SILK COCOON MARKETING IN ANANTAPUR DISTRICT OF ANDHRA PRADESH

BY

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CERTIFICATE

Mr. G.V. PRASAD has satisfactorily prosecuted the course of research and that the thesis entitled **"SILK COCOON MARKETING IN ANANTAPUR DISTRICT OF ANDHRA PRADESH"** submitted is the result of original research work and is of sufficiently high standard to warrant its presentation to the examination. I also certify that the thesis or part thereof has not been previously submitted by him for a degree of any university.

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This is to certify that the thesis entitled **"SILK COCOON MARKETING IN ANANTAPUR DISTRICT OF ANDHRA PRADESH"** submitted in partial fulfilment of the requirement for the degree of **Master of Science in Agriculture** of the Andhra Pradesh Agricultural University, Hyderabad is a record of the bonafide research work carried out by Sri **G.V. PRASAD** under my guidance and supervision. The subject of the thesis has been approved by the student advisory committee.

No part of the thesis has been submitted for any other degree or diploma or has been published. All the assistance and help during the course of investigations have been duly acknowledged by the author of the thesis.

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I, **G.V. PRASAD**, hereby declare that the thesis entitled "**SILK COCOON MARKETING IN ANANTAPUR DISTRICT OF ANDHRA PRADESH**" is the result of original research work done by me. It is further declared that the thesis or any part thereof has not been published earlier in any manner.

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ABSTRACT

The present study entitled "Silk Cocoon Marketing in Anantapur District of Andhra Pradesh" was undertaken mainly to probe a deeper investigation into the economic aspects of marketing of silk cocoons. The study was undertaken in Anantapur district as it ranks first in the area under mulberry crop, production of cocoons and has the highest number (4) of regulated cocoon markets in Andhra Pradesh. Out of the four regulated cocoon markets existed, three regulated markets viz., Hindupur, Dharmavaram and Kadiri markets were selected as Anantapur market is not functioning regularly due to inadequate arrivals to this market.

Both conventional analysis and functional analysis were applied for analysis of the data and the results were presented below.

In Hindupur market, the buying was less concentrated when compared to Kadiri and Dharmavaram markets.

Except in the arrivals of Kadiri market, there was a significant time trend in the selected markets with respect to both arrivals as well as price series. The trend in prices was consistent whereas arrivals tended to fluctuate. Hindupur is the dominant market when compared to the other two markets in case of arrivals. Though silk worms can be reared round the year, there was some degree of seasonality observed within the year with respect to arrivals as well as prices.

Prices and arrivals were strongly correlated at Hindupur market and weakly correlated in case of Dharmavaram, while it has no relationship at Kadiri market.

On the whole all the three markets were spatially price inefficient, but there was evidence of instantaneous casuality relationship between Hindupur and Dharmavaram markets, and Kadiri market prices follow both Hindupur and Dharmavaram prices after a period of 1 to 3 days when individual coefficients were considered.

Most of the selected rearers faced the problem of non-availability of quality eggs, lack of inadequate facilities for display and storage of cocoons, collusion among buyers resulting in low bidding price, and lack of grading facilities, whereas the reelers faced the problems of lack of inadequate institutional credit facilities, lack of storage facilities, lack of appropriate grading system in cocoons and ups and downs in the yarn market prices.

The results of investigation reveals that there is a need to improve the organisational set up as well as the facilities of the regulated cocoon market yards in fulfilling the objective of providing remunerative and better prices to the ultimate producer of the silk cocoons.

INTRODUCTION

CHAPTER I

INTRODUCTION

Sericulture plays an important role in shaping the economic destiny of the rural mass, and will continue to do so in a more effective way under scientific programme of sericulture development. As a Cottage and Agrobased industry, sericulture fits very well in India's rural structure, where agriculture continues to be the main stay. In recent years, sericulture activity has emerged as one of the potentials for creating immense employment opportunities as well as a continuous income generating activity among farmers in the rural areas.

Our country occupies second place after China in world's sericulture. Recent estimates in 1989 revealed that world silk production was approximately 60,000 tonnes and India's silk production was around 11,000 tonnes annually. India received Rs 400.55 crores through silk exports according to an estimate in 1990. Out of the 5,76,000 villages in the country, sericulture is being practised in about 50,000 villages providing employment to about six million persons. Most of them, who belong to the weaker sections of the society

including scheduled castes and scheduled tribes have benefitted. In India, Andhra Pradesh stood at second place after Karnataka state, both in area and production with 68,288 hectares and 28,169 tonnes of cocoon production as revealed from Table 1. In Andhra Pradesh Anantapur district is leading both in area and production with 70,615 acres and 135.61 lakh kgs of cocoons respectively as indicated in Table 2. Recent studies indicated that, two lakh farmers and thousands of silk yarn reelers in Anantapur district and neighbouring districts are earning their livelihood depending on the sericulture industry.

Sericulture has turned out to be a highly remunerative cash crop with minimum investment, but with rich dividends. There is an urgent need to prepare an ambitious plan to develop the sericulture industry in the rural areas. At present, the growth of sericulture is restricted to a few traditional areas. It is aimed at extending sericulture activities to non-traditional areas and to develop better quality of eggs, release of disease and pest resistance varieties of mulberry and better marketing facilities.

Infact the success of any agriculture development programme rests ultimately on the efficacy

Table 1. Statewise mulberry acreage and Production of DFL's, Reeling cocoons, Raw Silk and Silk-Waste During 1989-90

		1989-90 production of				
		Acreage	DFLs	Reeling cocoons	Raw silk	Silk waste
		(HECT)	(lakh Nos.)		(tonnes)	
1.	Karnataka	1,46,285	2,334.26	57,721	6,076	2,169*
2.	Andhra Pradesh	68,288	250.97	28,169	2,789*	996*
3.	Tamilnadu	34,658	173.30	9,930	863	308*
4.	West Bengal	16,148	602.00	12,000	926	370
5.	Manipur	13,800	7.24	289	22	1
6.	Bihar	3,055	21.67	515	140	31
7.	Jammu&Kashmir	1,782	41.15	925	24	34
8.	Maharashtra	1,740	6.05	126	4	4
9.	Meghalaya	1,242	3.41	10	1	NEG
10.	Madhya Pradesh	1,216	10.79	140	9	5
11.	Assam	1,082	5.07	157	15	1
12.	Orissa	977	1.07	25	2	1
13.	Mizoram	810	0.33	6	1	NEG
14.	Uttar Pradesh	726	14.07	204	20	0
15.	Kerala	620	0.00	48	1	1
16.	Himachal Pradesh	587	3.60	98	8	0
17.	Tripura	489	2.02	30	2	0
18.	Rajasthan	398	0.00	5	NEG	0
19.	Gujarat	138	0.00	4	NEG	NEG
20.	Nagaland	95	0.55	9	1	0
21.	Punjab	65	1.11	11	NEG	NEG
22.	Sikkam	22	0.00	NEG	0	0
23.	Arunachal Pradesh	18	0.02	11	1	0

Source: Office of the Assistant Director,Central Silk Board, Bangalore (1989-90)

* Estimated

NEG Negligble

Table 2. Area and Cocoon Production in 1990

District	Area under Mulberry (acres)	Cocoon production (lakh kg)
Anantapur	70,615	135.61
Chittoor	34,193	66.52
Kurnool	14,336	24.19
Cuddapah	13,718	21.42
Prakasam	3,576	9.16
Karimnagar	2,756	3.01
Khammam	2,435	0.67
Warangal	2,275	0.52
Krishna	2,231	2.08
East Godavari	1,916	1.61
Guntur	1,792	2.10
Medak	1,724	1.50
Vijayanagaram	1,598	0.23
Vizag	1,546	0.42
Mahaboobnagar	1,506	0.11
Ranga Reddy	1,230	0.57
Nellore	1,121	2.99
Srikakulam	1,027	0.75
Adilabad	885	0.23
Nalgonda	634	0.42
Nizamabad	303	0.08
	1,63,630	281.69

Source: Office of the Director of Sericulture, Government of A.P., Dept. of Sericulture, Hyderabad.

and efficiency of the marketing system. Increase in agricultural production in the absence of efficient market support may adversely affect the welfare of agricultural class itself. So the sound marketing system is a prerogative in sericulture industry also.

In the light of increased area under sericulture and production of cocoons the present marketing system is embodied with several marketing problems in terms of structure, number of markets, storage, grading system etc. As we move from conditions of scarcity to conditions of surplus, marketing problem shall gain complexity, while the success in boosting of any agricultural production has been made possible. Adequate marketing support should be provided in order to have a continuous access to sericulture production programme on account of institutional reform, technological change and industrial support. In view of the poverty and backwardness of Indian farmers, it is essential to pay attention to certain basic features for evolving a sound marketing policy, to enable the farmer in securing a fair price for his produce. Adequate transport and storage arrangements should be so designed for this purpose. Arrangements need to be made in disseminating the market information pertaining to the up-to-date

prices,demand and supply situation in different markets in abresting the farmers in their production as well as marketing programmes. Eventhough all these policies are included in the objectives of the established Regulated markets, in practice the attention towards these problems was not taken care off. Due to lack of appropriate grading policy, farmers often find it difficult to secure higher prices for their superior quality cocoons. In addition to this, large samples unauthorisedly collected in the market yards add fuel to the burning problems. These are the only few marketing problems faced by the producers. Obviously, a lot needs to be done to improve the conditions in the marketing system. For this, establishment of more regulated markets in the country may be the right answer with an improvement in the implementation of the policies. In Andhra Pradesh silkworm cocoon marketing was regulated under the Andhra Pradesh Silk Worm and Seed Cocoon (control) Rules Act of 1982. The distinct feature of the regulation for the silkworm cocoon marketing is the restriction imposed on the rearers (sellers) as well as reelers (buyers) of silk worm cocoons to transact their business only in the regulated cocoon markets. All types of transactions are being taken place under the supervision of the market officials designated for this

purpose. In these markets the needed physical facilities in terms of auction bins , Correct weighment and prompt payment of the sale takes place on the day of the sale itself. The sellers and buyers have the freedom to operate in any of the regulated markets eventhough, a certain amount of restrictions are imposed i.e., sales should have taken place only in the established cocoon markets, with licence etc. The complete elimination of the intermediaries (middlemen and/or commission agents) is the major feature of the regulated cocoon markets. The main aim of State intervention in cocoon marketing is the establishment of regulated cocoon markets in which sales transactions are done through open auction which is beneficial to the sellers and buyers alike.

