### CHAPTER – III

#### REVIEW OF LITERATURE

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REVIEW OF LITERATURE

This chapter deals with comprehensive literatures pertaining to the present research study, which will enable the researcher to collect the relevant data and subject them to sound reasoning and meaningful interpretation. This also helps in identifying the conceptual and methodological issues relevant to the study. The review of literature is rationale in identifying the research gap and also for framing appropriate research objectives for the present context. In view of the above imperatives, the various literatures have been reviewed and the highlights are presented under the following headings.

a) Economic Aspects

b) Production and Marketing Aspects

3.1 Reviews Related to Economic Aspects:

Prest and Turvey (1965) defined cost-benefit analysis as a practical tool in assessing the desirability of projects, which are of long-term in nature. The authors indicated that the cost-benefit analysis implies a complete enumeration and evaluation of all relevant costs and benefits from the project. An average, the crop yielded about 10 tones of flowers per hectare per year. The total cost of cultivation per hectare was estimated to be about Rs. 25,000 for the initial five years. The anticipated receipt for the same period was calculated at Rs. 62,000 having a net profit of Rs. 37,000 for five years.
Acharya and Patil (1970) worked out Economics of Chrysanthemum Cultivation in Ahmednagar and Parner Tehsil of Ahmednagar District. The total cost of cultivation was estimated of Rs. 4,072.75 per acre. Of which, marketing of flowers was major (Rs. 2,038.70) that comprises Weighing, Hamali, Transport, cost of Baskets, Postage and Commission. The average yield of flowers was observed at 3,876 kg per acre, which fetched a gross return of Rs. 8,699.22 resulting in a net profit of Rs. 4,626.47 per acre.

Mahandule (1983) analyzed the cost of cultivation of Chrysanthemum in Ahmednagar District of Maharastra and indicated that the cultivation as labour intensive. The total cost of cultivation worked out of Rs. 11,393 per hectare. The author analyzed the important components of the cost of cultivation of Chrysanthemum, which were the rental value of land (Rs. 2,868.88 per hectare) followed by expenditure on manure (Rs. 1,704.25 per hectare) and labour charges (Rs. 2,526.67 per hectare).

Dagat et al (1985) analyzed the economics of production of Chrysanthemum in Parmer Tahsil of Ahemadnagar District of Maharastra at different point of time during 1969-70 and 1981-82. The study revealed that marketing cost was major in the total cost of cultivation of Chrysanthemum in the District. Of the total marketing cost, transportation cost was major.
Subramanyam (1986) studied the cost of production of Chrysanthemum in Karnataka. The author estimated the average total cost of cultivation of Chrysanthemum was of Rs. 21537.59 per hectare showing capital-intensive crop in the State. Out of total cost, input cost accounted for nearly 46 percent, which was the major cost in the production of Chrysanthemum in the State.

Papaiah and Balakrishna (1989) recorded a net income of Rs. 42,885 from the cultivation of red Rose in & around Bangalore with a gross output value of Rs. 60,000 over the total input cost of Rs. 17,115. The study reveals that input-output ratio was 1:2.5, which is profitable.

Ramesh Kumar (1989) studied the economics of production and investment in Jasmine flowers at Madurai District in Tamilnadu. The study estimated that establishing a Jasmine garden in the initial year required expenditure was of Rs. 13,700 per hectare. Of which the planting materials accounted 31 percent of the total establishment cost. Whereas, the maintenance cost was of Rs. 32,184 per hectare in the District.

Subramanyam (1989) estimated the investment in Jasmine garden at Kolar District in Karnataka. The study revealed that Jasmine being a perennial crop, its economic life varied from 15 to 20 years. The total cost of cultivation of Jasmine in the initial year was around Rs. 18400/- per hectare. Of which, the cost of inputs has accounted to Rs. 10,900. From the subsequent year the total cost of cultivation varied
from Rs. 52570 to Rs. 42000 per hectare. The author pointed out that the cost of inputs was the major compared to rest of the costs for the cultivation of Jasmine in the District.

Jiyaulla (1990) concluded that the cultivation of Chrysanthemum was highly labour intensive. For cultivation of this flower crop required investment was of Rs. 10353 per acre. The author further added that labour cost was the lion's share in the total input cost.

