

## Economics of marketing silkworm cocoons and marketing constraints faced by farmers in Kolar district of Karnataka

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**Abstract:** The present study was conducted in the Kolar district of Karnataka through a well-structured survey during 2019-2020. The multi-stage random sampling technique was employed to select taluk, villages, and farmers with a sample size of 60 sericulture practicing farmers. The literates among the sample respondents were 88.33 per cent. In the study area, only one marketing channel was identified for marketing the cocoons, where the farmers sold directly to the wholesaler-cum-reelers in government cocoon markets in the auctions. The average marketing cost incurred by the cocoon producing farmers was calculated per 100 Disease Free Layings (DFLs) which was found to be ₹ 726. Its magnitude was relatively high in the case of marginal farmers (₹ 875/100 DFLs). An appraisal on components of marketing costs revealed that the expenditure on transportation (37.60 %) formed the most significant constituent of the total marketing cost. Since the produce was sold directly in the government cocoon markets, the producer's share in consumer's rupee was 98.37 per cent and there were relatively fewer constraints. Based on the opinion survey, the price volatility of cocoons was the major constraint (Garrett score 71.75). The other constraints include delayed payments, malpractices in markets, lack of sufficient transportation and storage facilities.

**Keywords:** Cocoon market, Disease free layings, Marketing cost, Price volatility

### Introduction

'Sericulture' is an art and science of rearing silkworms to produce cocoons and silk. It includes growing mulberry, rearing silkworms, reeling silk thread from cocoons, weaving the silk yarn, and further processing to produce the silk fabric (Kumar *et al.*, 2019). Sericulture plays a vital role in the socio-economic development of the rural sector. It is a highly labour-intensive, profit-oriented, and low input indoor activity that gives frequent periodicity of economic returns throughout the year. It is also well suited for the womenfolk of the rural sector. Sericulture has been an important income-generating cottage-based industry in the country. This industry has been providing sustainable income for different strata of people in rural society. Sericulture is providing employment opportunities to nearly 9.17 million people in the country (Anonymous, 2019a). The sericulture enterprise provides maximum (1000 Man days per acre) employment from the point of cultivation of mulberry to the final weaving stage (Suresh, 2017). It can generate employment for up to 11 persons for every kg of raw silk produced. Out of which more than 6 persons were women (Sidaram, 2018).

The production of raw silk and silk fabrics is limited to only a few countries in the world. In 2020, China occupies first place with 53359 MT (58.15 %) and India holds the second position with 33770 MT (36.80 %) of total global silk production (Anonymous, 2021a). Though India is the second-largest producer of raw silk with an area of 2.38 Lakh hectares under mulberry cultivation, the production of silk accounted for only

36.80 per cent of the total global raw silk production during 2020-21. Mulberry silk accounts for 70.76 per cent (23896 MT) of the total raw silk production in 2020-21 (Anonymous, 2021b). The area under mulberry in Karnataka accounted for 104577.56 hectares with the production of 83016.7 MT of silk cocoons and 11592.31 MT of raw silk with around 33 per cent of the country's raw silk production which ranks first in India (Anonymous, 2019a). Kolar district stands first in an area under mulberry cultivation with 19936 ha but stands 4<sup>th</sup> in the production of raw silk with 1273 MT after Mandya (2399 MT), Ramanagara (2044 MT), and Chikkaballapura (1645 MT) consequently in the state (Anonymous, 2019b).

The department of sericulture has established cocoon markets to facilitate both rearers and reelers to get a competitive and fair price for their cocoons. This type of regulated transaction system of cocoons exists only in Karnataka. In these markets, the cocoons brought from rearers are transacted as separate lots and dealt with in an open auction. To bring transparency to transactions, electronic weighing machines and computers are installed in the markets. Basic facilities like drinking water, restrooms, and toilets are also provided in the markets. The market fee is 2 per cent (1% from rearer and 1% from reeler).

Karnataka is having Asia's largest silk cocoon market located in the silk city Ramanagara. There are 55 commercial government cocoon markets spread throughout the state. Ramanagara, Kolar, Channapatna, Shiddlaghatta, Kollegal,

Vijayapura, and Kanakapura markets are the major cocoon markets. E-bidding has been introduced in the major cocoon markets to ensure competitive prices and transparency in cocoon transactions both for farmers and reelers. This study was conducted to analyse the economics of marketing and the marketing constraints encountered by the sericulture farmers in the study area.