There are 28 silk cocoon markets established throughout the state. Anantapur district leads with four regulated markets viz., Hindupur, Kadiri, Dharmavaram and Anantapur. It also leads both in mulberry area and production of silk cocoons in the state. These markets are also facing several problems like any other cocoon markets in the state. Very few studies were conducted to evaluate the silk cocoon markets in terms of the market structure, organization

and to ascertain the efficiency of the market.

In particular there are no such studies to evaluate marketing efficiency of the cocoon markets established in Anantapur district. very ~~few~~ studies identify the existing lacunae and provide ample scope to find suitable remedial measures for the improvement of the marketing system and efficiency. Thus, the present study is an attempt to understand the marketing structure of the selected cocoon markets viz., Hindupur, Kadiri and Dharmavaram of Anantapur district and to focus the attention on other related marketing activities. The present study was taken up with the following specific objectives.

1. To study the structure, organization and functions of the regulated cocoon markets.

2. To examine the trends in arrivals and prices of silk cocoons.

3. To study the spatial pricing efficiency of different silk cocoon markets.

4. To identify the marketing problems and to suggest suitable remedial measures.

LIMITATIONS

Single person research is always confronted with various bottlenecks and hence the present study is not any exception to these limitations. Since the present study was undertaken in a single district of Andhra Pradesh, generalisations drawn hitherto may not be applicable to all the silk cocoon markets in the state. Eventhough the secondary data was collected from the records of respective market offices, the primary data was collected through survey method by personal visits to the markets and particulars were obtained based on recall memory of respondents which have certain inherent limitations.

PLAN OF THE THESIS

This thesis is presented in five chapters.

The first chapter presents the importance of the regulated silk cocoon markets with specific objectives etc.

The second chapter attempts a critical review of past work done.

The third chapter deals with the method of collection of data, methods of analysis and the explanation of various concepts and definitions adopted in the study.

The fourth chapter encompasses a critical analysis of the results and discussion.

The fifth chapter throws light on the summary and conclusions emerged from the study.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

An attempt has been made in this chapter to review critically about the work done by various research workers with respect to marketing aspects. A review of past research helps in identifying the conceptual issues relevant to the study. This would enable the researcher to collect accurate data and subject them to proper tests to give sound reasoning and meaningful interpretation. For clarity and convenience the review is presented under the following sub-heads.

1. Market structure
2. Trends in arrivals and prices
3. Spatial pricing efficiency
4. Marketing problems

Comparatively a fewer number of studies were reported on the economics of silk cocoon marketing and therefore relevant studies on other agricultural commodities are reviewed.

2.2.1 Studies on Market Structure

George and Singh (1968) noticed that major share of the vegetable arrivals in punjab was handled by a few

large buyers with relatively large number of small buyers handling the rest. The results revealed that the large buyers purchased 64.24 per cent of okra, 69.67 per cent of tomatoes, 72.22 per cent of pea, 65.15 per cent of brinjal and 52 per cent of cauliflower arrivals in Amritsar market. As a consequence market power of large buyers was high leading to imperfect market conditions.

Maiti et al. (1980) analysed the pricing efficiency in mat marketing in Bengal. The results showed that the wholesalers appropriated nearly 40 per cent of the producers' price and the retailers made 13 per cent profit over wholesalers' price and as a consequence both markets were imperfect with a higher degree at wholesale market.

Chowdary et al. (1981) observed the structure of arecanut marketing in Mangalore using lorenz curve technique over the period of study. A steady decline in the value of coefficient of inequality was recorded. Thus, it was interpreted that there was a steady improvement in the size distribution of shares of intermediaries in the market which inturn increased the degree of competition in the market.

Jayaram et al. (1983) observed that a single commission agent handling more than half of the marketing arrivals of bidi tobacco in Nippani market. This high degree in market concentration resulted in trading claiming large trade allowances and influencing the price selling policies.

Narappanavar and Bharadwaj (1983) estimated the share of farmers and intermediaries in consumer's rupee in case of groundnut in India. Their study period was from 1962-63 to 1980-81. They regressed farm harvest price index on wholesale price index of groundnut oil, to ascertain the relationship between them. The indices of retail prices of oil was regressed on wholesale oil price indices in order to find the magnitude of the causal relationship, if any, between the two. The study concluded that the then existing structure of the oil and oilseed market was largely controlled by oil millers or traders and by and large the interests of farmers, as well as consumers were ignored.

Ramamoorthy et al. (1984) found the structure of tomato marketing in Coimbatore using lorenz curve technique, it was observed that the market concentration was high in assembling markets where commission agents

dominated while the wholesalers were less concentrated. It was concluded that, the competition between buyers and sellers was imperfect.

Satyapriya (1986) while studying trade concentration in different markets i.e. Jeewargi, Davanagiri, Siddlaghatta, Ramanagara and Kollegal in Karnataka State indicated that these markets of silk cocoons were competitive. The difference in the price paid by different buyers and their pattern of purchase, suggests the preference of individual reelers for certain quality of cocoons to suit their reeling establishment and the quantity of purchases is determined by their installed capacity.

Sujatha (1988) while analyzing the market structure for selected commodities revealed that marketing of rice was most competitive with a large number of intermediaries handling the commodity. This was followed by ragi. The marketing of onion was concentrated in the hands of only a few intermediaries and hence was least competitive. In case of potato nearly 80 per cent of the produce was handled by top ten intermediaries.

2.2.2 Studies on Arrivals and Prices

Kahlon [illegible] and Sandhu (1968) took six representative potato markets in Punjab to study the trend and seasonal variation in prices and the results indicated that potato prices were highly sensitive to the seasonal changes.

Arun Kausal et al. (1977) used regression technique to estimate the relationship between prices and arrivals of apples in the important terminal markets of India. The regression coefficient was found to be negative in all the markets indicating an inverse relationship between prices and arrivals of apples in all the important apple markets.

Kainath (1977) analysed the correlation coefficient between market arrivals and prices for rice, wheat and maize in Punjab markets. The results revealed a negative correlation between market arrivals and prices for all the three crops.

Chandrakanth et al. (1978) analysed the correlation coefficient between monthly average arrivals and prices of ragi in Bangalore market and found it to be negative and non-significant. Thus, in the short run there was no definite relationship between the arrivals and prices. It was further observed that the

correlation between seasonal correlation between seasonal indices of arrivals and prices was positive indicating that ragi being a staple food crop, the demand for it is not influenced by seasonal fluctuations in arrivals.

Govardhan (1978) worked out the relationship betwen average monthly arrivals and prices of chillies in selected markets of Karnataka and found that the correlation coefficients were negative and non-significant.

Surya Prakash et al. (1978) found a negative correlation between prices and arrivals of potato in Bangalore and Chikkaballapur markets. The coefficients were found to be non-significant in both the markets indicating that the prices in the markets are not completely explainable by the variation in the market arrivals.

Janardhan (1980) worked out the relationship between arrivals and prices of turmeric in Nizamabad Regulated Market using time series analysis and concluded that the prices are influenced more by the cyclical variations than arrivals.

Basavarajappa (1982) worked out the relationship between arrivals and prices of onion which revelaed that there was a positive relationship between arrivals and prices at Challakere market whereas in Hubli market generally prices were low when arrivals were high, but the highest arrival index did not coincide with the lowest price index, nor the lowest arrival index with the highest price index. There was no definite relationship between arrivals and prices at Bangalore market.

Hosamani et al. (1985) analysed the correlation coefficient to assess the magnitude of association between arrivals and prices of cotton in Belgaum district. The correlation co-efficient between monthly average arrivals and prices was negative and significant. However, the relationship between annual prices and arrivals was positive and was attributed to inflation in prices of cotton despite an increase in the arrivals at that market.

Satyapriya (1986) while studying the relationship between cocoon prices and arrivals brought out some interesting results of the 114 cases (19 markets and 6 years). Only in 11 cases the cocoon prices and market arrivals were significantly correlated. Statistically significant, positive association between cocoon arrivals and prices was observed in Dāvanagiri market.

Prabhakara (1988) observed that there was a significant time trend at Ramanagaram and Vijayapura markets with respect of price and arrival series. He further concluded that there was some degree of seasonality observed within the year with respect to prices as well as arrivals.

Sujatha (1988) used regression analysis to study the relationship between market arrivals and prices of selected commodities which revealed that there was no definite relationship between arrivals and prices of selected commodities except in potato.

2.2.3 Studies on Spatial Pricing Efficiency

Market integration is a measure of spatial and temporal efficiency in marketing. The movement of prices in the markets under consideration is studied. The correlation approach is capable of bringing out the relationship, if any, between price series of two markets.

A noteworthy study in this field was carried out by Blynn (1973). In his view, the price series correlations are convenient measures of market integration since only the price data are sufficient for the analysis. These price data are further compared with cost data (which can be used to evaluate the price differentials). But Blynn warns that there may be some bias involved. Hence he suggested the use of only the detrended and deseasonalized price series for such analysis.

Thakur (1974) worked out the pricing efficiency in foodgrain marketing and proved that the system is not efficient because of a few traders making most of the purchases regularly. Further the presence of outright collusion among buyers was identified in the markets and was found to be a major contributing factor for inefficiency in foodgrain marketing.

Raju and Vonoppen (1979) attempted to compare the market margins and price correlations as measures of market efficiency. They considered sorghum, pigeonpea, pearl millet, chickpea and groundnut in three selected markets of Andhra Pradesh. Of these crops, pigeonpea showed the highest correlation coefficient, followed by chickpea, bajra, sorghum and groundnut in that order.

Satish (1980) found market integration in the case of six jowar markets in Karnataka state. In the series adjusted for trend, 19 per cent (four out of twenty one) of total correlations were more than 0.70. The rest, though significant, were lesser in magnitude. However the jowar markets were well integrated.

Basavarajappa (1982) employed correlation analysis between the price series (adjusted to trend) as

a method to know the market integration which indicated that all the selected three markets were well integrated.

Ravi (1985) analysed the pricing efficiency in marketing of groundnuts in selected markets of Karnataka. The results of the run analysis revealed that pricing for groundnut was inefficient since the traders' price expectations in selected markets were influenced by current price rather than the information on other market situation.

Prabhakara (1988) while studying market integration found out that a very high coefficient of correlation 0.947 between the price series at Ramanagaram and Vijayapura markets implies that both the markets were highly integrated.

Sujatha (1988) observed that pricing was not efficient in the Bangalore Regulated market in case of selected commodities. The results of the analysis revealed the presence of trend and cyclical movements in the price series of selected commodities. The hypothesis of randomness of price series was rejected because of dependance of prices over the time period.