Neeraja Devi (1990) estimated that labour and material costs accounted over 50 percent in the cultivation costs of Kakada. The establishment cost was worked out to be around Rs. 3,978.16 per acre. The annual maintenance cost for carrying out of various operations amounted to Rs. 6,849.75 per acre.

Sharma (1990) has attempted to examine in detail, the growth performance of agriculture in various states and factor affecting growth performance. The data for the study was collected from Statistical abstracts of India, Reports of Economic Survey of India and various other published sources from the year 1966–67 to 1987–88. The growth rate of production of food grains for various states was worked out by the use of Exponential function.

Subramanyam and Sudha (1992) Stated that the expenditure on inputs in cultivation of Aster crop in Karnataka was of Rs. 9,678 per hectare in Kharif, Rs.
9,861 per hectare in Rabi and Rs. 9833 per hectare in Summer. The authors further stated that the cost of cultivation in Kharif was low due to lesser amount spends towards irrigation compared to the rest of the seasons and, sowing and planting material costs were high in Kharif compared to the rest of the seasons. Aster was highly labour intensive crop, which accounted to 48-50 percent of the total cost and harvesting operation alone accounted for 30-40 percent of the total cost of cultivation. The total cost of cultivation of Aster in the State was around of Rs. 14,000 per hectare.

**Kaushik and Garg** (1994) collected the time series data on bovine annual milk production over the years 1976-77 to 1990-91 of Meerut Region in Western Uttar Pradesh. Percent shares of cows, buffaloes to the country’s total annual yield were estimated, and the annual growth rate for the time series data was estimated using the exponential growth model.

**Saha and Swaminathan** (1994) in their article, analyses the data on agricultural production in the state of West Bengal in 1980s on district wise and compares growth rate estimated with those, for the periods up to 1980s. Two equations viz., the exponential and log-quadratic were used for the estimation of growth rates. The exponential growth equation was found to be useful compared to log-quadratic to estimate the growth rate.
Bhalla (1995) has attempted to estimate the food demand in addition to population growth, growth in per capita income and income elasticity of demand for different food items. The expenditure elasticities for most food items were estimated for the data on consumer expenditure by fitting Double–log and Log-inverse functions for both Rural and Urban areas on all India basis. A few interesting features obtained by using the expenditure elasticities for demand estimation were, firstly, $R^2$ was very high for both the functions and the elasticities derived by log-inverse function were lower for each commodity. Secondly, for most commodities, the elasticities for urban areas were lower compared with rural areas. Thirdly, the elasticities for most of the food items were very much lower for cereals, but much higher for MMP, eggs, meat and other superior foods.

Ravindra Kumar (1996) worked out the cost of production for Rose in Karnataka. The study revealed that the cost of establishment of Rose in narrow and wider spacing situations was worked out to be of Rs. 4,25,845.95 and Rs. 3,06,267.88 per hectare respectively. The annual cost of cultivation under narrow spacing was higher compared to cost incurred in wider spacing. The net return realized from Rose garden per hectare amounted to Rs. 1,40,397.75 and Rs. 2,25,868.63 under wider narrow spacing respectively.

Anonymous (1997) analyzed the profitability of Floriculture Industry in India by using financial ratio analysis. Financial ratio such as current ratio, acid test ratio, rate of return on investment, profitability ratio, etc., were arrived at for fifteen
floricultural units from all over India. Results indicated that the industry presented all the ratios in the lower range, thereby indicating very marginal profitability of the firms.

Bhattacharya (1997) studied on Floriculture industry in India as profit margin varied between 25-30 percent of the total cost of production. Roses were sold at the local markets at Rs. 70 - 100 per kg. A basket of Roses were priced at Rs. 150. The author indicated that Floriculture industry was both capital and labour intensive with an investment of Rs. 2.50 crores per hectare. The investment on plant materials alone accounted to 25 percent of the total establishment cost.

Chengappa et al (1998) studied the net returns from Rose, Chrysanthemum, Aster, Gladiolus and Tuberose in and around Bangalore. The study revealed that the net returns was maximum in Rose (Rs.79, 671.56) followed by Tuberose (Rs.57, 666.25) and Gladiolus (Rs.61, 097.09). It is observed from the study that Tuberose yielded the maximum input output ratio at 1:3.28 followed by Gladiolus (1:2.98), Chrysanthemum (1:2.92) and Aster (1:2.04) respectively.

