and equipment (93%), lack of credit facilities for construction of rearing room (93%), non-availability of subsidies for rearing of silkworms (93%), lack of knowledge regarding physical condition in rearing room (68%), grading of cocoons (65%), long distance of trading units for sale of cocoons (93%) and non-remunerative price for cocoons (73%) are the constraints faced by the farmers in silkworm rearing.

Managerial Constraints

The major managerial constraints faced by the farmers include lack of ability to utilize resources efficiently and effectively and untimely adoption of mulberry cultivation and silkworm rearing operations (n=50, 100.00%) followed by lack of awareness in preparation of calendar of operations for mulberry production, estimation of financial requirements for mulberry production, forecasting of different operations in cocoon production, estimation of materials required for rearing of silkworm, identifying source of availability of credit and rate of interest and lack of ability to make rational decision (n=25, 50.00%) followed by lack of ability in rational marketing (n=15, 30.00%) and lack of awareness in estimation of inputs required for mulberry production and competence in evaluation (n=10, 20.00%). The farmers do not face any managerial constraints on awareness in forecasting different operations in mulberry production, identifying source of availability of chawki worms well in advance and estimation of financial requirement for cocoon production (Table 5). Due to non-availability of timely marketing facility, rearers are not in a position to get better rates for their produce (Dar *et al.*, 2009) [1]. Deepa and Sujathamma (2007) [3] recorded the reasons for non-adoption of improved practices in sericulture under semi-arid conditions of Chittoor district of Andhra Pradesh were lack of economic resources, indifference on the part of rearers, lack of effective extension activities, lack of proper coordination between farmers and extension workers. Dayananda and Kamble (2008) [2] stated that the main constraints faced by the sericulturists in Anekal division of Karnataka were lack of knowledge about certain technologies (83.75%), non-availability of technical guidance (81.25%), lack of easy finance (61.25%) and uncertainty of irrigation and power (30.00%).

The major share of constraints among the farmers belongs to cocoon production (29.32%) followed by mulberry production (23.84%), financial (17.08%), institutional (15.05%) and least with managerial constraints (14.72%) (Fig. 1).

Conclusion

From the study it can be inferred that, large group of farmers are facing constraints in cocoon and mulberry production when compared to financial, managerial, and institutional constraints. Hence, farmers of the study area can be provided with adequate knowledge in both mulberry and cocoon production to enhance the production and productivity of cocoons.

Table 1: Constraints faced by the sericulture farmers in mulberry production

Sl. no.	Constraint	n= 50	
		No.	%
1	Lack of knowledge about soil sampling and testing	0	0
2	Lack of facilities for soil sampling and testing	0	0
3	Un-aware of improved mulberry varieties	0	0
4	Non-availability of planting material	0	0
5	Lack of knowledge about method and system of planting	0	0
6	High mortality at the initial stage of establishment	0	0
7	Non-availability/shortage of manures	0	0
8	Non-availability/shortage of fertilizers	10	20
9	Non-availability/shortage of bio-fertilizers	25	50
10	Lack of knowledge about the use of green manures	25	50

11	Non-availability of green manures	25	50
12	Lack of knowledge about use of oil cakes	25	50
13	Non-availability of oil cakes	25	50
14	Lack of knowledge about trenching and mulching	0	0
15	Non-availability of mulching materials	50	100
16	Lack of knowledge in identification of nutrient deficiency symptoms	0	0
17	Lack of knowledge about rectification of nutrient deficiency symptoms	0	0
18	Lack of knowledge about the use of foliar nutrients	0	0
19	Lack of knowledge about the recommended dose of manures and fertilizers	0	0
20	Non-availability/shortage of labour	0	0
21	Problem of weeds	40	80
22	Problem of pests	10	20
23	Problem of diseases	49	98
24	Lack of knowledge about integrated management of pests	50	100
25	Lack of knowledge of integrated management of diseases	40	80
26	Lack of knowledge about correct usage of pesticides	40	80
27	Non-availability/shortage of labors for harvesting of mulberry	0	0