Uma Shankar Patnaik (1988) studied a changing pattern in the integration of groundnut markets of Rayalaseema region of Andhra Pradesh and observed that with the development of markets and government intervention in the form of regulation, the groundnut producers are participating in a significant way and their transactions are usually in pods (Kernal in a few markets such as Chittoor). The prices paid to the farmers in the other primary markets are of interest to these major participants. Thus the market integration is achieved by transmission of price signals with regard to pods.

Fatimah-Arshad (1990) noticed that the crude palm oil market is spatially price efficient. The highly integrated nature of the crude palm oil market is not surprising in view of the efficient and adequate infrastructural facilities available. In the case of other agricultural markets (like cocoa, fruit and vegetables), the degree of market integration is shown to be low ([illegible]). The low degree of integration is attributed to structural factors like the long chain of market intermediaries, poor flow of price information, poor handling and grading system, and poor

infrastructures like storing and transportation.

2.2.4 Studies on Marketing Problems

Muniraju (1975) pointed out that the single most important factor which has eroded the scope for development of silk industry is the instability of the market prices of raw material.

Urs (1976) stated that one burning problem in a silk industry is the wide fluctuations in prices of raw silk market.

Sivarama Prasad (1980) recommended that market committee should provide amenities to the users market yards like sheds, rest houses, drinking water, Post Offices, auction platforms, trained people to give necessary guidance to the farmers in grading their produce properly, for collection and dissemination of accurate market information on prices etc.

Gopala Rao and Basavaraj Humbarwadi (1982) suggested that grading of farm produce is of basic importance in promoting orderly marketing of agricultural commodities. There is no single weapon so strong in eradicating marketing evils such as scientific

grading. It helps the producerseller to get a higher price.

Satyapriya (1986) while studying marketing of cocoons in Karnataka observed that excepting drinking water all the markets are lacking in grading facilities, proper toilet facilities, canteen or eating places, rest houses etc. These facilities are either totally absent or wherever they exist they are very poorly maintained.

Venkatagiriyappa (1986) identified certain marketing problems in marketing of silk cocoons such as, inadequate storage facilities in cocoon markets, unsatisfactory system of cocoon auction in the market, dissatisfaction of farmers with the present procedure of weighment, unremunerative prices for cocoons, high service charges for 'hamals' and the problem in receiving the payments.

Prabhakara (1988) concluded that after the regulation of markets, silk cocoon marketing system has reached a very efficient level when compared to several other agricultural commodities. An intervention by a government for maintaining healthy competition and orderly marketing of farm products is desirable.

Aswathanarayana (1989) found that the secret understanding among the buyers is ranked as the first marketing problem faced by sericulture farmers followed by delay in weighing of cocoons after auction, lack of place for exhibiting the cocoons at the market, cheating in weight, transportation and delay in payment.

METHODOLOGY

CHAPTER III

MATERIALS AND METHODS

The present investigation on "Silk cocoon marketing"was carried out in Anantapur District of Andhra Pradesh. The following methodology was adopted to compute the various aspects of the present study.

3.1 PERIOD OF THE STUDY

For time series analysis the data pertaining to the period 1983-90 were collected. All the Regulated Cocoon Markets were established during 1983 and as such, data pertaining to these markets were available since 1983. Lack of time and resources lead to the adoption of survey method for collecting primary data. Reliable information was collected through personal visits with the help of specifically designed pre-tested schedules.

3.2 SELECTION OF THE DISTRICT

Selection of the district was the first stage of sampling. Anantapur district was purposively selected for conducting this study for the following reasons.

1. It stands first both in acreage and production of silk cocoons in the state.

2. This is the only district which is having the highest number (four) of Regulated cocoon markets viz., Hindupur, Kadiri, Dharmavaram and Anantapur when compared to any other district of the state.

3. Because of the proximity of the study area to the researcher.

3.3 SELECTION OF THE MARKETS

The data pertaining to the daily arrivals and sales in all these four regulated markets were noted and it was observed that at Anantapur Regulated cocoon market, the arrivals and sales were irregular. Hence, this market was discarded from the study and only three Regulated Cocoon Markets viz., Hindupur, Kadiri and Dharmavaram were selected for detailed study.

3.4 COLLECTION OF DATA

Monthly data on the arrivals and average prices of cocoons pertaining to the period from 1983-84 to 1989-90 and the daily data of prices pertained to the period from September 1989 to August 1990 was collected to estimate the spatial pricing efficiency of the markets from the records maintained by the officials at the respective markets.

The structure and the competitiveness of each individual market was studied by examining the buyers' concentration on 24 randomly chosen days of the year 1989-90. This information was obtained from the respective market offices. The same procedure was adopted for all the selected markets.

The primary data relating to marketing problems of rearers and reelers were obtained with the help of structured pretested schedules.

3.5 MARKET STRUCTURE ANALYSIS

The market structure was analysed by evaluating the degree of buyer's concentration. The degree of concentration of buyers in the market was assessed by analysing their market share.

3.5.1 Bain's Theory on Classification of Markets

The method adopted to identify the market share of buyers in the respective markets was Bain's theory. It reveals the competitiveness of top ten buyers in the respective markets for a selected commodity. For this purpose the buyers handling cocoons were arranged in descending order of quantity handled. Out of these, the top ten buyers were selected and their share in the total quantity handled were calculated. Lower the value

of per cent of total quantity handled by the top ten buyers, more competitive is the marketing of the commodity.

3.5.2 Theil's Entropy Analysis

Theil's Entropy was employed to study the market structure. Theil's Entropy E(x) is a measure of the distribution of the market demand among the various participants in the market. The index points at whether the market is equitably distributed among the buyers or concentrated in the hands of few buyers.

The Theil's index is calculated as follows:

$$E(x) = \sum_{i=1}^{n} p_i \ln 1/p_i \Big/ \ln n$$

Pi is the proportionate share of i^{th} buyer in the total purchases of cocoons.

n is the number of groups.

The value of E(x) ranges between zero and one. An index of zero indicates that the market is concentrated and a value of one indicates that all the buyers have equal shares in the market. Hence market concentration is inversely related to the Index E(x).

3.6 TIME SERIES ANALYSIS

The total variability in the observed prices and arrivals was due to Trend (T), Cyclical (C), Seasonal(S) and Irregular components (I). The multiplicative model was used to isolate the different components of the time series.

Multiplicative model is given by

$$O = T \times C \times S \times I$$

where

O = Original values

T = Trend over year

C = Cyclical fluctuations

S = Seasonal variations

I = Irregular or random variable

3.6.1 Polynomial Functions

The trends in the series was estimated by using polynomial functions.

$$Y = a + bt + ct^2 + dt^3 + et^4$$

where

y = price or quantity of the dependent variable

a = intercept

b,c,d and e are the regression coefficients

t = time period (1,2. . . .84 months).

3.6.2 Linear Function

The simplest but generally prescribed mathematical model was employed.

$$y = a + bt + u$$

where

y = price or quantity of the dependent variable

a = intercept

b = trend coefficient

u = error term

t = time period (1,2. . . .84 months).

The method of the least squares was adopted to estimate the above functions. The goodness of the model was obtained through R^2, the coefficient of multiple determination in case of polynomial functions.

3.6.3 Seasonal Component

To ascertain the presence of seasonality within a series we take recourse to the seasonal indices using the ratio-to-trend method. By seasonality, we mean the fluctuations within the time span of a year. A thirteen-month moving average centred at the seventh month was calculated for the individual month. The actual value of the month was expressed as a percentage of such moving average, to get the monthly indices. All the monthly indices were then grouped under each of the

twelve months in a year. Then these monthly indices were added up. The totals so obtained were averaged to get the seasonal indices corresponding to each of the twelve months. They were then adjusted to 1200 so that sum of the seasonal indices add upto 1200.

3.7 CROSS CORRELATIONS BETWEEN ARRIVALS AND PRICES AT SELECTED MARKETS

Under the Box-pierce Q statistic method, each series is first prefiltered. Secondly these detrended series are crosscorrelated. Since individual estimated cross correlations can be misleading, Box-pierce Q statistic is used to test the significance of a group of cross correlation functions at a time. It is computed as follows.

$$Q = N \sum_{k=1}^{m} r_k^2 > \chi^2_{\alpha}(m)$$

where

m = integer large enough to include any suspected relationship (or expected non-zero coefficient)

N = the number of innovations in each series

r_k = the squared cross correlations at lag k

where Q follows χ^2 distribution with m degrees of freedom. The Q statistic was calculated by computing upto 5 lags/5 leads to capture relationship between the

series. If it is significant the null hypothesis that price and arrival series are independent of each other, can be rejected. If it is non-significant the null hypothesis that the price and arrival series are independent of each other can be accepted.

3.8 SPATIAL PRICING EFFICIENCY

The spatial pricing efficiency or market integration concept explains the relationship between two markets that are geographically separated. A study of market integration has great relevance to the analysis of pricing efficiency on the given commodity marketing situation.

Once spatial equilibrium is attained, prices in each market reflect the price information from other markets also. Given this definition of price efficiency on geographically dispersed markets, Gupta and Mueller (1982) identified three cases.

Case I

Interdependence or Feed back: Each market employs equivalent information from the other markets informing price expectation such that, a feedback relationship exists between them. This feed back can be instantaneous in nature. In this case information from

one market cannot be profitably exploited by the other market and thus the markets are spatially price efficient.

Case II

Independence: When no market uses information from any other market, the markets are independent. Independence is possible when the transportation costs are prohibitatively high between markets, thereby preventing trade.

Case III

Causation: One market uses information from the other market in the price formation process, whereas the other market does not use the corresponding information, such being the case a lead or lag relationship between the prices of the two markets will be observed providing for profits through arbitrary trade. In order to go in for the tests of dependence, independence and causation we have to prefilter the series to remove the time series component.

A study on integration of the silk cocoon markets will suggest the producers as to where, when and how much to sell, which inturn will have a bearing on their production strategies and hence the resource allocation.

The commonly adopted method of analysis of market integration consists of computing the correlation of the time series of prices of the concerned markets. Prabhakara (1988) observed that this method of correlation analysis is capable of reflecting the price signalling system that prevails. Further the direction and magnitude of movement of the series and thus the overall interrelationship can also be assessed. This procedure is based on the rationals that if the markets are perfectly competitive and well integrated spatially, as well as, temporally the bivariate correlation coefficient between a pair of such time-series data on prices will be equal to unity. The price differentials should be limited to only the transfer costs and/or cost of storage. According to this reasoning, the slack in the market integration is indicated by the coefficient of correlation that is lower than 1. If the markets are not well integrated, one can even examine the price signalling mechanism. However, greater care has to be exercised in the interpretation of a weaker correlation coefficient, as it could very well be due to a lack of product homogenity or prevalence of monopoly power or any other bottleneck in the marketing set up.