Pawan and Goyal (1998) worked out the cost of establishment of Rose garden in Sonepet District of Haryana State. The total cost for establishing the Rose garden worked out to Rs. 44, 457 per hectare. Cost of seedlings was major followed by manures and fertilizers. However, the average annual net return was of Rs. 27,356 per hectare.
Gajanana and Subramanyam (1999) worked out the cost of establishment of 1000 Anthurium consisting of shade house pots, seedlings, materials and labour inputs were of Rs. 1.27 lakh in Karnataka and of Rs. 1.39 lakh in Kerala. The cost of seedlings was the major component of establishment costs in both the States. The Cost of cultivation including the amortized establishment cost was of Rs. 49,000 in Karnataka and of Rs. 55,000 in Kerala. The cost of producing an Anthurium stem in Karnataka was around Rs. 10. While, in Kerala was of Rs. 12. Though the cost of cultivation was less in Karnataka, the net returns was lower than Kerala mainly due to higher price realized by Kerala growers who sold their flowers in distant markets viz. Mumbai, Kolkatta, etc.

Chattopadhyay and Purnendu Sekhar Das (2000) studied different forms of trend equations for growth performance of West Bengal agricultural production. Some of the trend equations were linear, parabolic, exponential, higher degree polynomial and S–type growth curves (Gompertz, logistic, etc.). So, for growth measurement, the choice of the trend equation among the available alternatives is done by using statistical criterion of coefficient of determination, $R^2$ or adj. $R^2$ [criteria of goodness of fit] and presence or absence of autocorrelation [tested by D-W statistic]. Based on the selection criteria exponential function was found to be the better estimator of growth in West Bengal.

Roy and Mahesh (2000) studied the Floriculture Development by Small Growers through Institutional Credit. The author Stated that under banking plan for development of Floriculture in any specific area, the prospective borrowers has not
required to prepare any scheme for availing the bank loan. The implementing banks have provided credit to the farmers in their service area based on the project parameters suggested by NABARD.

**Shiva Prasad** (2002) studied Anthurium cultivation in Madikeri taluk of Coorg District. The author analyzed the total recurring expenses in the first year was of Rs. 3,88,060 and the total planting expenses was of Rs. 5148 per sq. m. The flower produced per plant was only eight and per square meter was about 50 numbers. The total flower produced was around 2,59,200 numbers. The total income realized per year was of Rs. 23,32,800. The author observed that the cultivation of Anthurium was both labour and capital intensive in the District. The costs incurred on planting material and labour were the major items among the total cost of cultivation of Anthurium in the District.

**Chauhan and Sharma** (2003) conducted a study to estimate the average annual compound growth rates in area, production and productivity of maize in major states of India. The time series data were collected from various issues of Fertilizer Statistics in Indian Agriculture (1999) and Agricultural Statistical Compendium and few other secondary sources as well. The data pertained to the year 1970–71 to 1991–2000. To estimate the average annual compound growth rate of area, production and productivity, the formula recommended by Dandekar was used.

\[ Y = ab' \]

\[ \ln Y = \ln a + t \ln b \]
Where, \( Y = \frac{\text{Area/production/productivity}}{t} \)

\( t = \text{time period in all years} \)

Dayakar and Parwez (2003) made an effort to analyze the growth in area, production and productivity of sorghum over the last thirty years. The secondary data on areas for sorghum were collected for six states viz., Maharashtra, Karnataka, Andhra Pradesh, Gujarat, Madhya Pradesh and Rajasthan for a period of 29 years from 1970-1998 from Directorate of Economics and Statistics, Government of India, New Delhi. The Compound Growth Rate of area, production and yield were estimated using Log–Linear function. It was found that the Kharif Sorghum is in alarming growth rate for area and production and showed negative growth rate despite positive growth rate in productivity during this period. The state of Maharashtra recorded the growth rate of 4.23 percent for area.

3.2 Reviews Relating to Production and Marketing Aspects:

Narsimhan et al (1976) studied the marketing of Jasmine in Madurai Central Flower Market. The author observed that Wholesalers/Commission agents were playing an important role in marketing of Jasmine in the District.

