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Gender Analysis on Knowledge Regarding Silkworm Rearing Practices

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Abstract

The present study was carried out in two taluks of Ramanagara district in Karnataka state to assess the knowledge of farm men and women regarding silkworm rearing practices and to find out the extent of contribution of profile characteristics of farm men and women on their knowledge regarding silkworm rearing practices. The sample constituted 120 respondents (60 farm men and 60 farm women) and were interviewed using a pre-tested schedule. The results revealed that a majority of the farm men and women possessed correct knowledge on almost all the recommended silkworm rearing practices. There existed non- significant difference in the mean knowledge score between the farm men and women in respect of the silkworm rearing practices. Further, education, innovativeness, management orientation, economic motivation, mass media exposure, extension agency contact and extension participation significantly contributed to increasing the knowledge level of farm men and women regarding silkworm rearing practices.

Keywords : : Gender analysis, Knowledge, Silkworm rearing

Sericulture is a big industry that spans a variety of agricultural, artistic and technological fields, as well as textiles. It is valued as an agricultural industry by rural and resource-constrained farmers who cultivate mulberry and rear silkworms, but it is also viewed as a financial venture by other stakeholders. Since sericulture is a multipurpose agro-based industrial sector that serves all types of people worldwide, it provides answers to the majority of concerns when most farmers have limited production resources, such as land and funds to spend on agriculture. It is a high-yielding and highly profitable enterprise which offers regular and all-year-round attractive returns in the country's tropical states.

In most homes, women take care of both domestic chores and silkworm rearing tasks, including chopping leaves, making beds, feeding silkworms, maintaining personal cleanliness, selecting ripe worms, mounting them and so forth. According to calculations, out of the 4,225 labour days produced annually by all sericulture activities per hectare of mulberry, 2,575 work days or almost 60 per cent are generated by women. Sericulture offers 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.

According to recent studies, ten 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 per cent of the world's total output. Fifty-eight countries produce silk, with China, India, Japan, Brazil and Korea among the top producers. For every kilogramme 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 is drawn from the economically under privileged groups of society, including women. Sericulture is a profession performed by women because women perform more than 60 per cent of the labour and consume 80 per cent of the silk. Many silkworm rearing practices / technologies have been developed by the State Agricultural Universities, Central Silk Board, etc., but there are no empirical data available regarding the assessment of knowledge of farm men and women in silkworm rearing practices, hence the present study is carried out with the following specific objectives:

1. To know the profile characteristics of farm men and women
2. To assess the knowledge of farm men and women regarding silkworm rearing practices
3. To find out the extent of contribution of profile characteristics of farm men and women on their knowledge regarding silkworm rearing practices

Methodology

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 cocoon production in terms of mulberry area (18,975 ha), cocoon production (19,662 tons) and cocoon productivity (89 kg/100 dfls) during 2020-21 next to Chikkaballapura and Kolar districts (Anonymous, 2021a). During 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 was grown in more areas among the four taluks of Ramanagara district (Anonymous, 2021b). Five villages were randomly selected for the study from each of the two sampled taluks. From each village, six farm households rearing silkworms 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 present study.

Knowledge Regarding Silkworm Rearing Practices

Knowledge level of farm men and farm women regarding the silkworm rearing practices is operationalized as the quantum of scientific information known to the respondents about the recommended silkworm rearing practices. A total of 24 silkworm rearing practices were included to assess the knowledge level of farm men and women. To assess the knowledge level of farm men and women, the respondents were given a score of 0 and 1 for having 'incorrect knowledge' and 'correct knowledge', respectively on each of the silkworm rearing practices. Thus, a minimum and maximum score one can get was 0 and 24, respectively. Based on the total score obtained for the 24 silkworm rearing practices, the respondents were classified as low, medium and high levels of knowledge using mean and half standard deviation as measure of a check.