In the present study first order differences for the price series data are computed in order to make the

series random. It is computed as follows:

$$et = p_t - p_{t-1}$$

p_t = price at 't' th period

p_{t-1} = price at 't-1' th period

et = First order difference between the price series.

Next these series are cross - correlated.

There are two ways of approaching this problem. One is to study the r_k values, one at a time and to develop a standard error formula to test whether a particular r_k is significantly different from zero. The second is to consider a whole set of r_k values all at one time and develop a test to see whether the set is significantly different from a zero set. In the first instance a simple formula that is often used is

$$Se\ r_k = 1/\sqrt{N}$$

where

Se r_k = standard error of r_k

N = the number of innovations in each series and the Box - pierce portmanteau test for a set of r_k values is based on the Q statistic.

$$Q \simeq N \sum_{k=1}^{m} r_k^2 > \chi^2 \propto (m)$$

where

m = integer large enough to include any suspected relationship (or expected non-zero coefficient)

N = the number of innovations in each series

r_k = the squared cross correlations at lag k.

where Q follows χ^2 distribution with m degrees of freedom. The Q statistic was calculated by computing upto 7 lags/7 leads to capture relationship between the series. If it is significant, the null hypothesis that the price series of these regions are independent of each other can be rejected.

3.9 MARKETING PROBLEMS

Marketing problems of rearers and reelers were obtained with the help of pretested schedule. In each market ten rearers and ten reelers were interviewed and percentages were calculated for the problems like non-availability of quality eggs intime, lack of space for keeping cocoons, lack of grading facilities, taking large quantity of cocoons as samples, collusion among the buyers resulting in low bidding price, delay in weighing of cocoons, underweighment, delay in payment and lack of facilities in the market faced by the rearers. Inadequate institutional credit facilities, quality variations in cocoons, lack of storage facilities and ups and downs in the yarn market faced by reelers.

Terms Used

Cocoon

Refers to harvested, silk cocoons ready for reeling.

Rearer

A person engaged in rearing of silkworms for the production of silkworm cocoons, whether for reproduction or reeling.

Reeler

A reeler is one who is licensed by the State Department of Sericulture to operate in any of the regulated cocoon markets in the state, on payment of a prescribed fee.

Market

Market is an organisation by which the exchange of goods is affected. This may be an association of private individuals or an organised institution governed by written rules or by conventions or by state regulations.

Market Committee

Market committee is set up to maintain and manage efficiently the regulated market in its charge

according to the provisions of the Act, the rules, the Bye-laws and directions of Director of sericulture.

Market Yard

It is a place where transaction between the buyers and sellers takes place. Prospective participants meet here to purchase or dispose their produce.

Marketing

Marketing is concerned with the people and the activities involved in the flow of goods and services from producer to consumer.

Market Structure

According to Cundiff and Still, market structure means the whole network of the functionaries commencing with the producers, who initiate the flow of goods and various intermediaries like wholesalers and retailers who maintain this flow and finally discharge the goods to the consumers.

RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

The present study embodies the results of a field investigation and it contemplates various aspects of the ""**Silk Cocoon Marketing in Anantapur District of Andhra Pradesh**". The data generated as a consequence of the study which was analysed, presented and discussed in the following sections in consensus with the objectives of the study.

4.1 Organization, functions and structure of selected regulated silk cocoon markets.

4.2 Trends in arrivals and prices of silk cocoons.

4.3 Spatial pricing efficiency of selected silk cocoon markets.

4.4 Marketing problems of rearers and reelers with suggestions for improvement.

4.1 ORGANIZATION, FUNCTIONS AND STRUCTURE OF SELECTED REGULATED SILK COCOON MARKETS

Regulation of different functionaries and elimination of malpractices are the major objectives of the regulated cocoon markets. Regulated markets for silk cocoons came into existence, particularly after passing the Andhra Pradesh Silk Worm and Seed Cocoons

(control) Rules Act, 1982. The Government is providing the necessary physical structure and other infrastructural facilities in these markets after this act. In this context an attempt was made to bring into focus the nature, extent of the facilities provided, the market practices that are followed and functions of the markets. The structure of the selected markets was examined through the analysis of the extent of buyer's concentration in each market. A brief description of the individual market is presented below.

HINDUPUR: This is one of the biggest silk cocoon markets in Andhra Pradesh in terms of total transactions of cocoons(Table 3).It is at about 108 km away from the district headquarters. Apart from the producers of different places in Anantapur district, it attracts both the rearers and reelers of cocoons from the districts like Cuddapah, Kurnool, Mahaboobnagar, Khammam, Medak and Ranga Reddy and parts of Karnataka state also. It offers only meagre facilities to the rearers and reelers because it is a newly built market yard. The market yard is housed in a large building with the measurements of 100 x 120 ft. Here facility for proper storage and display silk cocoons is not sufficient enough. It has six small rooms, three payment counters, 100 auction bins, i.e (bin is a raised iron platform which is used

Table 3. Quantity of arrivals, value and market fee in the selected markets (April 1983 to Aug 1990)

	Quantity of cocoons lakh kg	Value of cocoons (Rs. in crores)	Market fee (Rs.in lakhs)
1. Hindupur	101.86	53.61	106.59
2. Kadiri	43.79	21.85	43.74
3. Dharmavaram	32.11	17.06	34.14

to display and avoid trampling of cocoons) one Avery or dial balance of 120 kg capacity and sufficient furniture. Another building with the same measurements of the existing one is sanctioned under the World Bank Scheme recently. The market yard is in close proximity to the town bus-stand.

KADIRI: This market is about 90 km away from the district headquarters. It accounts for the third largest volume of arrivals in the state. It would serve as an outlet for cocoons produced in Anantapur, Dharmavaram and Kadiri taluks of Anantapur district, Lakkireddipalle and Rayachoty of Cuddapah district, Atmakur and Koilkuntla of Kurnool district and Tamballapalli of Chittoor district. It also attracts reelers of cocoons from Karnataka state. This market is situated in the old buildings of a private groundnut oil mill. It has enough space and facilities for display and auction of the cocoons. It has four rooms, five sheds, verandahas, two rooms for serifed pesticides, one electronic weighing machine, one dial weighing machine, three counters and 50 auction bins. It stands first regarding facilities among the three markets studied. It is in close proximity to the railway station and nearer to the bus-stand.

DHARMAVARAM: It is about 42 km away from the district headquarters. It ranks the fourth largest in volume of arrivals in the state. It attracts the rearers of Penugonda, Hindupur, Dharmavaram, Kadiri, Gooty, Kalyandurg and Anantapur taluks of Anantapur district, Atmakur, Koilkuntla, Banaganapalli and Aaluru areas of Kurnool district and Karimnagar, Mahaboobnagar districts and parts of Karnataka state also. It also attracts local as well as Karnataka state cocoon reelers. The market yard is housed in a large spacious building in close proximity to the town bus-stand. It has two small rooms, three counters, one electronic weighing balance, two dial balances, one platform balance and 75 cocoon bins. It offers only meagre facilities to the rearers and reelers. It is also a newly built market yard.

The producers are called as the rearers and the buyers as reelers in the market. Silk worm cocoons are perishable in nature and cocoons have to be processed before they are taken to the yarn market. Generally the rearers prefer a bigger market with the expectation that the presence of a large number of buyers as one of the features of a large market, which fetches a fair price to the rearers. Efficient functioning of the marketing system should be coupled with the effective demand for the cocoons. Provision of a physical structure with

physical facilities will not make an efficient market. These are necessary conditions only but not sufficient conditions regarding marketing of cocoons is concerned. The rearers travel long distances in certain cases to catch a better market. The rearers have to obtain the bidding slip before the cocoons are taken into the auction hall. It is also necessary to receive the payments after the sales are completed.

Procedure followed in the Marketing of Silk Cocoons: If we observe the transactions in the market, from the time the cocoons enter into the market and till the payment is paid to the producer, we can notice the following procedure for the marketing of cocoons. The rearers have to obtain a bidding slip before they take their cocoons into the auction hall. The particulars of the seller are entered in the bidding slip. The rearers will display their produce in the alloted auction bins and wait for their turn. The marketing officials along with the auctioner, start the auctioning of the cocoons, lot by lot and prices will be quoted. The lot is taken by the highest bidder. If the rearer feels that the price is not remunerative for him he can withhold the produce and refuse to sell his produce. If he is interested, he can keep the same produce for the second and third auctions conducted on the same day. But for

the reeler, there is no option to him, except to take the produce at the prices quoted by him in the auction. Thus the regulated markets are helping the producers not to go for distressed sales and minimizing the reelers collusion, if any. Before the auctioning, the cocoons are inspected by the market staff in order to see whether the cocoons are matured or not. By inspecting the lots, the market officials advise and insist the producers to separate the good quality cocoons from jelly cocoons, so that the higher quality cocoons will fetch a premium price to the rearers. Generally the reelers are capable of deciding the quality of the cocoons by 'feel and touch' method based on their vast experience. Due to lack of specified grading system and implementation of it, generally, the producers have to rely on the quality judgements of the reelers, which is not revealed by them. Thus, the prices offered by the reelers have to be accepted by the producer, even for the better quality cocoons. Thus, it is essential that proper grading system should be evolved and the producers must be educated about the advantages of this system. Moreover this helps the producer as well as the reeler for better comparison of the prices of the same quality of cocoons in different markets and take the advantage by selling their produce in the highest price fetching markets.

After auction is over and the bidding price is acceptable to both rearer and reeler the marketing officials get the signatures of both the parties in the bidding slip. This ensures that both parties should abide to the prices struck in the auction and other rules and regulations of the market yard. After completion of the first round auctions of all the lots in the market then the weighment of individual cocoon lots will be taken under the supervision of market officials in the presence of producer and the bidder of the lot. The weights will be noted in the bidding slip and derive the total quantum of the cocoons. Then these bidding slips are passed on to the payment counters for final payment. Like that if needed second and third round of auctions are held in the same manner. Weighment is one of the important and most crucial stage. If it is not done accurately, the rearers are bound to lose considerably. The rearers are not in a position to read the markings on the scale and weighing is also done so speedily to cover all the lots. Only the experienced rearers who are in touch with the weighing machine can detect the malpractices in weighment. This is the stage where honesty and integrity of the market staff is required because most of the rearers are generally illiterates. There is a general complaint by the producers about the correct

weighment of their cocoons in the selected markets. Hence they expressed their dissatisfaction. So, the responsibility of correct weighment lies on the shoulders of the market staff to create confidence in the minds of the producers.