Varadarajan et al (1976) studied flower marketing in Coimbatore City. The study identified the following major marketing channels for flowers grown in open field:

Grower – Wholesaler – Retailer - Consumer
Grower – Wholesaler - Bulk Consumer
Producer – Wholesaler - Commission agent – Agents in the other Cities- Retailer – Consumer

Suryaswami et al (1979) studied the marketing of Roses in Western Maharastra. The study found that the producer received Rs. 2.31 per dozen of Rose, which accounted for 47.73 percent of the Consumer rupee. The commission and profit of Traders formed more than 43 percent of the total marketing cost. The share of Wholesaler, Retailer and Commission agent in Consumer’s rupee was about 19.01, 16.12 and 08.47 percent respectively.

Chengappa (1980) applied the Box-Jenkins model to forecast pool sale and export auction prices of coffee. Monthly data used and due to the distinct seasonal variation in prices, the ARIMA seasonal model was applied. The pool sale price forecasts were found to be accurate when compared to forecasts of export prices. This attributed to possible lack of stationary to the data. Hence, the adoption of differencing procedure or a transformation to make the data stationary found necessary for a better estimate of export prices.

Robertson and Chatfield (1982) reported that colour and bunch composition were the most important factors influencing the Consumers purchase decision of loose bunch merchandising of fresh flowers in Ohio State of USA. Roses were more significant than Carnations and marguerite daises. Price was judged relatively more
important for the mixed loose bunches. The addition of hybrid tea, Rose increased the marketability of loose bunch as much as the addition of orange and peach sweetheart and floribunda Rose.

Achoth (1985) analyzed the supply, price and trade of Indian tea by fitting ARIMA models to data on prices and production. The moving average models found to be most suitable. Among the price series particular months price was not related to the price of the immediate previous month but significantly related to the price of the same month in previous year. However, the production in a particular month was related both to production of the previous month as well as to the production of the same month in previous years. The forecasts yielded reasonably good results as judged from the tests of their efficiency. The forecasts of prices were superior when compared to the forecasts of quantities, which was attributing to the highly structured pattern of price behavior.

Achoth (1985) fitted the seasonal ARIMA model to price data of tea at Calcutta and Cochin auctions to production data of Northern and Southern regions of the country and quantity of tea exports and their prices. He identified that the moving average model was most suitable. The forecasts from these models yielded reasonably good ex-post and ex-ante forecasts judging from the test of their efficiency. Further, some of the models fitted to the quantity series did reveal a certain degree of inadequacy, which was not consider serious probably because certain cyclic pattern may not have been captured by the model.
Patel et al (1985) studied the marketing of Chrysanthemum in Dharwad District of Karnataka. The study identified that sale through Commission agent was main channel for Chrysanthemum and the marketing margin was slightly higher in Belgaum market than Hubli market due to high cost incurred in marketing of inputs in Belgaum market. The study further found that marketing margins in Belgaum and Hubli markets were 54.9 and 63.76 percent respectively.

Patil and Hiremath (1985) studied the marketing of Chrysanthemum flowers in Dharwad District, Karnataka. The marketing of Chrysanthemum through the Commission agent was the prime channel in the District. The marketing margin in Belgaum market was higher than that of Hubli market.

Patil and Pramodkumar (1986) studied the economic viability of investment in Alphanso mango plantation in Ratnagiri district of Maharastra considering 72 orchards in six villages. The study revealed that the capital investment in Alphanso mango plantations was an economically viable as the Benefit Cost ratio was 1.38.

Shafer and Kelley (1986) conducted a market survey to establish the relative contribution of cultivar’s price and longevity of potted Chrysanthemums in Consumers purchasing decisions. The survey reveled that Cultivar’s characteristics were most influential in determining the Consumers demand towards potted Chrysanthemum. A difference in response to potted mum attributes was observed between males and females. The females perceived price relatively similar in value to the grower characteristics during a purchase decision, but males exhibited less
price sensitivity and regarded grower attributes as possessing the greatest importance to the decision.

**Subramanyam** (1986) identified two important marketing channels for Chrysanthemum in Kolar District as given below.

a) Selling through Commission agents

b) Selling through Pre-harvest contractors

The author also observed that most of the cultivators (92 percent) in Chikkaballapur taluk sold their produce to Commission agents. Whereas in Malur taluk, majority of the growers (81%) sold their produces to Pre-harvest contractors. The majority of the growers preferred the Commission agents who were near the market place.

