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Socio-Economic Profile of Chawki Rearing Centers Owned Farmers in Tamil Nadu, India

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ABSTRACT

Sericulture play an important role in economy especially sericulture industry includes huge labour intensive activities and women friendly industry and it generate huge employment opportunity and more income generate to farmers. The current study investigates the socio-economic profile of Chawki Rearing Centers (CRCs) owned sericulture farmers of Tamil Nadu. The research conducted across ten districts in Tamil Nadu and involved 45 farmers classified into small, medium and large farm categories based on landholding size. Data collected through personal interviews using a pre-tested interview schedule and analyzed using statistical tools such as frequencies, percentages and means. The study evaluated factors such as age, education, gender, family composition, farm experience and income. The current findings shown that the most of the CRC farmers are middle-aged, educated up to high school level and rely on family labor for sericulture operations. Chawki rearing contributes significantly to farmers' annual income, with the majority involved in allied activities to supplement farm earnings.

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INTRODUCTION

Sericulture play an important role in economy especially sericulture industry include huge labour intensive activities and women friendly agriculture based industry and it generate huge employment opportunity and more income generate to farmers and it is one of the labour intensive industry and more specifically women friendly, hence it generates more employment. This provides employment opportunities to 219,679 persons. Also it gives sustainable income to the rural farming communities especially to landless. Landless families contracted mulberry garden from local farmers are benefitted by cocoon production in many States (Geetha *et al.*, 2001).

For farming community's sericulture offers more number of opportunities, particularly small and marginal farmers. Sericulture promotes equable development, predominantly to rural households. It also provides vibrancy to village economies, ideal programme for the weaker section of the society and an eco-friendly activity (Sunildutt and Chole, 2002).

To enhance any industry, embracing new technologies is crucial and these technological advancements must be both profitable and well-received by users. In sericulture, the implementation of innovative technologies aims to achieve key goals, such as boosting crop production and productivity while also enhancing farmers' employment opportunities and income. By introducing advanced sericulture techniques, we can not only increase silk production but also elevate the quality of life, living standards and socio-economic conditions of the rural population (Kumar *et al.*, 2020).

The socio-economic status of farmers is a key determinant of their technology adoption levels. Various field studies have examined this status by considering multiple constraints, such as status, structure of the family, primary livelihood, sericulture farming knowledge, size of the family, silkworm cocoon yield per 100 disease-free layings (DFLs), income, education, landholding size, mulberry irrigation and extension support. Factors like education, income, social participation, extension contacts, mass media usage, cosmopolitanism and risk orientation were positively associated with technology adoption, while age displayed a negative relationship (Raveesha *et al.*, 2016). Therefore, the main objective of this study, to provide an assessment of the socio-economic status of chawki rearing centers owned sericulture farmers.

MATERIALS AND METHODS

Study Area

Tamil Nadu is covered around 130,060 km^2 of India which is located 11°00' N Latitude and 78°00' E Longitude of Southern India. The current study is concerned about socio economic profile of CRC's owned sericulture farmers. This study was conducted in 10 districts of Tamil Nadu such as Krishnagiri, Dharmapuri, Salem, Thiruvannamalai, Tiruppur, Erode, Coimbatore, Dindigul, Theni and Tirunelveli. These districts were purposively selected because chawki rearing centers operated only in these districts and the farmers are depending on CRC for getting disease free, robust and healthy larvae.

Data Collection

Using a pre-tested comprehensive interview schedule the selected respondents were personally contacted and interviewed. The objectives of the study were clearly explained to them to emphasize its significance and secure their cooperation. In general, farmer did not maintain any record about their farming business. Hence, they had to recall and furnish the necessary information. Nevertheless, they were able to recollect and present the information regarding sericulture farming and marketing at farm level fairly well. However, consistency and accuracy of the data were ensured by cross check questions.

The general characteristics of the sample respondents include social, economic and basic information about the crops raised. They are age, education status, experience in sericulture, family size and family composition, land holding pattern, cultivation of mulberry variety, cropping pattern and unit size of chawki rearing centers of the respondents.

In present study the chawki rearing farmers are classified three categories, such as, the farmers reared chawki rearing below 0.6 hectare were recorded as small farmers, 0.6 hectare to 2.5 hectares as medium farmers and above 2.5 hectares as large farms. Hence to arrive at an accurate estimate, based on the size of land holding the sample farms were post stratified into three size groups' *viz.*, small, medium and large farmers and results are presented accordingly.