Knowledge category	Criteria	Farm men	Farm women
Low	< (Mean – ½ SD)	<18.58	<17.51
Medium	(Mean ± ½SD)	18.58 to 21.83	17.51 to 20.53
High	> (Mean + ½ SD)	> 21.83	> 20.53
	Mean	20.21	19.02
	Standard deviation	3.25	3.02

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Information regarding profile characteristics *viz.,* age, education, innovativeness, management orientation, economic motivation, mass media exposure, extension agency contact and extension participation were analysed using a structured schedule with suitable scale/procedure (Nataraju *et al.,* 2019). The collected data were scored, tabulated and analysed using frequency, percentage, standard deviation, multiple regression analysis and student 't' test.

Results and Discussion

Profile Characteristics of Farm Men and Women

Table 1 presents the data on the profile characteristics of farm men and women. It is observed from Table 1 that a majority of the farm men (61.68%) were of middle age, while 21.66 and 16.66 per cent of the farm men were of old and young age, respectively. A majority of the farm women (63.34%) were of

Table 1

Profile characteristics of farm men and women

Characteristics	Category	Farm men (n_1=60)		Farm women(n_2=60)	
		No.	%	No.	%
Age	Young (< 35 years)	10	16.66	9	15.00
	Middle (35 to 50 years)	37	61.68	38	63.34
	Old (> 50 years)	13	21.66	13	21.66
Education	Illiterate	2	3.34	05	8.34
	Primary school	9	15.00	08	13.33
	Middle school	12	20.00	11	18.33
	High school	14	23.34	13	21.67
	Higher secondary	7	11.66	08	13.33
	Graduation	16	26.66	15	25.00
Innovativeness	Low (<7.82 score)	14	23.34	21	35.00
	Medium (7.82 to 9.38 score)	27	45.00	26	43.34
	High (>9.38 score)	19	31.66	13	21.66
Management orientation	Low (<8.25 score)	09	15.00	13	21.66
	Medium (8.25 to 10.07 score)	20	33.34	23	38.34
	High (>10.07 score)	31	51.66	24	40.00
Economic motivation	Low (<8.26 score)	08	13.34	14	23.34
	Medium (8.26 to 10.09 score)	19	31.66	23	38.33
	High (>10.09 score)	33	55.00	23	38.33
Mass media exposure	Low (<7.81 score)	20	33.34	18	30.00
	Medium (7.81 to 9.48 score)	18	30.00	26	43.34
	High (>9.48 score)	22	36.66	16	26.66
Extension agency contact	Low (<7.82 score)	13	21.66	28	46.66
	Medium (7.82 to 9.28 score)	29	48.34	24	40.00
	High (>9.28 score)	18	30.00	08	13.34
Extension participation	Low (<7.95 score)	9	15.00	21	35.00
	Medium (7.95 to 9.60 score)	30	50.00	23	38.34
	High (>9.60 score)	21	35.00	16	26.66

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middle age, followed by 21.66 and 15.00 per cent of the farm women belonged to old and young age, respectively.

More than one-fourth of the farm men (26.66%) had completed graduation, whereas 23.34, 20.00, 15.00 and 11.66 per cent of the farm men had completed high school, middle school, primary school and higher secondary education, respectively. The remaining 3.34 per cent of the farm men were illiterates (Table 1). One-fourth of the farm women (25.00%) were educated up to graduation, while 21.67, 18.33, 13.33 and 13.33 per cent of the farm women had completed high school, middle school, primary school and higher secondary, respectively, while less number of farm women were illiterate (8.34%).

It is seen from Table 1 that 45.00 per cent of the farm men had a medium level of innovativeness, while 31.66 per cent of them had a high level of innovativeness and the remaining 23.34 per cent of the farm men had a low level of innovativeness. As high as 43.34 per cent of the farm women had a medium level of innovativeness, whereas 35.00 and 21.66 per cent of the farm women had a low and high level of innovativeness, respectively.

More than half of the farm men (51.66%) had a high level of management orientation followed by 33.34 and 15.00 per cent of the farm men had a medium and low level of management orientation, respectively (Table 1). Forty per cent of the farm women had a high level of management orientation followed by 38.34 and 21.66 per cent of the farm women had a medium and low levels of management orientation, respectively.

