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Gender participation and drudgery in silkworm rearing

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Abstract

Sericulture sector is a labour-intensive sector that provides employment to both men and women and offers chance for the upliftment of socio-economic status of the sericulture households. In reality, sericulture is an occupation by women and for women because women form more than 60% of the workforce and 80% of silk is consumed by them. Women constitute over 60% of those employed in down-stream activities of sericulture in the country. In this backdrop, the present study was carried out in Ramanagar district of Karnataka state during 2020-21 to know the extent of participation and drudgeries faced by sericulture households in silkworm rearing activities. Sixty farm men and women were personally interviewed using a pre-tested schedule.

The results revealed that farm men and women had participated in the application of disinfectants (70.00% and 53.33%), maintenance of temperature (58.33% and 61.66%) and relative humidity (58.33% and 60.00%) in rearing house, feeding of silkworms (65.00% and 65.00%), bed spacing (61.66% and 60.00%), bed cleaning (63.33% and 66.66%), incubation of DFLS (58.33% and 66.66%), black boxing of DFLS (65.00% and 68.33%), brushing of DFLS (63.33% and 65.00%), pest management (96.66% and 41.66%) and cocoon harvesting (53.33% and 70.00%), respectively. The profile characteristics such as, age, education, experience in sericulture, innovativeness, achievement motivation, management orientation, risk orientation, attitude towards sericulture, farming commitment, economic motivation, training in sericulture, extension agency contact, extension participation, mass media exposure, and farm scientist contact of both farm men and women were having a significant association with their participation level. It was also found that less than half of the farm men and women experienced 'back ache' while applying disinfectants (26.66% and 16.66%), and performing operations such as, heating and cooling the rearing houses (10.00% and 13.33%), feeding the silkworms (46.66% and 48.33%), and bed cleaning (41.66% and 43.33%) practices, respectively.

Keywords: Gender, participation, drudgery, silkworm rearing

Introduction

Sericulture is an agro-based cottage industry and it is the meeting point of art and science. Silk production is a livelihood opportunity for millions of people. It is one of the labour intensive and low capital intensive cottage industries with high output. India is the only country of the world which produces all the four major varieties of silks viz. mulberry, eri, muga and tasar. The country is the second largest producer of silk in the world. Sericulture plays an important role in the upliftment of socio-economic development of a largely agrarian economy like India.

Sericulture is a women friendly economic activity in rural India. Women participate in a variety of sericulture activities and performing their tasks most skillfully. It offers an opportunities for women to participate directly in the production process and decision-making for bettering their economic circumstances and to elevate their status within the family and community. Due to their unique work ethic, women are generally favoured in sericulture. They work on a grainage, a silkworm farm, or a mulberry garden. Their role in post-cocoon technologies, starting with the silk

reeling, weaving, and clothing manufacturing industries, is larger. According to recent studies, 10 million people rear silkworms; half a million people work in the silk industry; and Asia is the world's top silk-producing continent, accounting for 95% of the world's total output. Fifty-eight countries produce silk, with China, India, Japan, Brazil, and Korea among the top producers. For every Kilogram me of raw silk produced, sericulture can also create up to six jobs to women out of 11 new jobs. The sericulture business employs about eight million people in semi-urban and rural areas in India. A sizable portion of these employees are drawn from the economically underprivileged groups of society, including women. Sericulture is a profession performed by and for women because women perform more than 60% of the labour and consume 80% of the silk. In this backdrop, the present study was carried out with the following specific objectives:

1. To analyse the extent of participation of farm men and women in sericulture activities
2. To understand the relationship and extent of contribution of profile characteristics of farm men and

- women on their participation level
- To document the drudgeries faced by farm men and farm women in silkworm rearing activities

Materials and Methods

The study was conducted in Ramanagara district of Karnataka State during 2021-22. Ramanagara is a well-known as Silk City and Sericulture is one of the main occupation in the district. In Karnataka, Ramanagara district stands third position in the cocoon production in terms of mulberry area (18975 ha), cocoon production (19662 tons) and cocoon productivity (89 kg/100 DFLS) during 2020-21 next to Chikkaballapura and Kolar districts (Anonymous 2021a) [1]. During the year 2020-21, mulberry was grown in 9528, 3609, 2691 and 311 ha of Kanakapura, Channapatna, Ramanagara and Magadi taluks of Ramanagara district, respectively. The study was purposively conducted in Kanakapura (9525 ha) and Channapatna (3609 ha) taluks, since mulberry is grown in more areas among the four taluks of Ramanagara district (Anonymous, 2021b) [2]. Five villages were randomly selected for the study from each of the two sampled taluks. Small and marginal farmers rearing silkworms were interviewed for the study since farm women of small and marginal farmers are more involved in decision making and participation in sericulture activities.