Generally payments are made in the afternoon. One of the major provisions of regulated cocoon marketing is to make the payments on the same day itself. But in certain days when the arrivals are high, around 10 per cent payments are carried to the following day. Under those situations, the rearers coming from distant places are paid on the same day. Both the rearers and reelers should get licence in order to participate in the auction. The reelers have to pay the deposit in the morning to participate in the auctions. Both the rearers and reelers have to pay a market charge of one per cent of the total turn over to the market yard for utilization of the market services. After deducting the market fee the payment will be done. For the smooth functioning of the market the market officials do not insist the reelers to pay the full payment on the day of auction itself. Because many reelers particularly the small reelers running charaka units, always face the problem of full payment for

cocoon purchased on the auction day itself as the cash on their hands will not be sufficient. However, they make the full payment on the next day.

The above description of selected markets brings out to the extent of facilities available in the regulated markets which fall short of even the basic needs of the market users, particularly the rearers, for whose benefit these markets are established. Kadiri market has some facilities among the three markets because it is situated in the old groundnut oil mill, whereas the other two markets are situated in the new buildings. In the case of Hindupur, enough space is not available to accommodate the cocoons brought to the market. Since selling of cocoons in the regulated markets is made compulsory, the rearers have no other way, but to use these markets. It appears that the market authorities have taken the advantage of this situation. Market authorities feel that whatever they provide is more than required. The rearers largely illiterate, are docile. But while, talking to them, one sees the undercurrent of their resentment. The rearers feel that the one per cent market fee which is collected from them is not being spent for their benefits. To have a sustained growth of sericulture not only the market authorities should end the malpractices but they should also provide some basic facilities to the rearers

and reelers. When one notices, the rearers standing in long queues to get the bidding slip or to receive payments or waiting with the cocoons exposed in the blazing sun, any one gets the feeling that the rearers and their welfare are neglected.

4.1.2 Market Committees

1. The committee constituted by the State Government shall consist of one representative each from rearers and reelers and the market officer. The market officer as an Ex-officio member acts as the Chairman or Executive Officer of the committee.

2. The term of office of the nominated member shall be one year from the date of appointment, unless he ceases to be a member due to death or resignation or removal by the Director of Sericulture.

3. If Government opine, the duties entrusted with the market committees are not satisfactorily discharged the Government may dissolve such market committee and reconstitute it.

Powers and Functions of Market Committee:

1. **The market committee shall take immediate action to** prevent uzifly infection detected in the cocoon lots by taking such steps as required.

2. It shall be the duty of the market committee to ensure fair trading and prompt payment in all transactions conducted in the market.

3. The committee shall supervise and take adequate steps for proper weighment of the cocoons.

4. The employees of the committee shall be subjected to the orders of the committee under the control of the market officer.

5. The market officer is responsible in maintaining and safe custody of all records and reports pertaining to the day-to-day accounts of the market.

6. Where adequate storage accommodation is available in the market, the market committee may permit the storage of undisposed cocoons in the market in any day before the market is closed. Before taking any lot of cocoons for such storage, shall be weighed

and a receipt in respect of such lot indicating therein the lot number and the weight of the lot shall be issued to the rearer concerned. Such cocoons shall subject to such reduction in weight on account of driage in accordance with such scale and deliver to the rearer on the next working day.

7. A Register shall be maintained by the market committee and every transaction shall be recorded in the register.

8. The market officer shall issue a certificate to the person who sells the cocoons in the . l market.

9. The market officer shall issue a cash receipt for the market fee collected from every buyer of cocoons.

By law, the above powers and functions are supposed to exercise by each committee, but in reality, there are no such market committees exist in the selected markets. Due to the absence of these committees, the ensured functions are exercised and supervised by the officials themselves, whose powers are limited in improving and maintaining the present markets. Even there are

no proper scientific storage facilities to store the producers' cocoons in all the market yards, which compel them to dispose their produce on the same day, irrespective of the prices.

4.1.3 Structure of the Selected Markets

Due to perishable nature of cocoons, they cannot be stored beyond certain specified period of time. The cocoon buyers (reelers) have a tendency to utilise this situation to their advantage by offering lower prices, particularly during periods of heavy arrivals. They influence prices either by colluding among themselves or through control of the prices by the large scale operators. It indicates that the relatively larger reelers determine and dictate the prices in the cocoon market. The small reelers are not in a position to buy all the quantities offered for sale even when the prices are low and attractive. Because the small reelers operate under the limitations of ready finance to make immediate payments for the purchases and in the very short run the installed reeling capacity cannot be altered because reeling operation of the cocoons has to be completed within a short period from the time of cocoon purchase. The large scale reelers are well aware of this situation also. The small reelers cannot compete for the quantities, eventhough the price is low,

gives an additional leverage to the large scale reelers to fix the price of cocoons to their advantage. This is referred to as imperfections in the markets. But the major objective of the market regulation is to encourage healthy competition among the cocoon buyers. This can be done on the one hand by eliminating malpractices and making the sale transactions open and on the other by the direct participation of the government agencies in the purchase of cocoons if the situation warrants. The residual variations in prices are due to imperfections in the market. These imperfections could be traced to the defective market structure and/or to the wide variations in the quality of cocoons.

An efficient marketing system is necessary for increasing the cocoon production as well as the incomes of the millions of the cocoon producers. Marketing efficiency is determined by the market structure and organization which in turn reflects the competitiveness of the markets. The market share of top 10 buyers was analysed by employing Bain's theory on classification of markets in order to assess the relative importance of each buyer in the market and also to compare the competitiveness between the different cocoon markets. The Theil's entropy was also applied to estimate the degree of buyers concentration in the markets. A higher

Theil's indices reflect the competitiveness of the market and if it is less, it reflects the buyers concentration. The results of the analysis of the selected markets structure is presented in the Table 4.

1. Bain's theory on classification of markets.

Table 4. Market share of top ten buyers in the three markets

Sl.No.	Market	Percentage quantity handled by top ten buyers
1.	Hindupur	47.39
2.	Dharmavaram	66.00
3.	Kadiri	69.00

The quantity handled by the top ten buyers were analysed by obtaining the percentage share of each buyer to that of the total quantity handled by all the buyers in the market in 24 randomly chosen days of the year 1989-90. The first ten buyers' percentage share was obtained to that of the total quantity handled by all the buyers in the markets by adding each individuals share of first ten buyers. The first ten buyers were

identified based on the volume of quantity handled by them. This was done to assess the level of competitiveness in the three markets.

The results of the analysis presented in Table 4 reveals that in case of Hindupur, the top ten buyers handled only 47.39 per cent which indicates the competitiveness of Hindupur market over the other two markets. The top ten buyers handled 66 and 69 per cent in case of Dharmavaram and Kadiri markets respectively which indicates the high concentration of these markets in the hands of only few buyers.

THEIL'S ENTROPY TO STUDY MARKET STRUCTURE

The structure and the competitiveness of the markets was studied by examining the buyers concentration of 24 randomly chosen days of the year 1989-90. The concentration of buying was estimated by computing the Theil's entropy index. The average indices were presented in Table 5. Perusal of the results showed that in the Hindupur market, the buying was less concentrated when compared to Kadiri and Dharmavaram markets. The results of the present study are in accordance with the Bain's theory results on classification of markets.

Table 5. Theil's entropy to study market structure

S.No.	Market	Theil's index
1.	Hindupur	0.95
2.	Kadiri	0.88
3.	Dharmavaram	0.88

Analysis of the market structure reflects the degree of competition among the buyers in the market. To judge that a particular market is efficient, it should be nearer to perfect or pure competition. An efficient market is essential to provide a fair return to rearers and reelers. The results of Bain's theory on classification of markets and Theil's entropy showed that in the Hindupur market, the buying was less concentrated when compared to Kadiri and Dharmavaram markets. It is justified that by volume of transaction, Hindupur market stands first in the state. It attracts reelers from Karnataka state being very nearer. It has good transport and communication facilities to Karnataka

state. Due to these reasons buying was less concentrated and the top ten buyers handled less percentage share when compared to other two markets. Whereas in the other two market areas viz., Kadiri and Dharmavaram the number of reeling units were less and thus the local buyers competition in these markets was very less. The participation of local reelers on a large scale is essential to make any market to be competitive. Moreover the Government purchases in these markets was also insignificant as per the records. If the reelers are less, they have freehand in influencing the buying activity of cocoons. Concentration occurs only at buyers level with so many producers, each with such a small quantity can hardly influence the price formation in the cocoon market. On the other hand, one expects that the buyers could dictate the price by their colluded auction irrespective of the demand for silk yarn and the yarn prices as such. The adverse effect of a high degree of concentration of trade in the hands of few individual traders will be reflected in the prices, eventhough the three cocoon markets are competitive in nature.

Satyapriya (1986) while studying trade concentration in different markets viz., Jeewargi, Davanagiri, Siddlaghatta, Ramanagara and Kollegal

indicated that these markets were competitive. The results of the present study are also in accordance with the findings of Satyapriya.

The findings of this study is in accordance with the observation of Sujatha (1988) who has evaluated the market structure for different commodities like rice, ragi, onion etc.

George and Singh (1968) revealed that a few large buyers handled a major share of the total vegetable arrivals in Punjab market with a relatively large number of small buyers handling the remainder, the results of which are in accordance with the findings of the present study. Thus it is clear that market concentration in the hands of few buyers existed in the regulated markets and the markets under study are also no exception to this buyers' concentration.

4.2.1 Trends in Arrivals of Cocoons from 1983 to 1990 (for 84 months)

Monthwise arrivals in the respective markets for 84 months (1983-90) was obtained from the records of the respective market committees and to identify the changes in the arrivals of the cocoons in the selected markets over years was analysed through Time Series Analysis.

The trends in arrivals was measured by means of a linear trend equation. The results of the analysis is presented in Table 6.