A perusal of Table 1 reveals that a majority of the farm men (55.00%) had a high level of economic motivation, while 31.66 and 13.34 per cent of the farm men had a medium and low levels of economic motivation, respectively. An equal percentage of the farm women (38.33% each) had a medium and high level of economic motivation, whereas 23.34 per cent of the farm women had a low level of economic motivation.

More than one-third of the farm men (36.66%) had a high level of mass media exposure, while one-third (33.34%) and 30.00 per cent of the farm men had a low and medium level of mass media exposure, respectively (Table 1). More number of farm women had a medium level of mass media exposure (43.34%), whereas 30.00 and 26.66 per cent of the farm women had a low and high level of mass media exposure, respectively.

The results in Table 1 reveals that nearly half of the farm men (48.34%) had a medium level of extension agency contact, while 30.00 and 21.66 per cent of the farm men had a high and low level of extension agency contact, respectively. As high as 46.66 per cent of the farm women had a low level of extension agency contact, whereas 40.00 and 13.34 per cent of the farm women had a medium and low levels of extension agency contact, respectively.

It could also be seen from Table 1 that half of the farm men (50.00%) had a medium level of extension participation, whereas 35.00 and 15.00 per cent of the farm men had a high and low levels of extension participation, respectively. More than one-third of farm women had a medium (38.34%) and low (35.00%) levels of extension participation, while a little over one-fourth (26.66%) of the farm women had a high level of extension participation, respectively.

It could be inferred from the findings that a larger number of farm men were of middle age (61.68%), graduates (26.66%) and had a high level of management orientation (51.66%), economic motivation (55.00%) and mass media exposure (36.66%). Whereas, a majority of the farm men had a medium level of innovativeness (45.00%), extension agency contact (48.34%) and extension participation (50.00%). On the contrary, a larger number of farm women were of middle age (63.34%) and graduates (25.00%). An equal percentage of farm women (38.33% each) had a medium and high levels of economic motivation, while a greater proportion of farm women had a medium level of innovativeness (43.34%), mass media exposure (43.34%), extension

agency contact (46.66%) and extension participation (38.34%), while more number of farm women had high level of management orientation (40.00%). More or less similar findings were reported by Prabhu Illiger *et al.,* (2017), Chaitra (2020), Vikas (2020) and Rahul *et al.,* (2021).

Knowledge of Farm Men and Women Regarding Silkworm Rearing Practices

Knowledge of Farm Men and Women Regarding Specific Silkworm Rearing Practices : The research data in Table 2 presents the data on the knowledge of farm men and women regarding the specific silkworm rearing practices. In respect of the use of disinfectants, a vast majority of the farm men had correct knowledge of the disinfectant name (bleaching powder) (81.66%), the quantity of disinfectants used (200g/ha) (93.33%) and equipment/appliance used for disinfection (91.66%), while a majority of the farm women also had correct knowledge on disinfectant name (bleaching powder) (55.00%), quantity of disinfectants used (200g/ha) (51.66%) and equipment/ appliance used for disinfection (53.33%).

A majority of the farm men possessed correct knowledge on the temperature maintenance at rearing house (85.00%), relative humidity maintenance at rearing house (90.00%), procurement of silkworms through eggs /chawki (85.00%) and the name of the silkworm breed (58.33%). While, more than half of the farm women also possessed correct knowledge regarding the temperature maintenance at rearing (60.00%), relative humidity maintenance at rearing house (58.33%), procurement of silkworms through eggs /chawki (76.66%) and the name of the silkworm breed (63.33%).

With regard to the method of silkworm rearing, almost all the farm men had correct knowledge on tray method (98.33%) and shoot method of rearing silkworm (96.66%), while a majority of the farm women had correct knowledge on the tray method (66.66%) and shoot method of rearing silkworm (51.66%).

