

## A CASE STUDY

# Trends in arrivals and prices of cocoons in Shirahatti market at Haveri district

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### ABSTRACT

The study was conducted in Haveri district of Karnataka state. Where mulberry area of 947 hectares and cocoon production of 680.511 M tonnes, respectively during 2013-14 was observed. The study was conducted to Trends in arrivals and prices of cocoons in Shirahatti market at Haveri District. In Haveri district Shirahatti taluka market were selected. The trend was computed in order to ascertain the long run movements of market arrivals of cocoon in the Shirahatti market. The trend in arrivals and prices of multivariate cocoon in Shirahatti market over the year were found to be significant at one per cent probability level with  $R^2$  value of 0.42 and 0.58, respectively. In order to ascertain the long term movement of cocoon price in the Shirahatti market the data relating to prices of cocoon were subjected to non linear (exponential) trend equation analysis.

**KEY WORDS :** Trends, Arrivals, Prices, Cocoons

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India is mainly an agriculture based country with 65 per cent of its population dependent on agriculture for their livelihood. Further, about 70 per cent of the people live in rural areas and more than 40 per cent of the rural population still lives below the poverty line. In developing countries like India, the small sized holdings by a large proportion of farmers in the absence of alternative sources of income are considered as one of the main factors causing rural poverty and hindering agricultural growth. Small holders are able to realize only a part of the production potential due to physical, technological

and institutional constraints. Government of India is committed to provide employment guarantee to one person from each family of below poverty line in the rural areas. Further, in order to control migration of rural poor to urban places, Government of India has been encouraging regular income and employment oriented farming approaches, one such potential farming enterprise is sericulture.

Sericulture is one of the important sectors of economy in India and plays an important role in poverty alleviation. Compared to agricultural crops, sericulture provides more employment round the year and fetches higher income to the rural farm families. 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 the rural society including the landless.

Sericulture is an important agro based rural industry that helps rural economy and generates higher income and employment. Ganga and Chetty (1991), the profitability of sericulture depends on the production of quality leaf and its conversion into quality cocoons at economic cost. It is

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practiced in a wide range of agro-climatic regions like forests, hilly areas and plains. In fact, the recent technological advancements have made it possible to practice it on an intensive scale, mainly due to increased profits obtained from it as compared to most of the crops and enterprises.

China, the leading producer of silk in the world produces silk to the tune of 1,04,000 million tonnes during the year 2009-10 accounting for 81.89 per cent of the world's silk output. India is the second largest producer of the raw silk with an area of 3.98 lakh hectares under mulberry cultivation and production of 19,690 million tonnes there by accounting to 15.5 per cent of the total global raw silk production during the year 2009-10. More than 90 per cent of the silk produced in India is of multivoltine. India has unique distinction of being the only country in the world which produces all the known commercial varieties of silk—mulberry, tropical tasar, temperate tasar, eri and muga.

According to the historians, raw silk was exported from India to Rome during the reign of Kanishka in 58 B.C. Silk has a place of pride in the social and culture lives of Indians, since it is superior to other textile fibres in quality in terms of durability, luster and low weight. Hence, it is regarded as the 'Queen of textiles.'

Sericulture is a cottage industry and one of the most labour intensive sectors in Indian economy combining both agriculture and industry. Sericulture is practiced over 60,000 villages in India. In Karnataka it is practiced in 19,868 villages and sericulture industry provides direct employment and livelihood to more than 11 lakh persons engaged in different sericultural activities like mulberry cultivation, silkworm rearing, silk reeling, tisting, dyeing, weaving etc.

Sericulture industry supported by way of providing employment to six million rural people in our country. The majority of them belong to the economically backward sections of the society, as well as to the scheduled castes, schedule tribes and advises. From the cultivation of mulberry on one acre of land to the final silk weaving stage creates 1,000 man days of employment. Sericulture in India has turned out to be a highly remunerative enterprise with minimum capital base and yielding reasonably good returns *vis-à-vis* other enterprise. It is one of the most stable enterprises which provides regular flow of returns in the tropical states of the country throughout the year.