The primary data collected from 45 respondent farmers was subjected to simple tabular analysis. Simple percentage and tabular analysis is used to assess the general features of the sample *viz.*, age [4

categories: below thirty years, between thirty to forty years, between forty one to fifty years and more than fifty years]; education [4 categories: illiterate, primary, higher secondary and college]; gender [2 categories: male and female]; family size [3 categories: small (<4), medium (4-5) and large (>5)]; occupation [4 categories: chawki rearing, chawki rearing + allied activities, chawki rearing + agriculture, chawki rearing + government employment]; income [3 categories: chawki rearing, allied activities and agriculture crops], farm experience [3 categories: <10 years, 10-25 years and >25 years], land holding [3 categories: small (upto 0.5 ha), medium (0.6-2.5 ha) and large (>2.5 ha)]. In the present study the statistical technique such as frequency and percentage were used for analysis and interpretation of collected data.

RESULTS AND DISCUSSION

Age of the respondents is an important demographic factor to be studied as it gives a picture on the common age of the farmers preferring to work in chawki production activity The sample respondents age categories were classified into four classes such as less than thirty years, between thirty to forty years, between forty-one to fifty years and more than fifty years. The details are furnished in table 1.

In many studies, the head of the farm household age has play important role in farmer's determinant of crop production decisions. The details of age distribution are specified in table 1; among the three groups of farmers most of the farmers (40%) belonged to the age group of between thirty-one to forty years, which indicated that the younger groups

Table 1: Age of heads of sample CRC households

Sl. No.	Age	Number of farmers				Percentage
		Small (12)	Medium (23)	Large (10)	Total	
1.	Below 30 years	0	3	0	3	6.67
2.	31-40 years	5	8	5	18	40.00
3.	41-50 years	4	8	3	15	33.33
4.	Above 50 years	3	4	2	9	20.00
5.	Total	12	23	10	45	100.00

of sample respondents are involved in Chawki rearing. The sample respondents had awareness in adopting new technologies to enhance the productivity of mulberry cultivation and Chawki rearing and also 33.33% of the farmers were aged between 41-50 years, 20% were above 50 years, and only 6.67% were under 30 years. These findings align with the results of Sunildutt and Chole (2002).

The education level of the sample respondents is important factor influences the level of adoption of innovation, decision making behaviours and social participations to a greater extent which are represented in table 2. In the study area, majority of the farmers (37.78%) educated up to high school level, followed by farmers with college education was 28.89% and primary education (26.67%) the

Table 2: Educational status of heads of sample farm households

Sl. No.	Education	Number of farmers				Percentage
		Small (12)	Medium (23)	Large (10)	Total	
1.	Illiterate	3	0	0	3	6.66
2.	Primary	3	7	2	12	26.67
3.	Higher Secondary	6	8	3	17	37.78
4.	College	0	8	5	13	28.89
	Total	12	23	10	45	100.00

present study lined with Kumar *et al.* (2020). Only 6.66% of the respondents were found to be illiterate. Thus, it could be concluded from the results, the sample respondents of chawki farmers have higher education level.

The information of the general of the sample farmers are furnished in table 3. The current study most of the farmers (84.44%) are males and 15.56% farmers are females. Thus, it could be concluded that in Chawki rearing practicing majority of respondents

Table 3: Gender of the sample respondents

Gender Status	Number of farmers			Total number of farmers	Percentage
	Small (n=12)	Medium (n=23)	Large (n=10)		
Male	8	20	10	38	84.44
Female	4	3	0	7	15.56
Total	12	23	10	45	100.00

are males. The present study lined with Raveesha *et al.* (2016).

The sample respondent size of the family has been shown in table 4. From the above table it was noticed that among the three size of farmers, about

57.78% of respondents comprised of 4-5 family members which comes under the medium size followed by 15.56% belonged to large size family with more than five members and the less than four persons (small family) was 12%. These findings clearly indicated that most of the households under

Table 4: Family composition of the respondents

Family size	Number of farmers			Total number of farmers	Percentage
	Small (n=12)	Medium (n=23)	Large (n=10)		
Small (<4)	5	4	3	12	12.00
Medium (4-5)	6	16	4	26	57.78
Large (>5)	1	3	3	7	15.56
Total	12	23	10	45	100.00

the category of medium family size. Family size point out the availability of family labours for sericulture operations; hence it is concluded that in most of the Chawki rearing farmers were able to

efficiently manage rearing using family labour compared to hired labour. The present study supported by Raju *et al.* (2019).