From each village, six farm households practicing sericulture were randomly selected. Relevant data were collected from the head of the family and his spouse. Thus, the final sample constituted 120 respondents (60 farm men and 60 farm women) from ten villages of Kanakapura and Channapatna taluks of Ramanagara district. Expost-facto research design was adopted for conducting the study. This design was considered appropriate because the phenomenon has already occurred and the researcher does not have direct control over independent variables.

Dependent and Independent variables of the study Extent of participation (dependent variable) is defined as ‘the degree to which the farm men and women have participated in various sericulture activities. It was measured using the procedure followed by Rajula Shanthy (2010) [6] with slight modification. A list of 11 silkworm rearing activities were presented to the respondents to know their extent of participation. To analyze the extent of participation of the participants a score of 0 and 1 were assigned for non-participation and participation in the sericulture activities, respectively. The minimum and maximum score one could get was 0 and 11, respectively. Based on the total score by the respondents on all the 11 silkworm rearing activities, they were categorized into low, medium and high level of participation considering mean and half standard deviation.

Table 1: Show the participation categories

Participation categories	Criteria	Farm men (score)	Farm women (score)
Low	< (Mean – ½ SD)	< 7.37	< 7.32
Medium	(Mean + ½SD)	7.37 – 9.31	7.32 – 8.65
High	> (Mean + ½ SD)	> 9.31	> 8.65
Mean		8.34	7.99
Standard deviation		1.94	1.33

Data regarding the 19 independent variables were collected from the respondents using a structured schedule with suitable scales/procedures. The collected data were analysed using frequency, percentage, mean, standard deviation, zero order correlation test, multiple regression analysis and student ‘t’ test.

Results and Discussion

Participation of farm men and women in silkworm rearing activities

The results in Table 2 reveals that majority of the farm men and women had participated in the application of disinfectants (70.00% and 53.33%), maintenance of temperature (58.33% and 61.66%) and relative humidity

(58.33% and 60.00%) in rearing house, feeding of silkworms (65.00% and 65.00%), bed spacing (61.66% and 60.00%), bed cleaning (63.33% and 66.66%), incubation of DFLS (58.33% and 66.66%), black boxing of DFLS (65.00% and 68.33%), brushing of DFLS (63.33% and 65.00%), pest management (96.66% and 41.66%) and cocoon harvesting (53.33% and 70.00%), respectively. Activities such as, application of disinfectants, maintenance of temperature and relative humidity in rearing house, feeding of silkworms, bed spacing, bed cleaning, incubation of DFLS, black boxing of DFLS, brushing of DFLS and cocoon harvesting are less laborious and cumbersome, hence these activities are performed by majority of the farm women along with farm men.

Table 2: Participation of farm men and women in silkworm rearing activities

Sl. No.	Silkworm rearing practices	Participation level			
		Farm men (n1=60)		Farm women (n2=60)	
		No.	%	No.	%
1.	Application of disinfectants	42	70.00	32	53.33
2.	Temperature maintenance at rearing house	35	58.33	37	61.66
3.	Relative humidity maintenance at rearing house	35	58.33	36	60.00
4.	Feeding of silkworms	39	65.00	39	65.00
5.	Bed spacing	37	61.66	36	60.00
6.	Bed cleaning	38	63.33	40	66.66
7.	Incubation of DFLS	35	58.33	40	66.66
8.	Black boxing of DFLS	39	65.00	41	68.33
9.	Brushing of DFLS	38	63.33	39	65.00
10.	Pest management	58	96.66	25	41.66
11.	Cocoon harvesting	32	53.33	42	70.00

Overall participation level of farm men and women in silkworm rearing activities: A greater proportion of farm men were having high level of participation (43.34%) in the silkworm activities, while 30.00 and 26.66% of the farm men were having medium and low level of participation, respectively. Similarly, 40.00% of the farm women were having high level of participation, followed by 31.66 and

28.34% of the farm women were having medium and low level of participation in recommended silkworm rearing practices/activities, respectively (Table 3). The 't' value (1.49) was found to be non-significant indicating that there is no significant difference in the mean participation score between the farm men (8.34) and women (7.99) in respect of the silkworm rearing practices activities.