The findings with respect to the instar-wise feeding frequency, all the farm men had correct knowledge on the feeding frequency in 1st instar

TABLE 2
Knowledge of farm men and women regarding specific silkworm rearing practices

Silkworm rearing practices	Correct knowledge			
	Farm men (n_1=60)		Farm women (n_2=60)	
	No.	%	No	%
Use of disinfectants				
Disinfectant name (Bleaching powder)	49	81.66	33	55.00
Quantity of disinfectants used (200g/ha)	56	93.33	31	51.66
Equipment/appliance used for disinfection	55	91.66	32	53.33
Temperature maintenance at rearing house	51	85.00	36	60.00
Relative humidity maintenance at rearing house	54	90.00	35	58.33
Procurement of silkworms through eggs /chawki	51	85.00	46	76.66
Name of the silkworm breed	35	58.33	38	63.33
Method of silkworm rearing				
Tray method	59	98.33	40	66.66
Shoot method	58	96.66	31	51.66
Instar-wise feeding frequency				
1st instar	60	100.00	53	88.33
2nd instar	60	100.00	56	93.33

Table 2 Contd....

Silkworm rearing practices	Correct knowledge			
	Farm men (n_1=60)		Farm women (n_2=60)	
	No.	%	No	%
3rd instar	60	100.00	57	95.00
4th instar	59	98.33	58	96.66
Bed spacing (100 dfls with breed)	57	95.00	56	93.33
Bed cleaning	58	96.66	55	91.66
Incubation of dfls	51	85.00	41	68.33
Black boxing of dfls	50	83.33	42	70.00
Brushing of dfls	42	70.00	40	66.66
Density of worms in moulting per unit area (sq.feet)	56	93.33	41	68.33
Disease management				
Use of bed infectants	55	91.66	42	70.00
Use of lime +fungicide	58	96.66	40	66.66
Pest management				
Use of meshes to ventilator or window to control uji fly	58	96.66	42	70.00
Number of days required for cocoon harvesting	58	96.66	46	76.66
Cocoon harvesting	60	100.00	60	100.00

(100.00%), 2nd instar (100.00%) and 3rd instar (100.00%), while 98.33 per cent of the farm men had correct knowledge on the feeding frequency during 4th instar. A greater majority of the farm women had correct knowledge on the feeding frequency in 1st instar (88.33%), 2nd instar (93.33%), 3rd instar (95.00%) and 4th instar (96.66%).

More than half of the farm men possessed correct knowledge regarding bed spacing (100 dfls with breed) (95.00%), bed cleaning (96.66%), incubation of dfls (85.00%), black boxing of dfls (83.33%), brushing of dfls (70.00%) and density of worms in moulting per unit area (sq. feet) (93.33%). Similarly, more than half of the farm women had correct knowledge regarding bed spacing (100 dfls with breed) (93.33%), bed cleaning (91.66%), incubation of dfls (68.33%), black boxing of dfls (70.00%), brushing of dfls (66.66%) and density of worms in moulting per unit area (sq.feet) (68.33%).

With respect to the disease management of silkworms, an overwhelming number of farm men possessed correct knowledge on the use of bed infectants (91.66%) and lime + fungicide (96.66%), Whereas, a majority of the farm women possessed correct knowledge on use of bed infectants (70.00%) and lime + fungicide (66.66%). In respect of pest management, a vast majority of farm men had correct knowledge on the use of meshes to ventilator or window to control uji fly (96.66%), while 70.00 per cent of the farm women had correct knowledge on the use of meshes to ventilator or window to control uji fly.

A vast majority of the farm men possessed correct knowledge on the number of days required for cocoon harvesting (96.66%) and all the farm men possessed correct knowledge on cocoon harvesting (100.00%). Whereas, more than two-third of the farm women possessed correct knowledge on the number of days required for cocoon harvesting (76.66%) and all the farm women possessed correct knowledge on cocoon harvesting (100.00%).

It can be inferred from the study results that a majority of the farm men and women possessed correct knowledge on almost all the recommended silkworm

rearing practices. Mass media exposure, participation in extension activities and frequent contact with the sericulture extension personnel have aided the farm men and women in having good /correct knowledge on silkworm rearing practices.