Table 6. Trends in arrivals of cocoons from 1983 to 1990 (for 84 months)

S.No.	Market	Intercept	b	r^2
1.	Hindupur	95.44	0.39** (2.17)	0.06*
2.	Kadiri	44.38	0.07NS (0.91)	0.01NS
3.	Dharmavaram	17.45	0.44*** (11.00)	0.54**

* Significant at P = 0.10 level of probability

** Significant at P = 0.05 level of probability

*** Significant at P=0.01 level of probability

NS Non significant

Figures in parehtheses are observed values of 't'

From the above table, it was noticed that during the reference period, Dharmavaram market registered a significant rate of increase in the quantity traded followed by Hindupur. But Kadiri market registered an insignificant rate of increase in the quantity traded. The rate of increase was more in Dharmavaram among the three markets, where the monthly increase was 0.44 tonnes, whereas in case of Hindupur the increase was 0.39 tonnes, however this increase was not much significant. But the rate of increase 0.07 tonnes was

very less and insignificant in case of Kadiri market. The higher intercept for the Hindupur market which was more than twice that of Kadiri and five times that of Dharmavaram indicated the dominant nature of the Hindupur market when compared to the other two markets.

4.2.2 Trends in Prices of Cocoons from 1983 to 1990 (84 months)

Similarly to derive the Trend in the prices of cocoons in the selected markets over the period for 84 months (1983-90) linear trend equation was employed and the results are presented in Table 7.

Table 7. Trends in prices of cocoons from 1983 to 1990 (84 months)

S.No.	Market	Intercept	b	r^2
1.	Hindupur	32.37	0.50*** (14.42)	0.72**
2.	Kadiri	33.83	0.50*** (5.6)	0.50**
3.	Dharmavaram	31.19	0.48*** (12.00)	0.69**

Figures in the parentheses are observed values of 't'
** Values of 't' at 0.05 level of significance
*** Values of 't' at 0.01 level of significance

From the above table it was observed that monthly increase in prices was almost equal in the three selected markets, whose values were Rs. 0.50, Rs. 0.50 and Rs. 0.48 in Hindupur, Kadiri and Dharmavaram markets respectively. Prices at Hindupur and Kadiri markets increased at a slightly higher rate Rs. 0.50 when compared to Dharmavaram market.

The intercept was higher in case of Kadiri Rs.33.83 followed by Hindupur with Rs. 32.37 and Dharmavaram with Rs. 31.19.

Perusal of the results of the trend analysis presented in Tables 6 and 7 indicated the presence of a significant time trend in both the arrivals and prices, except in the arrivals of Kadiri market. However, with respect to arrivals at Hindupur market, the base value (95.44 tonnes) was more than twice that of Kadiri and more than five times that of Dharmavaram, indicated the dominant nature of Hindupur market over the other two markets. Between Kadiri and Dharmavaram, Kadiri market base value (44.38 tonnes) was higher than that of Dharmavaram. Here both Hindupur and Kadiri are dominant over Dharmavaram market.

But the rate of increase in arrivals was not of the same order. The rate of increase was greater in

case of Dharmavaram followed by Hindupur and Kadiri markets. On an average, every month an increase of about 0.44 and 0.39 tonnes of cocoon arrivals was observed at Dharmavaram and Hindupur markets respectively, while this was very low i.e. 0.07 tonnes in case of Kadiri. Such an increase in arrivals in Hindupur and Dharmavaram markets may be due to the popularisation of sericulture. The buyer's concentration in these two markets was also less when compared to Kadiri market as revealed in Table 4.

Another probable factor for insignificant arrivals in Kadiri market may be that this market is surrounded by Dharmavaram, Hindupur markets in Anantapur district, Rayachoty in Cuddapah district, Madanapally in Chittoor district and neighbouring Karnataka state markets. So the producers in the border areas of this taluk prefer to take their produce to the near by markets, where they feel better fetching prices for their produce due to less buyer's concentration in these markets when compared to Kadiri market.

The Hindupur market attracts the largest volume of cocoons in the state and hence a higher constant and an appreciable trend rate of growth appears justified.

The scenario is different in case of Trends in prices. The constant in the trend function was higher at Kadiri followed by Hindupur and Dharmavaram markets. While the rate of increase was equal in Kadiri and Hindupur and slightly lower in Dharmavaram. The evidence indicated that the Kadiri and Hindupur markets recorded the moderately higher unit price increase for cocoons on several occasions.

Based on the r^2 of the linear trend equation we can infer that the trend in prices was consistent, whereas arrivals tended to fluctuate.

This kind of trend both in arrivals and prices was also observed by Prabhakara (1988). He has noticed the presence of a significant time trend component in both the arrivals and prices of cocoons at Ramanagaram and Vijayapura markets of Karnataka. He concluded that both arrivals and prices were moving on an increasing path at both the markets.

Trend Cycles in Arrivals and Prices:

Trend cycles in both arrivals and prices were estimated by employing polynomial equation. We tried upto fifth degree polynomial equation. Depending on R^2, significant of coefficience the appropriate order was selected. The results of trend cycles in arrivals and

Table 8. Trend cycles in arrivals

Sl.No.	Market	Intercept	b	c	d	e	R^2
1.	Hindupur	162.46	-6.75**	0.23*	-0.0036*	0.0000214*	0.4
			(-2.25)	(1.64)	(-1.44)	(1.43)	
2.	Kadiri	44.47	-0.1816 NS	0.0444NS	-0.00141NS	0.000015**	0.2
			(-0.13)	(0.68)	(-1.24)	(1.72)	
3.	Dharmavaram	33.82	-1.99***	0.11***	-0.0021***	0.000013***	0.4
			(-2.55)	(2.75)	(-3.23)	(3.42)	

Figures in the parentheses are values of 't'

* Significant at 0.10 level
** Significant at 0.05 level
*** Significant at 0.01 level
NS Non significant

Table 9. Trend cycles inprices

S.No.	Market	Intercept	b	c	d	e	R^2
1.	Hindupur	28.12	2.4146***	-0.1259***	0.0026***	0.000016NS	0.82
			(4.05)	(-4.45)	(5.20)	(1.14)	
2.	Kadiri	26.15	2.459***	-0.1172**	0.0021NS	0.0000089NS	0.85
			(2.74)	(-1.80)	(1.11)	(0.36)	
3.	Dharmavaram	24.12	3.04***	-0.160***	0.0031***	-0.000019***	0.81
			(5.07)	(-5.33)	(6.2)	(-6.33)	

Figures in the parentheses are values of 't'

NS Non-significant
* Significant at 0.1 level
** Significant at 0.05 level
*** Significant at 0.01 level

prices are presented in Tables 8 and 9. There appears to be a significant trend cycles only in case of Hindupur and Dharmavaram arrivals indicated by significant coefficients of the polynomial regression. However in all the markets prices exhibited cyclical variations since some of the coefficients of the polynomial regression were significant.

4.2.3 Seasonal Indices of Arrivals and Prices of Cocoons in the Selected Markets

It is noticed from the Table 10 that there were some seasonal fluctuations in arrivals and prices of cocoons in all the selected markets.

In Hindupur market the seasonal indices for arrivals reached the peak in the month of May and lowest in the month of August. If the seasonal index for arrivals is 126.56 in the month of may which indicates that 26.56 per cent arrivals were more than average in that month and if it is 47.17 in the month of August which indicates that 52.83 per cent less arrivals were noticed than the average arrivals in that month. In the remaining months there was not much variation in the indices for arrivals. Further it was observed that there was not much variations in price indices in this market. The price index was highest in the month of

Table 10. Seasonal indices of arrivals and prices of cocoons in the selected markets

Month	Arrivals			Prices		
	Hindupur	Kadiri	Dharmavaram	Hindupur	Kadiri	Dharmavaram
January	102.59	86.90	97.91	112.20	103.86	78.86
February	95.52	79.83	114.58	111.34	111.78	109.68
March	105.62	86.65	108.66	87.67	109.50	110.23
April	125.83	123.89	118.62	98.03	80.75	96.46
May	126.56	96.41	90.26	105.18	102.03	114.61
June	101.48	100.67	102.54	89.91	93.57	107.02
July	102.73	112.31	104.79	84.37	108.15	88.03
August	47.17	85.16	128.89	102.51	107.63	116.31
September	81.73	105.14	99.32	102.05	103.40	97.40
October	104.82	113.42	67.24	99.18	105.38	86.82
November	102.95	121.68	86.65	100.96	77.00	90.63
December	103.00	87.94	80.54	106.60	96.95	103.95
	1200.00	1200.00	1200.00	1200.00	1200.00	1200.00

January and low in the month of July. It was observed that eventhough the arrivals were high during the months of May and April the price indices were not low during these months. In the same manner when the arrivals index was low during the months of August, the price index was not high. The probable reason for these variations might be that the impact of climate and season on sericulture output is not as great as in many other agricultural commodities. Also the cocoon prices depend on the yarn prices and thus there will be seasonal ups and downs in the cocoon prices, irrespective of the variations in the arrivals of the cocoons in the market.

In Kadiri market seasonal indices for arrivals reached the peak in the month of April followed by November, October and July months, whereas it was the lowest in the month of February. There was not much variation in case of price indices. The price index reached the peak in the month of February and was low in November.

In Dharmavaram market the seasonal index was lowest in the month of October in case of arrivals and in the month of January in case of prices. As one can expect the prices are depressed in the months of August, April and February when there was a peak in the arrivals

during these months. However peak and trough did not coincide in this market. Probable reason for this might be sericulture output may not exhibit same tendency as that of several other agricultural commodities output. Moreover the prices of cocoons mainly depend upon the prices of yarn in the silk exchange markets.

Seasonality in agricultural production is a well known phenomenon and this has a tendency to lower the prices of agricultural products in the immediate post-harvest months. It is also generally observed that the post-harvest decline in prices is more than warranted by the cost of carrying the stock to the next season, thereby the producers are deprived of their legitimate price. While this is true in the case of many non-perishable agricultural products, the situation is different in the case of silk worm cocoons. The special feature of the cocoons is that they are to be processed within a short span of time after they are brought into the market and to that extent they are perishable in nature. The fluctuations appear to have been caused by the production pattern of individual farmers which depends on a variety of interrelated factors rather than on a season pattern. A possible factor that could lead to a significant seasonal movement in cocoon prices is the quality of cocoons

produced under different seasonal conditions. It is generally recognised that the quality of cocoons during the rainy season is poorer in quality and consequently the yield of yarn is low. This poor quality of cocoons would directly affect the prices.

Two other factors that could be visualized as responsibile for seasonality in cocoon prices are the production pattern and the prices in the terminal market i.e. the yarn prices. It was noted earlier that market arrivals representing cocoon output, did not follow the same seasonal patterns in the three markets. Hence the production patterns of cocoons resulting in the seasonal fluctuations in output is rather doubtful. The movement of silk yarn prices could cause these seasonal fluctuations in cocoons prices. No definite uniform seasonal pattern in the arrivals or prices was observed in these markets under study.