Table 3: Overall participation of farm men and women in silkworm rearing practices

Sl. No.	Participation category	Number	Percent	Standard deviation	Mean participation score	't' value	
A Farm men (n₁=60)							
1.	Low (< 7.37 score)	16	26.66	1.94	8.34	1.49 ^{NS}	
2.	Medium (7.37 to 9.31 score)	18	30.00				
3.	High (> 9.31 score)	26	43.34				
Total		60	100.00				
B Farm women (n₂=60)							
1	Low (< 7.32 score)	17	28.34	1.33	7.99		
2	Medium (7.32 to 8.65 score)	19	31.66				
3	High (> 8.65 score)	24	40.00				
Total		60	100.00				

NS= Non-significant

Relationship and extent of contribution of profile characteristics of farm men and women on the participation level in sericulture activities

Profile characteristics namely, credit orientation, social participation, cosmopolitaness and deferred gratification of farm men and women had no significant relationship with the participation in sericulture activities, whereas age, education, experience in sericulture, innovativeness, achievement motivation, management orientation, risk orientation, economic motivation, attitude towards sericulture, farming commitment, mass media exposure, training in sericulture, extension agency contact, farm scientist contact and extension participation of farm men women had significant to highly significant relationship

with their participation in sericulture activities (Table 4). It is also observed from Table 4 that 15 profile characteristics of farm men and women (age, education, experience in sericulture, innovativeness, achievement motivation, management orientation, risk orientation, economic orientation, attitude towards sericulture, farming commitment, mass media exposure, training in sericulture, extension agency contact, farm scientist contact and extension participation) were significantly contributing to the increased participation in sericulture activities. All the 19 independent variables have contributed to the tune of 75.50% (R²= 0.755) in the participation of farm men and women in sericulture activities.

Table 4: Relationship and extent of contribution of profile characteristics of farm men and women on the participation level in sericulture activities (n = 120)

Sl. No.	Profile characteristics	Correlation co-efficient value (r)	Regression co-efficient (RE)	Standard error of RE	't' value
1.	Age	0.201*	0.342	0.818	2.390*
2.	Education	0.1995*	0.270	0.700	2.590*
3.	Experience in sericulture	0.222*	0.434	0.916	2.110*
4.	Innovativeness	0.202*	0.073	0.192	2.618*
5.	Achievement motivation	0.219*	0.271	0.716	2.588*
6.	Management orientation	0.241*	0.385	0.812	2.110*
7.	Risk orientation	0.197*	0.324	0.717	2.210*
8.	Economic motivation	0.213*	0.324	0.716	2.210*
9.	Credit orientation	0.091 ^{NS}	0.154	0.111	0.720 ^{NS}
10.	Social participation	0.079 ^{NS}	0.406	0.688	1.691 ^{NS}
11.	Cosmopolitaness	0.088 ^{NS}	0.527	0.517	0.980 ^{NS}
12.	Deferred gratification	0.009 ^{NS}	0.418	0.418	0.810 ^{NS}
13.	Attitude towards sericulture	0.398*	0.363	0.792	2.180*
14.	Farming commitment	0.299*	0.122	0.318	2.606*
15.	Mass media exposure	0.215*	0.127	0.296	2.322*
16.	Training in sericulture	0.278*	0.278	0.618	2.222*
17.	Extension agency contact	0.312**	0.292	0.912	3.122**
18.	Farm scientist contact	0.320**	0.240	0.816	3.400**
19.	Extension participation	0.399**	0.373	0.888	2.380**

NS = Non-significant, *=Significant at 5% level, **=Significant at 1% level; F= 16.99**; R²=0.755

Drudgeries faced by farm men and women in silkworm rearing

The results in Table 5 presents the data on findings related to the drudgeries faced by farm men and women in silkworm rearing activities. It is seen from the table 5 that less than half of the farm men and women experienced ‘back ache’ while applying disinfectants (26.66% and 16.66%), and performing operations such as, heating and cooling the rearing houses (10.00% and 13.33%), feeding the silkworms (46.66% and 48.33%), bed cleaning (41.66% and 43.33%), cleaning of mountages (36.66% and 30.00%) and harvesting of cocoons (46.66% and 48.33%), respectively.