Overall Knowledge of Farm Men and Women Regarding the Silkworm Rearing Practices : It could be seen from Table 3 that nearly half of the farm men (46.47%) possessed high level of knowledge regarding silkworm rearing practices, whereas 28.33 per cent and one-fourth (25.00%) of the farm men possessed medium and low level of knowledge regarding the silkworm rearing practices, respectively. Likewise, a greater proportion of farm women possessed high level of knowledge (43.34%) regarding silkworm rearing practices, while 31.66 per cent and one-fourth (25.00%) of the farm women possessed medium and high level of knowledge regarding silkworm rearing practices. The 't' value (0.98) revealed that there existed no significant difference in the mean knowledge score between the farm men (20.21) and women (19.02). Majority of the farm men and women possessed correct knowledge on almost all the silkworm rearing practices. As a consequence, there existed a non-significant difference in the mean knowledge score between the farm men and women in respect of the silkworm rearing practices.

Extent of Contribution of Profile Characteristics of Farm Men and Women on their knowledge Regarding Silkworm Rearing Practices

The results of multiple regression analysis revealed that education, innovativeness, management orientation, economic motivation, mass media exposure, extension agency contact and extension participation of farm men and women had significantly contributed to increasing the knowledge level regarding silkworm rearing practices (Table 4). All the eight profile characteristics of farm men and women contributed to the tune of 84 and 88 per cent towards the knowledge regarding silkworm rearing practices, respectively. It can be concluded from the results that age, education, innovativeness, management orientation, economic orientation, mass media exposure, extension agency contact and extension participation of farm men and women had synergic effect on one another leading to significantly contributing in increasing the knowledge among both sexes regarding the silkworm rearing practices.

TABLE 3

Overall knowledge of farm men and women regarding the silkworm rearing practices

Knowledge category	Number	Per cent	Standard deviation	Mean knowledge score	't' value
Farm men (n_1=60)					
Low (<18.58 score)	15	25.00	3.25	20.2	
Medium (18.58 to 21.83 score)	17	28.33			
High (>21.83 score)	28	46.67			
Total	60	100.00			
Farm women (n_2=60)					0.98 NS
Low (<17.51 score)	15	25.00	3.02	19.0	
Medium (17.51 to 20.53 score)	19	31.66			
High (>20.53 score)	26	43.34			
Total	60	100.00			

NS=Non significant

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TABLE 4

Extent of contribution of profile characteristics of farm men and women on the knowledge regarding silkworm rearing practices

Profile characteristics	Farm men^{+} (n_1-60)			Farm women^{++} (n_2-60)		
	Regression co-efficient	SE of regression co-efficient	't' value	Regression co-efficient	SE of regression co-efficient	't' value
Age	0.267	0.098	0.617^{NS}	0.138	0.089	0.098^{NS}
Education	0.369	0.781	2.116*	0.184	0.399	2.168*
Innovativeness	0.255	0.589	2.311*	0.178	0.414	2.318*
Management orientation	0.300	0.781	2.601*	0.339	0.712	2.098*
Economic motivation	0.308	0.717	2.333*	0.172	0.415	2.399*
Mass media exposure	0.256	0.619	2.411*	0.298	0.618	2.068*
Extension agency contact	0.120	0.514	4.28**	0.327	0.792	2.418*
Extension participation	0.242	0.582	2.398*	0.317	0.812	2.561*

NS=Non-significant *=Significant at 5% level, **=Significant at 1% level; SE=Standard Error; $^{+}F=29.31^{**}$; $^{+}R^2=0.84$; $^{++}F=30.11^{**}$; $^{++}R^2=0.88$

The results revealed that a majority of farm men and women possessed correct /good knowledge of almost all the silkworm rearing practices. It was found that mass media exposure, extension agency contact and extension participation had significant contribution to the knowledge of farm men and women regarding silkworm rearing practices. Therefore, farm men and women need to be provided enough opportunities 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 formal sericulture extension personnel (Demonstrator, Sericulture Officer and Assistant Director of Sericulture) will also aid both farm men and women in gaining more knowledge regarding silkworm rearing practices. Print and electronic media might also publish/broadcast/telecast need based messages/information in local languages on silkworm rearing practices helping both farm men and women to increase their knowledge on silkworm rearing practices for practising the same in the rearing house to obtain increased cocoon yield and income.

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