This kind of seasonality was observed by Prabhakara (1988) who has reported that there was some degree of seasonality observed within the year with respect to prices as well as arrivals.

The present study findings are in accordance with the study of Basavarajappa (1982).

Cross-correlation Coefficients of Prices and Arrivals:

Cross-correlation coefficients between arrivals and prices were worked out for the three markets under study to identify the relationship between prices and arrivals. These coefficients were presented in Table 11. The results of the table reflected that all the coefficients of Hindupur and Dharmavaram markets were positive and in the case of Kadiri market they were negative. Further it was noticed that the Box-pierce Q statistic values of Hindupur (808.9) and Dharmavaram (232) markets were greater than the table value and less in case of Kadiri market (5.2). Prices and arrivals were strongly correlated at Hindupur market and weakly correlated in case of Dharmavaram, while it was observed no relationship at Kadiri market.

Perusal of the results of the cross-correlation co-efficients of prices and arrivals presented in Table 11 indicated the presence of significant positive relationship between arrival and prices in Hindupur and Dharmavaram markets. In these markets both the arrivals and prices are interdependant. But in case of Kadiri a non-significant relationship was observed. This market registered an insignificant rate of increase in arrivals which is evident from Table 6.

Table 11. Cross-correlation coefficients of prices and arrivals

	Hindupur		Kadiri		Dharmavaram	
	Lag	Lead	Lag	Lead	Lag	Lead
i)	0.98487	0.98294	-0.00463	-0.12119	0.59983	0.31942
ii)	0.98317	0.98080	-0.02981	-0.03655	0.65835	0.35018
iii)	0.98484	0.97844	-0.01301	-0.05200	0.58012	0.45346
iv)	0.98486	0.97529	-0.02235	-0.12214	0.45988	0.58481
v)	0.98482	0.97230	-0.04390	-0.06911	0.49185	0.64185
BOX-PIERCE Q STATISTIC	808.9***		5.2		232***	

*** Significant at 0.01 probability level

The probable reason for insignificant arrivals in Kadiri market may be that this market is surrounded by Dharmavaram, Hindupur markets in Anantapur district, Rayachoty in Cuddapah district, Madanapally in Chittoor district and neighbouring Karnataka state markets. So the producers in the border areas of this taluk prefer to take their produce to the near by markets, where they feel better fetching prices due to less buyers' concentration in these markets when compared to Kadiri market.

The results of the present study are in accordance with the findings of Basavarajappa (1982) where he has observed significant and non-significant relationships between prices and arrivals in different markets.

The findings of the present study are in accordance with the findings of Satyapriya (1986).

Spatial Pricing Efficiency:

Spatial integration of markets implies that the prices between markets are closely coordinated and differ only to the extent of the transport cost. The prices are determined when markets are integrated keeping the entire demand and supply position of the

Spatial pricing efficiency:

Table 12. Cross-correlation coefficients of prices

	Hindupur - Kadiri		Kadiri-Dharmavaram		Hindupur-Dharmavaram	
	Lag	Lead	Lag	Lead	Lag	Lead
(0)	0.08732	-	0.02008	-	0.11893**	-
(1)	0.19825**	0.09215	0.07261	0.11618**	0.0254	-0.03489
(2)	-0.07461	0.04694	0.04083	-0.00207	0.09792	-0.05378
(3)	0.12540**	0.09974	0.05619	0.03063	0.11563	0.04958
(4)	0.00493	0.02388	0.00603	-0.08606	0.08258	0.01416
(5)	-0.01406	0.03873	0.00970	-0.00157	-0.03834	-0.07541
(6)	0.05547	-0.02074	0.09190	-0.06410	0.01689	-0.0025
(7)	0.05079	-0.02741	0.12168	0.07884	0.10245	-0.04531
	35.47		23.92		25.83	

** Significant at 5% level

marketing system in view, by that offering very little scope for profiteering from arbitrage. Such markets are integrated and the prices are competitive.

Daily prices measure spatial pricing efficiency very accurately. In the present study we utilised daily prices from September 1989 to August 1990 in the selected markets. The results of the spatial pricing efficiency of different markets are presented in Table 12. In this study the Box-Pierce Q Statistic values between the price series were 35.47, 23.92 and 25.83 for Hindupur-Kadiri, Kadiri-Dharmavaram and Hindupur-Dharmavaram markets were not significant, when all the coefficients were taken together. So they were spatially price inefficient. But when individual cross-correlation coefficient values were taken, then appeared some causation effect. Between Hindupur and Dharmavaram there was an evidence of instantaneous causality which is an indication of spatial integration indicated by significant cross correlation coefficient 0.11893 at lag (0) level i.e. on the same day. Kadiri prices follow Hindupur prices after a period of 1 to 3 days indicated by significant lag cross correlation coefficients of 0.19825, 0.1254 respectively. Dharmavaram prices affect Kadiri prices after one day at significant lead correlation coefficient of 0.11618.

level. The probable reason for the spatial pricing inefficiency is attributed to lack of awareness about the price situation in the respective markets between the sellers and buyers, poor flow of price information, lack of appropriate grading facilities and poor infrastructures like storing and transportation.

The findings of the present study are in accordance with the findings of Thakur (1974).

4. Marketing Problems of Rearers and Reelers with Suitable Remedial Measures

Opinion polls were conducted to identify the marketing problems faced by rearers as well as reelers in the selected cocoon markets. In each market, 10 rearers were contacted and the opinion expressed by them is presented in Table 13. The major problems associated with marketing of cocoons in regulated markets are lack of inadequate facilities for display and storage of cocoons, collusion among buyers, under weighment and grading facilities.

All the three markets do not have the appropriate grading facilities due to which the farmers were unable to fetch higher prices even for their superior cocoons. Delay in

Table 13. Marketing problems of rearers in selected markets

Particulars	No.of farmers reported (Total farmers=10)			Percentage to the total respondents		
	Hindupur	Kadiri	Dharma-varam	Hindupur	Kadiri	Dharma-varam
1. Lack of space for keeping cocoons at the market	7	2	6	70	20	60
2. Grading facilities	10	10	10	100	100	100
3. Taking cocoons as large samples	5	3	3	50	30	30
4. Collusion among the buyers resulting in low bidding prices	3	5	4	30	50	40
5. Delay in weighing of cocoons after auction	5	3	4	50	30	40
6. Under weighment	1	1	1	10	10	10
7. Delay in payment	2	2	2	20	20	20
8. Lack of facilities in the market	6	3	6	60	30	60

weighing of cocoons after auction ranked 50 per cent in Hindupur market followed by 40 per cent in Dharmavaram and 30 per cent in Kadiri markets. This might be due to the huge quantity of cocoon arrivals at Hindupur when compared to Dharmavaram and Kadiri markets. Generally the delay in weighment causes losses to the rearers in terms of weighment and additional expenditure for waiting. Moreover some farmers might be bringing their produce from far off distances and due to this delay they have to stay on that day, which means incurring additional expenditure. Delay in weighment leads to delay in payment also, which in turn keeps the producers to wait for longer periods by incurring additional expenses. Collusion among buyers is the another major problem in the study markets. It was reported that nearly 50 per cent of the rearers in Kadiri market and 40 per cent in Dharmavaram market observed this type of collusion in these markets, while only 30 per cent of the rearers opined this view in Hindupur market. If there is no healthy competition among buyers, generally, the prices quoted are very low and inturn affects the incomes of the producers. Moreover the producers are not organized into unions and this leads to the advantage of the traders. More over silk cocoons are perishable in nature, which prevents the producer to franchize his option or choice to store or sell it at

favourable markets. This collusion also leads to the commanding nature of the buyers over the producer and facilitate them to take large samples of cocoons. It was reported that nearly 30 to 50 per cent of the producers in all the markets were facing this problem. Though taking samples is illegal as per the norms of the Regulated Markets, still this practice is going on in all these markets, which should be curbed by the market officials with their constant vigil and supervision. Probable reason for the continuation of this illegal unhealthy abandoned practice might be due to either the lower cadres of market officials colluding with the traders or this might have not been brought to the notice of the market officials by the producers.

Another major problem associated in cocoon marketing in the most of the cocoon regulated markets is lack of proper spacing in the market yards to display the cocoons. The cocoons are perishable in nature and need careful handling. Generally the cocoon markets are crowded with buyers as well as producers. It was observed that nearly 70 per cent and 60 per cent of the respondent producers in Hindupur market and Dharmavaram market opined that the space to display their produce in these markets was inadequate, whereas at Kadiri market only 20 per cent of the producers expressed this view.

The probable reason for this might be due to huge quantities of arrivals at Hindupur which is evident from Table 3. Eventhough the Kadiri market ranks second, interms of quantity of arrivals, the producers did not opine that the space is inadequate in this market. The reason for this is that Kadiri market is situated in a spacious, old groundnut oil mill. At Dharmavaram market also, the space is inadequate, when compared to the quantity of arrivals to the market daily. There is every need to expand the space to display the cocoons of the producers to avoid trampling of cocoons which causes losses to the producers.

In each market 10 reelers were contacted and the opinion expressed by them is presented in Table 14. Lack of inadequate institutional credit facilities for payment of ready cash was reported by 70 per cent reelers in Kadiri, followed by 60 per cent in Hindupur market whereas it was 50 per cent in Dharmavaram market. In order to encourage the reelers to participate actively in the transactions adequate credit facilities should be provided by which there will be higher competition among buyers and the prices are also be high. Lack of storage facilities were reported by 80 per cent reelers in Hindupur and Dharmavaram markets and 70 per cent in Kadiri market. Adequate storage facilities should be developed in order to keep the

Table 14. Marketing problems of reelers in selected markets

Particulars	No. of reelers reported (total reelers=10)			Percentage to the total respondents		
	Hindupur	Kadiri	Dharmavaram	Hindupur	Kadiri	Dharma-varam
1. Lack of inadequate institutional credit facilities	6	7	5	60	70	50
2. Lack of storage facilities	8	7	8	80	70	80
3. Quality variations in the cocoons	5	6	4	50	60	40
4. Ups and downs in the yarn market	5	4	5	50	40	50

cocoons in the markets itself if the reelers have accommodation problem. Quality variations in cocoons were reported by 60 per cent reelers in Kadiri market followed by 50 per cent in Hindupur market, whereas it was 40 per cent in Dharmavaram market. Due to lack of appropriate grading system reelers face the problem in evaluating the quality of cocoons, ups and downs in the price of yarn market were reported by 50 per cent reelers in Hindupur and Dharmavaram markets followed by 40 per cent in Kadiri market. This problem ultimately affects the cocoon purchases. Generally in the business circles established fact is that the quality of cocoons produced in A.P. especially in Anantapur and Chittoor districts are considered to be superior when compared to cocoons produced in Karnataka state. But this yarn produced from the same cocoons is rated inferior compared to yarn produced in Karnataka state and thus fetching lower prices produced from Andhra Pradesh. This puts hardships to reelers in producing and marketing their yarn in silk exchange of Karanataka eventhough there is a silk exchange market at Dharmavaram. Most of the reelers take their produce to silk exchange at Bangalore which is considered to be the top level market in India.