**Materials and method**

Multistage random sampling technique was adopted in designing the sampling frame for the study to select taluk, villages, and farmers in the Kolar district of Karnataka. In the first stage, the Kolar district was selected purposively based on the highest area under mulberry cultivation in Karnataka and the scope for increasing cocoon production. In the second stage, Kolar taluk was selected based on highest area under mulberry and cocoon production and potentiality, in the Kolar district. While selecting villages in the selected taluk for identifying the potentiality as well as the concentration of sericulture farmers, the experiences of the Sericulture Officers at the district and taluk level were taken by consultation. Out of all villages, fifteen villages namely Chitnahalli, Sugaturu, Nayakarahalli, Ankathatti, Hoohalli, Uppakunte, Medihala, Gaddekannuru, Bennanguru, Annihalli, Somasandra, Balagere, Naganaala, Byappanahalli, and Begli Benajenahalli were selected at a random process for the study purpose. Finally, a total of 60 sericulture practising farmers were randomly selected. The information on their landholding was procured from the record of the village revenue officer. All the sample farmers were then categorized into four size groups based on the landholdings *viz*, marginal farmers (less than 1 ha), small farmers (1 to 2 ha), medium farmers (2 to 4 ha), and large farmers (more than 4 ha) to arrive at realistic estimation. They were interviewed personally to elicit required information about marketing scenarios and constraints encountered by them, with the help of a well-structured and pre-tested schedule. Every possible care and effort was taken to ensure the accuracy and reliability of the data during the personal interview. The Kolar cocoon market has been purposively selected for the study of market and market functionaries.

The study was conducted during the agricultural year 2019-2020. In the study area, only one marketing channel was identified for marketing of cocoons, where the farmers sold directly to the wholesaler-cum-reelers in government cocoon markets in the auctions. Here final consumer was the reeler

who purchased the cocoons for reeling, from the farmers’ point of view. Marketing cost was calculated, which was incurred in marketing by the producer and by various intermediaries involved in the purchase and sale of cocoons. This includes the cost of packing material, transportation cost of cocoons, loading and unloading charges, the market fee, and other incidental expenses incurred in the marketing of cocoons. The net price received by the farmer at the time of the first sale can be calculated as,

$$P_F = P_A - C_F$$

Where  $P_F$  = Producer’s price

$P_A$  = Wholesale price in primary assembling market

$C_F$  = Marketing cost incurred by farmer.

The producer’s share in consumer’s rupee is the price received by the farmer expressed as a percentage of the price paid by the consumer.

$$P_s = (P_F \div P_r) \times 100$$

Where,  $P_s$  = Producer’s share

$P_F$  = Net price received by the producer

$P_r$  = Retail price or consumer’s price

The marketing constraints were identified based on the opinion survey in the study area. Garrett’s ranking technique was applied to rank a set of factors as perceived by the sample respondents based on their priority. The order of merit assigned by the respondents was converted into scores using the following formula given by Garrett and Woodworth (1969).

$$\text{Per cent position} = 100 (R_{ij} - 0.5) / N_j$$

Where,  $R_{ij}$  = Rank of the  $i^{\text{th}}$  item by  $j^{\text{th}}$  individual

$N_j$  = Number of items ranked by the  $j^{\text{th}}$  individual

The factor with the highest mean score was considered to be the most important constraint. Thus, the mean score for each constraint was ranked by arranging them in descending order.

**Results and discussion**

**Marketing of silkworm cocoons**

The marketing cost of cocoons incurred by the farmers is illustrated in Table 1 which depicts that the total average market

Table 1. Marketing costs incurred by silkworm rearing farmers (Unit: ₹/100 DFLs)

Particulars	Size groups				Total
	Marginal	Small	Medium	Large	
Packing	200 (22.86)	198 (27.39)	197 (27.51)	190 (32.26)	196 (27.00)
Transportation	400 (45.71)	270 (37.34)	260 (36.31)	160 (27.16)	273 (37.60)
Loading and unloading	48 (5.49)	48 (6.64)	50 (7.00)	50 (8.49)	49 (6.75)
Market fee	103 (11.77)	97 (13.42)	97 (13.54)	103 (17.49)	100 (13.77)
Miscellaneous	124 (14.17)	110 (15.21)	112 (15.64)	86 (14.60)	108 (14.88)
Total	875 (100.00)	723 (100.00)	716 (100.00)	589 (100.00)	26 (100.00)

Note: Figures in parenthesis indicate the percentage to the total

Table 2. Marketing costs and producer's share in consumer's rupee under the marketing channel (Unit: ₹ /kg)

Particulars	Size groups				Total
	Marginal	Small	Medium	Large	
Producer's sales price	413	447	453	469	445.5
Marketing cost	8.50	7.45	7.38	5.72	7.26
Net price received by the producer	404.5	439.55	445.62	463.28	438.24
Consumer's price	413	447	453	469	445.5
Producer's share in consumer's rupee (in %)	97.94	98.33	98.37	98.78	98.37