Table 5: Major Occupational status of the sample farmers

Status of Occupation	Farmers (in number)			Total number of farmers	Percentage
	Small (n=12)	Medium (n=23)	Large (n=10)		
Chawki rearing	4	10	5	19	42.22
Chawki rearing + Allied activities	5	6	2	13	28.89
Chawki rearing + Agriculture	3	5	3	11	24.44
Chawki rearing + Government employment	0	2	0	2	4.44
Total	12	23	10	45	100.00

[Figures in parentheses indicate percentage to total]

Based on status of occupation the sample chawki rearing centres owned farmers were also classified

into 4 groups *i.e.*, Chawki rearing only, Chawki rearing and associated activities, Chawki rearing and

agriculture and those with Chawki rearing and government employment

The status of the selected chawki rearing centres owned farmers could be seen from the table 5. Around 42.22% farmers had Chawki rearing as their main occupation followed by Chawki rearing and allied activities (28.89%). Since Chawki rearing depends on the demand of late age rearer, presently, many farmers followed several activities to enhance the fame income. Only 4.44% farmers had Chawki rearing and government employment. So, the findings indicated that most of the farmers Chawki rearing alone had major occupation. This study confirmed with Girish *et al.* (2020).

The average annual income of the sample farmers is presented in table 6. The average annual income of

Table 6: Average annual income of sample farmers (Rs. ha^{-1}year^{-1})

Sl. No.	Details	Small (n=12)	Medium (n=23)	Large (n=10)
1.	Chawki rearing	369670 (92.23)	624340 (96.08)	723875 (96.34)
2.	Allied Activities	20875 (5.21)	15758 (2.43)	18765 (2.50)
3.	Agriculture crops	16268 (2.56)	9672 (1.49)	8689 (1.16)
	Total	400813 (100)	649770 (100)	751329 (100)

[Note: Allied activities include livestock rearing and management]

different group of the farmers was Rs. 4,00,813.00, Rs. 6,49,770.00 and Rs. 7,51,329.00 in small, medium and large size farmers, respectively. Chawki rearing contributes the major share in total annual income of the sample farmers. The share was 92.23% in small farmers, 96.08% in medium farmers and 96.34% in large farmers. Among the three groups of sample farmers the annual income share was high in Chawki rearing followed by allied activities and agriculture crop cultivation. This could be concluded that Chawki rearing farmers in addition practicing allied activities and agriculture would increase the farmers' annual income. The present outcomes of this study are reliable with result of Nataraju (2012) and Girish *et al.* (2020). The productivity and capacity of the farmers highly influence by the experience of the farmer. Therefore, the sample farmers were categorized based on their farming experience and the results are furnished in table 7.

Table 7: Knowledge in sericulture

Sl. No.	Sericulture Knowledge (Experience) in years	Number of farmers				Percentage
		Small (12)	Medium (23)	Large (10)	Total	
1.	< 10 years	1	6	1	8	17.78
2.	10-25 years	10	16	7	33	73.33
3.	> 25 years	1	1	2	4	8.89
	Total	12	23	10	45	100.00

Based on current findings, 73.33% of the sample respondents were almost 10-25 years of experience in the field of mulberry cultivation and silkworm rearing. Followed by 17.78% the sample respondents were experienced by less than 10 years and 8.89% of the sample respondents have experienced by more than 25 years. Hence, the present study concluded that almost more than 70%

sample respondent had good experience in mulberry cultivation and silkworm rearing. Central Silk Board (CSB) and State Department of Sericulture provided subsidy for establishing mulberry garden, rearing shed and rearing appliances for sericulture for last one decade. This was the reason for the experienced respondents shifting to Chawki rearing in the study area. The present findings confirmed with the study of Geetha (2010).

In table 8, it is reported that the land holding pattern in Chawki mulberry producers, in small farmers the highest area had been occupied by the garden land (64%) followed by dry land (35.63%) and nil in wet land. In large scale farmers 56.62 per occupied garden land next to 18.88% dry land and 1% in wet land. In medium scale farmers 57.14% engaged garden land fallow by 34.45% dry land nil in wet land. From small scale farmers 64% occupied

Table 8: Land holding pattern of sample farmers

Sl. No.	Size groups	No. of respondents	Total area (in ha)	Average size of the farm (in ha)			
				Wet land	Garden land	Dry land	Total
1.	Small (Upto 0.5 ha)	12	10.44	-	0.56 (64.00)	0.31 (35.63)	0.87 (100.00)
2.	Medium (0.6-2.5 ha)	23	54.74	-	1.38 (57.14)	0.82 (34.45)	2.20 (100.00)
3.	Large (>2.5 ha)	10	49.8	0.05 (1.00)	2.82 (56.62)	0.94 (18.88)	3.81 (100.00)
	Total	45	114.98	0.5 (0.50)	66.66 (67.24)	31.98 (32.26)	99.14 (100.00)

[Figures in parentheses indicate percentages to total]

garden land next to 35.63% dry land and nil wet land. Among the three groups of farmer's mulberry cultivated was high in garden land (67.24%) than other land. Hence this table concluded that garden land was well suitable for mulberry growth. The findings of Mande and Thombre (2009) and Nataraju (2012) were in agreement with the results of the present study.