Regarding other basic amenities the respondent producers opined that except drinking water, these markets are lacking in proper toilet facilities, canteen or eating places, rest houses etc. There are no proper godown facilities in these markets to store their undisposed cocoons. The need for these facilities are very keenly felt by the rearers rather than the reelers because the rearers have to travel considerable distances to reach the market. Provision of necessary physical facilities and elimination of the various malpractices existed in the markets are a major pre-requisite for the efficient functioning of the marketing system. While considerable progress has been made in this direction, the markets still lack many of the basic facilities. Some of the malpractices present in the markets could be eliminated by streamlining many of the procedures. Introduction of grading of cocoons which has not received any attention, may have to be considered. This not only helps the rearers to improve the quality of their cocoons, but is necessary for proper assessment of the functioning of the markets in terms of efficiency. Efficiency of grainages should be increased to meet the growing demand for eggs as well as to supply good quality of the eggs to the rearers. Intelligence activity should be strengthened so as to educate the farmers regarding previous day's prices,

arrivals and purchases of the cocoons in the different markets.

The studies made by Satyapriya (1986), Venkatagiriyappa (1986), Aswathanarayana (1989) have observed the similar problems like inadequate spacing, delay and under weighment, lack of grading and storage facilities, delay in payments etc. and suggested for improvements in the silk cocoon markets. The findings of the present study are also in accordance with the above observations.

SUMMARY AND CONCLUSIONS

CHAPTER V

SUMMARY AND CONCLUSIONS

Sericulture has turned out to be a highly remunerative cash crop with minimum investment, but with rich dividends. As a cottage and small scale industry, sericulture fits very well in India's rural structure and plays an important role in shaping the economic destiny of the rural people, where agriculture continues to be the main industry. It also has vast potential for generating income as well as employment opportunities, when compared to other agro-based industries. There is an urgent need to prepare an ambitious plan to develop the sericulture industry in the rural areas. At present, the growth of sericulture is restricted to a few traditional areas. It is suggested to extend the sericulture activities to non-traditional areas and to develop better quality of eggs, release of disease and pest resistance varieties of mulberry and better marketing facilities.

Infact the success of any agriculture development programme rests ultimately on the efficacy and efficiency of the marketing system. Establishment of more regulated markets in the country may be the right answer to improve the conditions in the

agricultural marketing system. In Andhra Pradesh silk worm cocoons marketing was regulated under the Andhra Pradesh Silk worm and seed cocoon (control) Rules Act of 1982. The main idea of state intervention in cocoon marketing is to regulate all the functions and functionaries and to minimize the intermediaries involved in the cocoon marketing. There are 28 silk cocoon markets spread throughout the state. The present study is aimed to probe a deeper investigation into the economic aspects of marketing of silk cocoons in Anantapur district of Andhra Pradesh. The following are the specific objectives of the study:

1) To study the structure, organization and functions of the regulated markets.
2) To examine the trends in arrivals and prices of silk cocoons.
3) To study the spatial pricing efficiency of different silk cocoon markets.
4) To identify the marketing problems and suggest suitable remedial measures.

Anantapur district was purposively selected for the present study as it ranks first in the area under mulberry crop, production of cocoons as well as it has the highest number (4) of regulated cocoon markets in

Andhra Pradesh. Out of the four regulated cocoon markets existed, three regulated markets viz., Hindupur, Dharmavaram and Kadiri markets were selected for the present study as Anantapur market is not functioning regularly due to inadequate arrivals to this market. The present study is based on secondary data pertaining to monthly average arrivals and prices at the three selected markets spanning a period of seven years (from 1983 to 1990), daily prices data pertained to the period from September 1989 to August 1990 and the buyers' concentration of 24 randomly chosen days of the year 1989-90. Primary data pertaining to marketing problems were obtained with the help of structured pretested schedules.

The data was subjected to both conventional as well as functional analysis viz., time series, cross correlations, Theil's index analysis and Bains' theory analysis.

The major findings of the study are detailed below.

By law, the powers and functions are supposed to exercise by the market committees in the selected markets, but in reality, there are no such market

committees exist in the selected markets. Due to the absence of these committees, the ensured functions are exercised and supervised by the officials themselves whose powers are limited in improving and maintaining the present markets.

In case of Hindupur, the top ten buyers handled only 47.39 per cent of the total transactions which indicates the competitiveness of Hindupur market over the other two markets. The top ten buyers handled 66 and 69 per cent in case of Dharmavaram and Kadiri markets respectively which indicated the high concentration of transactions of cocoons in the hands of top 10 buyers participated in these two markets. Theil's entropy analysis also showed that in the Hindupur market, the buying was less concentrated (0.95) when compared to 0.88 in Kadiri and 0.88 in Dharmavaram markets. A higher Theil's Indices reflect the competitiveness of the market and if it is less, it reflects the buyers concentration.

During the reference period (1983 to 1990) the rate of increase in the cocoon arrivals was more in Dharmavaram market among the three markets, where the monthly increase in the arrivals of cocoons was 0.44 tonnes, whereas in case of Hindupur the increase was

0.39 tonnes, however this increase was not much significant. But the rate of increase 0.07 tonnes was very less and insignificant in case of Kadiri market.

The higher intercept in arrivals for the Hindupur market which was more than twice that of Kadiri and five times that of Dharmavaram market indicated the dominant nature of Hindupur market when compared to the other two markets.

The monthly increase in prices was almost equal in the three selected markets, whose values were Rs. 0.50, 0.50 and Rs0.48 in Hindupur, Kadiri and Dharmavaram markets respectively. The intercept for prices was higher in case of Kadiri Rs.33.85 followed by Hindupur with Rs. 32.37 and Rs. 31.19 in Dharmavaram market.

Based on the correlation coefficient of the linear trend equation, we can infer that the trend in prices was consistent, whereas arrivals tended to fluctuate.

There appears to be a significant trend cycles only in case of Hindupur and Dharmavaram arrivals indicated by significant coefficients of the polynomial regression. However in all the markets prices exhibited

cyclical variations since some of the coefficients of the polynomial regression were significant.

In Hindupur market monthly seasonal index for arrivals was lowest in August and the price index was lowest in the month of July. The seasonal index for arrivals reached the peak in the month of May and highest price index was recorded in the month of January.

In Kadiri market monthly seasonal indices for arrivals reached the peak in the month of April and was lowest in the month of February. The monthly price index reached the peak in the month of February and was low in November.

In Dharmavaram market the monthly seasonal index was the lowest in the month of October in case of arrivals and in the month of January in case of prices. Peak and trough did not coincide in this market.

Cross-correlation coefficients between prices and arrivals in case of Hindupur and Dharmavaram markets were positive and in case of Kadiri market they were negative. The Box-pierce Q statistic values of Hindupur (808.9) and Dharmavaram (232) markets were significant

and non-significant in case of Kadiri market (5.2). Prices and arrivals were strongly correlated at Hindupur market and weakly correlated in case of Dharmavaram, while it has no relationship at Kadiri market.

The Box-pierce Q statistic values of cross correlation coefficients of prices were 35.47, 23.92 and 25.83 for Hindupur-Kadiri, Kadiri-Dharmavaram and Hindupur-Dharmavaram markets respectively. These values were not significant when all the coefficients were taken together. When individual coefficients were taken, there was evidence of instantaneous causality relationship which is an indication of spatial integration indicated by significant cross correlation coefficient at lag (o) - 0.11893 i.e on the same day between Hindupur and Dharmavaram markets. Prices of Kadiri market follow Hindupur market prices after a period of 1 to 3 days indicated by significant lag cross correlation coefficients of 0.19825, 0.1254 respectively. Dharmavaram prices affect Kadiri prices after one day at lead cross correlation coefficient of 0.11618.

Regarding marketing problems of rearers lack of grading facilities ranked 100 per cent in all the markets.

The reported problems were in the range of, lack of space for keeping cocoons at the market (20-70%), taking cocoons as large samples (30-50%), collusion among the buyers resulting in low bidding price (30-50%), delay in weighing of cocoons after auction (30-50%), lack of facilities in the market (30-60%).

Marketing problems of reelers were in the range of, lack of inadequate institutional credit facilities (50-70%), lack of storage facilities (70-80%) quality variations in cocoons (40-60%), ups and downs in the yarn market (40-50%).

The following conclusions can be drawn from the results of the present study.

1. In Hindupur market, the buying was less concentrated when compared to Kadiri and Dharmavaram markets.
2. Except in the arrivals of Kadiri market, there was a significant time trend at the selected markets with respect to both arrivals as well as price series.

The increasing trend in arrivals in the selected three cocoon markets was mainly due to higher production. The trend in prices was consistent whereas arrivals tended to fluctuate.

3. Hindupur was the dominant market when compared to the other two markets in case of arrivals.
4. We can infer that, though silk worms can be reared round the year, there was some degree of seasonality observed within the year with respect to prices as well as arrivals.
5. Prices and arrivals were strongly correlated at Hindupur market and weakly correlated in case of Dharmavaram while it has no relationship at Kadiri market.
6. All the three markets totally were spatially price inefficient, but there was evidence of instantaneous casuality relationship between Hindupur and Dharmavaram markets on the same day. Kadiri market prices follow both Hindupur and Dharmavaram markets price after a gap of 1 to 3 days.
7. The major problems associated with marketing of cocoons in the selected regulated markets were lack of inadequate facilities for display and storage of cocoons, collusion among buyers, under weighment, lack of grading facilities and prompt payment of cash.
8. Marketing problems faced by reelers were lack of inadequate institutional credit facilities, lack of storage facilities, quality variations in cocoons and up and downs in the yarn market.

Based on the results we can infer that there is a need to improve the organisational set up as well as the facilities of the regulated cocoon market yards in fulfilling the objective of providing remunerative and better prices to the ultimate producer of the silk cocoons.

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