Note. Marketing channel = Producer → Wholesaler-cum-reeler

cost was ₹ 726/100 DFLs (1 DFL=500 Larvae). Its magnitude was relatively high in marginal farmers (₹ 875/100 DFLs) followed by small farmers (₹ 723/100 DFLs), medium farmers (₹ 716/100 DFLs), and large farmers (₹ 589/100 DFLs). This was mainly due to the higher transportation cost for marginal farmers than others because marginal farmers were transporting smaller quantities of cocoons which resulted high unit cost. The transportation cost for large farmers was relatively low (₹ 160/100 DFLs) because of the low unit cost as they were transported in bulk quantities. An appraisal of components of marketing costs revealed that the expenditure on transportation (37.60%) formed the most significant constituent of the total marketing cost followed by packing (27.00%), miscellaneous charges (14.88%), and market fee (13.77%). Loading and unloading charges were the least under marketing cost (6.75%).

The cocoon yield per 100 DFLs was 103 kg in the case of marginal and large farmers whereas it was 97 kg in the case of small and medium farmers. These returns were dependent on the source of chawki, they purchased for rearing where more number of DFLs were supplied by the chawki rearing centres than the required quantity to attract the customers. Based on this, the marketing cost in ₹ /100DFLs was converted into ₹ /kg of cocoons for easy understanding. Marketing costs and producer's share in consumer's rupee under the marketing channel are given in Table 2. The sale of cocoons was done in government commercial cocoon markets, where the producer directly sold his produce to wholesaler-cum-reeler. So there was no price spread issue. The average producer's share in consumer's rupee was 98.37 per cent. Thus, the farmers in the study area have benefitted to the maximum extent by receiving the actual price paid by the final consumer (wholesaler-cum-reeler).

### Marketing constraints encountered by farmers

It is essential to note the important marketing constraints encountered by farmers which helps in minimizing their cost. Therefore, an opinion survey was carried out to elicit the perceptions of the respondent farmers on constraints in the marketing of cocoons. So that the constraints were identified and were ranked using the Garrett ranking technique. The results were represented in Table 3. The volatility of cocoon price was the major constraint (Garrett mean score 71.75). The allocation of prices to different quality of cocoons is through bidding in an open auction, therefore the prices vary from produce to produce and from time to time. It was followed by a delay in payments (Garrett mean score 60.75) due to technical issues during e-payments and some illiterate farmers were not

Table 3. Constraints of sample farmers in the marketing of cocoons (Unit: Garrett mean score)

Marketing constraints	Score	Rank
Price fluctuation in market	71.75	I
Delayed payments	60.75	II
Malpractices followed in markets	51.00	III
Lack of transportation facility	40.75	IV
Lack of storage facility	25.75	V

much aware of this new procedure. In markets, the reelers took out some quantity of cocoons in the name of sample cocoons to check occasionally, but this causes loss to the farmers if it happens repeatedly. Such malpractices in the cocoon market were another constraint (Garrett mean score 51). Another marketing constraint was the lack of transportation facility (Garrett mean score 40.75), as few farmers marketed their produce to distant cocoon markets to realise better prices. During such times transportation was difficult to some extent. Lack of storage facility was the least constraint with Garrett mean score of 25.75 because the availability of good marketing facilities demands no storage of cocoons as they were sold out on the same day of bringing cocoons to the market in most of the cases. However, few farmers needed storage facilities due to delay in selling the produce. This situation occurred when farmers want to sell their produce at distant markets and when the reelers back steps to purchase cocoons, which may be due to dissatisfaction with the quality of cocoons and also their subjective nature.

### Conclusion

Sericulture is well suited to the agro-climatic condition of the Kolar district. The cocoon markets are well established in the locality with good infrastructure. The farmers can get profit from this enterprise because of periodic income and direct marketing in the government commercial cocoon markets. Price is a matter of vital importance to the seller and the buyer in a marketplace. Even though the perceived reasons affecting the price of cocoons are irregular supply, prevailing prices of raw silk and uneven competition, the farmers should give utmost importance to enhancing the quality of cocoons through proper care of silkworms and proper handling of cocoons while transporting because the cocoon price is also fixed based the quality of the produce. However, the damage due to climatic factors cannot be controlled. The Government should also take necessary steps by introducing the support price policy to ensure better benefits for farmers during difficult situations to thrive the industry in the long run. Proper price in the nearby markets avoids the farmers from moving to distant cocoon markets so that the transportation costs can be reduced.

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