Table 2: Constraints faced by the sericulture farmers in cocoon production

Sl. No.	Constraint	n = 50	
		No.	%
1	Lack of separate rearing house	0	0
2	Inadequate rearing appliances	25	50
3	Shortage and high wage rate of labourers	50	100
4	Non- availability of rearing room disinfectants	0	0
5	Lack of knowledge in usage of rearing room disinfectants	0	0
6	Lack of space for preservation of mulberry leaf	0	0
7	Lack of devices for preservation of mulberry leaf	0	0
8	Lack of knowledge about chawki rearing centres	0	0
9	Untimely availability of chawki worms	0	0
10	Lack of devices for transportation of chawki worms	0	0
11	Lack of transportation facility for chawki worms	0	0
12	Lack of knowledge in maintenance of temperature and humidity for late-age worms	50	100
13	Lack of knowledge about late-age silkworm rearing operations	0	0
14	Non-availability of bed disinfectants	0	0
15	Lack of knowledge about usage of bed disinfectants	0	0
16	Lack of knowledge about Uzi fly and other pests	0	0
17	Lack of knowledge about silkworm diseases	0	0
18	Lack of knowledge about maintenance of hygiene during silkworm rearing	0	0
19	Lack of knowledge about use of hormone	10	20
20	Lack of separate mounting hall for spinning cocoons	50	100
21	Non-availability of adequate mountages	50	100
22	Non-availability of labourers for mounting of worms	0	0
23	Non-availability of labourers for harvesting of cocoons	0	0
24	Non-availability of labourers for sorting of cocoons	0	0
25	Non-availability of devices for carrying cocoons	0	0
26	Lack of cocoon transportation facilities	0	0

Table 3: Financial constraints faced by the sericulture farmers

Sl. No.	Constraint	n = 50	
		No.	%
1	Lack of knowledge about the agencies involved in financing sericulture	26	52
2	Lack of finance for digging of bore wells	25	50
3	Inadequate subsidy for installation of drip irrigation system	0	0
4	Inadequate subsidy for establishment of mulberry garden	0	0
5	Inadequate financial assistance for purchase of inputs for mulberry production	25	50
6	Inadequate financial assistance for purchase of inputs for cocoon production	25	50
7	Inadequate finance facilities for construction of separate rearing house	25	50
8	Inadequate finance facilities for purchase of rearing equipments	10	20
9	Lack of support price by the government for cocoons	40	80
10	High rate of interest by the financial institutions	25	50
11	Non-availability of finance on-time	50	100

Table 4: Institutional constraints faced by the sericulture farmers

Sl. No.	Constraint	n = 50	
		No	%
1	Lack of service personal for efficient transfer of technologies	50	100
2	Lack of service personal for demonstration of recent technologies	50	100
3	Inadequate input supply system	10	20
4	Intervention of middlemen in sanction of subsidies for sericulture	0	0
5	Lack of space in cocoon markets	0	0
6	Fluctuation in price of cocoons	50	100
7	Problem of middlemen in cocoon markets	0	0
8	Malpractice in fixation of cocoon price	0	0
9	Delay in payment	41	82
10	Lack of basic amenities in cocoon markets	0	0

Table 5: Managerial constraints faced by the sericulture farmers

Sl. No.	Constraint	n=50	
		No.	%
1	Lack of awareness in forecasting different operations in mulberry production	0	0
2	Lack of awareness in estimation of inputs required for mulberry production	10	20
3	Lack of awareness in preparation of calendar of operations for mulberry production	25	50
4	Lack of awareness in estimation of financial requirement for mulberry production	25	50
5	Lack of awareness in forecasting of different operations in cocoon production	25	50
6	Lack of awareness in estimation of materials required for rearing of silkworm	25	50
7	Lack of awareness in identifying sources of availability of chawki worms well in advance	0	0
8	Lack of awareness in estimation of financial requirement for cocoon production	0	0
9	Lack of awareness in identifying sources of availability of credit and rate of interest	25	50
10	Lack of ability to make rational decisions	25	50
11	Lack of ability to coordinate activities	10	20
12	Lack of ability to utilize resources efficiently and effectively	50	100
13	Untimely adoption of mulberry cultivation and silkworm rearing operations	50	100
14	Lack of ability in rational marketing	15	30
15	Competence in evaluation	10	20

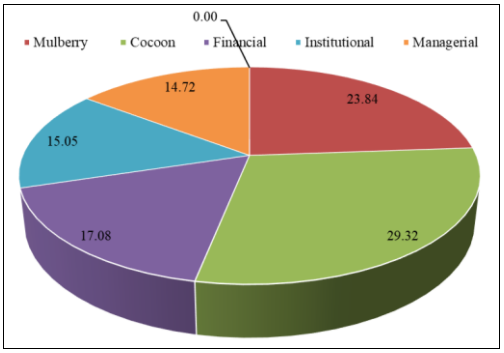

Fig 1: Share of constraints among the sericulture farmers

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