The findings revealed that less than one-third of the farm men and women experienced ‘itching’ while applying disinfectants (6.66% and 5.00%), performing operations like, heating and cooling the rearing houses (1.66% and 1.66%), feeding the silkworms (3.33% and 1.66%), bed cleaning (26.66% and 25.00%) and harvesting of cocoons (28.33% and 31.66%), respectively. Table 5 also reveals that less than one-fifth of the farm men and women

experienced ‘allergy’ while applying disinfectants (13.33% and 6.66%) and performing operations like, heating and cooling the rearing houses (3.33% and 1.66%), feeding the silkworms (5.00% and 5.00%), bed cleaning (8.33% and 10.00%), cleaning of mountages (25.00% and 13.33%) and harvesting of cocoons (13.33% and 6.66%), respectively.

It could also be observed from the Table 5 that less than one-fourth of the farm men and women perceived drudgery due to inhalation of disinfectant causing ‘cough and nasal infestations’ while applying disinfectants (25.00% and 13.33%), cleaning of mountages (25.00% and 13.33%) and performing bed cleaning (15.00% and 13.33%) activities. Over one-third of the farm men (26.66%) and 15.00% of the farm women experienced ‘headache’ while applying disinfectants, whereas 16.66% of the farm men and 15.00% of the farm women experienced ‘headache’ while carrying out bed cleaning practices and 33.00 and 13.33% of the farm men and women were experiencing ‘headache’ while cleaning the mountages, respectively. More or less similar findings were reported by Nishitha (2016) ^[5], Malek *et al.*, (2019) ^[4] and Biradar (2021) ^[3].

Table 5: Drudgeries faced by farm men and women in silkworm rearing practices

Sl. No.	Drudgeries	Farm men (n1=60)		Farm women (n2=60)	
		No.	%	No.	%
1.	Back pain				
a.	Application of disinfectants	16	26.66	10	16.66
b.	Heating and cooling the rearing houses	6	10.00	8	13.33
c.	Feeding the silkworms	28	46.66	29	48.33
d.	Bed cleaning	25	41.66	26	43.33
e.	Cleaning of the mountages	22	36.66	18	30.00
f.	Harvesting of cocoons	28	46.66	29	48.33
2	Itching				
a.	Application of disinfectants	4	6.66	3	5.00
b.	Heating and cooling the rearing houses	1	1.66	1	1.66
c.	Feeding the silkworms	2	3.33	1	1.66
d.	Bed cleaning	16	26.66	15	25.00
e.	Harvesting of cocoons	17	28.33	19	31.66
3	Allergy				
a.	Application of disinfectants	8	13.33	4	6.66
b.	Heating and cooling the rearing houses	2	3.33	1	1.66
c.	Feeding the silkworms	3	5.00	3	5.00
d.	Bed cleaning	5	8.33	6	10.00
e.	Cleaning of the mountages	15	25.00	8	13.33
f.	Harvesting of cocoons	8	13.33	4	6.66
4	Cough and nasal infections				
a.	Application of disinfectants	15	25.00	8	13.33
b.	Cleaning of the mountages	15	25.00	8	13.33
c.	Bed cleaning	9	15.00	8	13.33
5.	Headache				
a.	Application of disinfectants	16	26.66	9	15.00
b.	Bed cleaning	10	16.66	9	15.00
c.	Cleaning of the mountages	20	33.33	8	13.33

Conclusion

The findings revealed that a majority of the farm men and women were belonging to medium to high level of participation in sericulture activities. Adequate opportunities needs to be provided for both farm men and women to participate in the extension activities (discussion, demonstrations, meetings, training programmes, field days, farm schools, farmer field schools, exposure visit to progressive sericulturists farm, etc.) and frequent contacts

with farm scientists and formal sericulture extension personnel (Demonstrator, Sericulture Officer and Assistant Director of Sericulture) will aid both in motivating by engaging themselves profitably in different sericulture activities.

The drudgery in silkworm rearing could be minimised by the use of hand gloves while mixing the disinfectants. Further, the use of face and eye masks will help in minimising drudgery during the application of disinfectants

and performing the operations like heating and cooling the rearing houses, feeding the silkworms, bed cleaning and harvesting the cocoons. The reduction in drudgery will lead to reduced fatigue and increase the participation of farm men and women in sericulture activities, however the extent of drudgery of the farm men and women in sericulture across the country vary widely with the nature of work, type of activity, their socio-economic status, local customs, size of family etc.

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