Indian silk goods are exported to over fifty countries, important among them being U.S.A., U.K., U.A.E., Italy, Honduras, Spain, Germany, France, Saudi Arabia, and Hong Kong. The foreign exchange earnings from the export of silk are also increasing in the recent years. It was reported that the country earned Rs. 2892.44 cores from the export of silk during 2009-10 (Anonymous, 2010).

Mulberry silk is produced from silk worm (*Bombyx mori* L.) which feeds on mulberry leaves. Silk worm rearing is

location specific, a temperature ranging from 70° F to 85° F, humidity in the range of 60 to 80 per cent and the annual rainfall of about 600 mm found suitable for cultivation. Silkworms produce the cocoon in about 25-30 days, after which worms spin cocoons. These cocoons are sold to the reelers at the regulated cocoon markets. The reelers convert them into silk yarn. In the major silk producing states, there are well established cocoon markets for the sale of cocoons. The reeled silk is bought by weavers and this transaction takes place through the silk exchanges.

Sericulture industry concerned with the production of silk is divided into five phases, *viz.*, cultivation of mulberry, silk worm seed production, rearing of silk worm, reeling of raw silk and weaving of silk. Cultivation of mulberry and rearing of silk worms are the farm based activities managed by the silk cocoon producers. Mulberry leaf is the host plant for silk worm. It is possible to harvest four to seven crops per year in the tropical areas. Although, sericulture has been practiced on small or medium sized holdings in our country, the remunerative return from sericulture has enabled a few large scale ventures also.

Mulberry leaves form the major share of the cost of cocoon production. Production of the silk depends upon the quality and quantity of the silk cocoon produced and which in turn depends on mulberry leaves produced.

Sericulture in Karnataka has 200 years history. It was introduced by King Tippu Sultan who needed high-value low-volume commodities to trade with Europe in exchange for arms and ammunitions. Sericulture took its roots in Karnataka due to the meticulous care taken in its propagation by him. The rulers succeeding him in Mysore also continued the royal patronage to this activity. Subsequently, the British Government encouraged the production of mulberry filature silk in Mysore and Kollegal areas which were then in the Madras province. Though Kashmir and West Bengal were the leading sericultural states in India in the past, Karnataka later on became the leading producer of silk and currently accounting for 44.09 per cent of the mulberry cocoon production in the country. This is possible because of a conducive climate, institutional support and planning and the traditional skill of the farmers.

Since sericulture is a state subject, the Government of Karnataka launched intensive programmes like, Karnataka Sericulture Project with the assistance from the World Bank to develop sericulture industry in the state. The idea was to expand the production base and to provide sound infrastructure to the industry.

A large chunk of labour is employed in all the sericulture based activities and the industry is a boon to the labour-surplus countries like India. Sericulture also employs a sizeable share of women labour. The women participation in sericulture ranges between 55 and 60 per cent. Due to the significance in

the economy, the year 1994 was observed as the year of women in sericulture”.

Out of the total production, about 45 per cent is accounted by Karnataka; it was followed by Andhra Pradesh, West Bengal and Tamil Nadu. The five traditional states where sericulture is practiced are Karnataka, Andhra Pradesh, Tamil nadu, West Bengal and Jammu and Kashmir. These states together accounts for most of the mulberry silk production in the country.

The area under mulberry in Karnataka during 2010-11 accounted for 62,697 hectares and with 52,708 tones production of silk cocoons. In Karnataka state more than 1.26 lakh families are depending on sericulture, mulberry plant is the sole food for the silkworms is being cultivated in more than 71209 ha, more than 7430 reeling families converting the cocoons to 7338 MTs of silk yarn. Remunerative prices for silk-cocoons gave an impetus and farmers who had uprooted mulberry also returned to replant mulberry in many times (Anonymous, 2011).

The budget for 2011-12 is considered as agriculture budget and several beneficiary oriented schemes for farmers were announced. However, sericulture sector is denied of the benefit by announcement of reduction in customs duty in the union budget. Once the prices of cocoons and raw silk reduced, there was a large scale uprooting of mulberry in the sericulture belts of Karnataka which resulted in drastic decline in raw silk production in turn will increase the gap of demand and supply of Chinese silk. Mulberry cultivation during the year 2012-13 was 1.86 lakh per hectare and raw silk production CB (Cross breed) was 19.84 metric tonnes during the year 2012-13 in India (Anonymous, 2013).