The analysis of cropping patterns used by farmers provides important information about the significance of different crops in their farming systems. This study highlights how important mulberry cultivation is in the total cropped area and its potential as a source of income for the farmers involved in sericulture. This study is crucial for understanding how farmers view changes in land use

Table 9: Cropping pattern of sample farms

Sl. No.	Name of crop	Area under crops			
		Small (12)	Medium (23)	Large (10)	Total
1.	Mulberry	0.39 (27.08)	1.63 (16.39)	3.81 (38.45)	5.83 (27.38)
2.	Ragi	0.03 (2.08)	0.29 (2.92)	0.52 (5.25)	0.84 (3.95)
3.	Samai	0.09 (6.25)	0.50 (5.03)	0.75 (7.57)	1.34 (6.29)
4.	Red gram	0.10 (6.94)	0.29 (2.92)	0.60 (6.05)	0.99 (4.65)
5.	Horse gram	0.08 (5.56)	0.25 (2.52)	0.38 (3.83)	0.71 (3.33)

Sl. No.	Name of crop	Area under crops			
		Small (12)	Medium (23)	Large (10)	Total
6.	Mango	0.01 (0.69)	0.98 (9.86)	0.80 (8.07)	1.79 (8.41)
7.	Tomato	0.15 (10.42)	0.63 (6.34)	0.30 (3.03)	1.08 (5.07)
8.	Flowers	0.12 (8.33)	0.42 (4.23)	0.38 (3.83)	0.92 (4.32)
9.	Turmeric	-	0.80 (8.05)	0.38 (3.83)	1.18 (5.54)
10.	Sugarcane	0.20 (13.89)	0.48 (4.83)	-	0.68 (3.19)
11.	Groundnut	0.05 (3.47)	0.50 (5.03)	0.35 (3.16)	0.90 (4.23)
12.	Cotton	-	0.75 (7.55)	-	0.75 (3.52)
13.	Coconut	-	0.37 (3.72)	1.28 (12.92)	1.65 (7.75)
14.	Banana	-	0.80 (8.05)	-	0.80 (3.76)
15.	Bajara	-	0.15 (1.51)	-	0.15 (0.70)
16.	Fodder crops	0.22 (15.28)	1.10 (11.07)	0.36 (3.63)	1.68 (7.89)
	Gross cropped area	1.44 (100.00)	9.94 (100.00)	9.91 (100.00)	21.29 (100.00)

[Figures in parentheses indicate percentages to total]

and crop combinations, especially when these changes are influenced by market factors. The cropping pattern signifying area under different crops on selected sample mulberry growers in all three categories of farmers is presented in table 9.

The average gross cropped area of the sample mulberry grower was 21.29 hectare. In the study area mulberry occupied major share in gross cropped area (27.38%). This finding was consistent with the outcome of Dandin *et al.* (2003)

Followed by the mango occupied the share in gross cropped area was 8.41%. The proportion of area under fodder crops were (7.89%) among mulberry growers. Coconut was occupied 7.75% area at the overall category. The major food crops grown by the sample respondent were samai, ragi, bajara and the

pulses crops are red gram, horse gram and mixed with the cash crop like sugarcane, cotton and turmeric crop were popular. The current findings aligned with Gummagolmath *et al.* (2020). The total gross cropped area was 1.44 ha, 9.94 ha, 9.91 ha in small, medium and large size farmers respectively.

CONCLUSION

This study highlights the vital role of Chawki Rearing Centers in improving the socio-economic status of small and medium-scale farmers in Tamil Nadu. Most CRC farmers are middle-aged, educated and rely on family labour, with sericulture contributing significantly to their annual income. The findings emphasize the need for adopting advanced technologies and providing targeted training to enhance productivity and sustainability.

Promoting sericulture can serve as a key driver for rural employment, income generation and poverty alleviation in the region.

Conflict of Interest

The authors declare no conflict of interest.

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