Therefore keeping in this view the importance of the sericulture industry, the present study is undertaken to analysis the various aspects of production of mulberry and cocoons marketing by farmers. Hence, the present study is conducted with the following specific objectives.

## METHODOLOGY

### Trend analysis :

Trend analysis was carried out to study the variations in monthly arrivals and prices of cocoon in Shirahatti market for the period of 13 years. A time series analysis was worked out for Trend and Seasonal indices.

### Linear trend :

Over a long period of time, time series is very likely to show a tendency to increase or decrease over time. The factors

responsible for such changes in time series are mainly the growth of population, change in the taste of people, technological advances in the field, etc.

There are different types of trends, some of them are linear and some are nonlinear in their form. For shorter period of time, in most of the situations the straight line provides the best description of trend and for longer period of time, the non-linear form generally provides a good description of the trend. Often, it may be possible to describe such movements with a structured mathematical model. In the absence of such a definite format, approximately a polynomial or a free hand curve describes the movements.

For estimating the long-run trend of arrivals and prices, the method of least squares estimate was employed. This method of ascertaining the trend in a series of annual arrivals and prices involves estimating the co-efficient of intercept (a) and slope (b) in the exponential functional form. The equation adopted for this purpose was specified as follows :

$$Y = ab^x$$

$Y_t$  = Trend values at time t  
 $X$  = Period  
 $A$  = intercept parameter  
 $B$  = Slope.

Annual trend of prices and arrivals for the selected markets were computed and compared. The goodness of fit of trend line to the data was tested by computing the co-efficient of multiple determinations which is denoted by  $R^2$ .

## ANALYSIS AND DISCUSSION

The trend was computed in order to ascertain the long run movements of market arrivals of cocoon in the Shirahatti market of result are presented in Table 1.

The trend in arrivals and prices of multivariate cocoon in Shirahatti market over the year were found to be significant at one per cent probability level with  $R^2$  value of 0.42 and 0.58, respectively. In order to ascertain the long term movement of cocoon price in the Shirahatti market the data relating to prices of cocoon were subjected to non linear (exponential) trend equation analysis.

From the Table 1 it can be seen that the cocoons arrivals in the study area indicated that the variation in arrivals between the varieties of cocoons in Shirahatti market is found to be significant at 1 per cent level. This is clearly from the value of  $F$  which is 8.89 and 17.71, respectively. This method of ascertaining trend in a series of annual arrivals involves in

**Table 1 : Trends in arrivals and prices of cocoons in Shirahatti market**

Particular	Equation	R <sup>2</sup>	'F' value	't' value
Arrival	$Y = 76617.78 + 7926.06 t^{**}$	0.43	8.89	3.39
Price	$Y = 914.30 + 70.44 t^{**}$	0.59	17.11	6.30

\*\* indicates significance of values at  $P = 0.01$ , respectively

estimating the exponential co-efficient alpha and beta in the power function. Thus a positive trend in all cocoons in Shirahatti market under study was observed. The increased arrivals in Shirahatti market clearly shows that farmers are slowly and gradually developing positive attitude towards the benefits. The cocoons  $R^2$  value was 0.43 indicating 43 per cent of the total variation explained by the independents. These findings were in conformity with Manasa (2009).

From the Table 1 it can be seen that the cocoon prices in the study area indicated that the variation in prices between the varieties of cocoons in the Shirahatti market is found to be significant at 1 per cent level. This is clear from the F value 17.11. This method of ascertaining trend in a series of annual prices involves in estimating the expo exponential co-efficient alpha and beta in the power function. Thus, a positive trend in all cocoons was observed. The increased prices in Shirahatti market clearly shows that farmers are slowly and gradually developing positive attitude towards the benefits. The cocoons  $R^2$  value was 0.59 indicating 59 per cent of the total variation explained by the independents. These findings were in conformity with Choudhary *et al.* (2010). Similar work related to the present investigation was also carried out by Jayakumar *et al.* (2005) and Ravikumar (2003).

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