**Parthasarathy et al** (1988) analysed price behaviour of vegetables in Hyderabad markets from 1980 to 1987 and found that arrivals in general did not decline the prices. Further, price variations were not in the uniform magnitude during the same month in different years, in case of both tomato and brinjal. The regression analysis of prices over a period of seven years showed a slight upward movement in prices.

**Subramanyam** (1988) analyzed the flower marketing in Karnataka for Jasmine, Chrysanthemum and Marigold. The study found the various marketing channels used for disposing off the flowers soon after harvesting in the State. Among them, selling to Pre-harvest contractors and to Commission agents were major
channels. However, selling to Pre-harvest contractors not at all desired by the flower growers in the State.

Ashok Kumar (1989) studied the price and arrivals of arecanut from 1961-62 to 1986-87 in three major markets of Karnataka viz., Mangalore, Shimoga and Sirsi. A twelve months centered moving averages were computed to study the trend behaviour of price and arrivals, polynomial regression equation was fitted to estimate the trend components (after removing the cycle affect). An harmonic analysis was done for explaining intra-year fluctuations in the market. For testing significant difference in seasonal patterns over years, Friedman’s two way ANOVA was used.

Eshwaraprasad (1989) studied the seasonal indices of arrivals and price turmeric in Guntur market for the period 1970-71 to 1985-86 by using the ratio of moving average movement. The results of the study indicated that the indices of arrivals were higher during March, April, May and June months in both bulbs and fingers and during these months, the price indices were on the lower side in both bulbs and fingers could be observed during September to February.

Rameshkumar (1989) estimated the marketing costs and marketing problems of Jasmine in Madurai District. The study revealed that a cultivator incurred in an average of Rs. 222 per quintal towards marketing of Jasmine flowers. The commission charge and transportation cost were major items, which accounted to Rs. 72.28 and Rs. 24.25 of the total marketing cost respectively. The high commission
charge was the major problem expressed by the majority of Jasmine cultivators (78%) in the District.

**Agarwal and Sharma** (1990) analysed the seasonal indices of pulse crops in Rajasthan during the period 1972-1987. The results of the study indicated that price indices were the lowest during peak arrival months (April, May months for gram and October, November months for, moong and pulse crops) and the highest during sowing months of the crop (October, November for gram and June, July for moong and pulse). Arhas depicted minimum prices during January, February, months and maximum in the month of October.

**Naik et al** (1990) studied the short-term and long-term variation in the prices and arrivals of groundnut in Gadag and Ranebennur regulated markets in Karnataka. The results indicated that the arrivals were maximum in periods September-October and April-May in Ranebennur markets and during October-January in Gadag market. They concluded that farmers sold bulk of their produce immediately after harvest. The analysis at seasonal pattern in price should the presence of seasonality over month and constancy and this pattern over years in both markets.

**Neeraja Devi** (1990) studied marketing costs and marketing problems of Kakada in Bangalore District. The study found that cultivators spent an average of Rs. 231.50 per quintal for marketing of Jasmine flowers. The prevalence of high
commission charges and high transportation cost emerged as major problems in marketing of Kakada flowers in the District.

Hemakumari (1992) identified the major problems in marketing of Chrysanthemum in East Godavari District of Andhra Pradesh. The author highlighted that lack of technical knowledge on packaging of flowers, non-existence of flower markets nearby production centres, high transportation cost and poor infrastructure emerged as major problems in marketing of Chrysanthemum in the District.

Sharma et al (1992) made price analysis of potato vis-a-vis vegetables and pulses for eighteen years (1969 to 1987) in five important markets of India: Amritsar (Punjab), Delhi, Kanpur (U.P), Jamshedpur (Jarkhand) and Calcutta (W.B). The analysis conclusively showed strong sympathetic price movements between potatoes and vegetables, and to a lesser extent between potatoes and pulses. This led to the conclusion that the prices of vegetables should be taken into account as an important variable while analyzing the behavior of potato prices and for devising policy measures aimed at dealing the fluctuations experienced in them so that the interests of both the producers and consumers protected reasonably well.

Jiyaula (1993) highlighted the major problems faced by the producers of Chrysanthemum as high commission charges, high cost of transportation, defective weighment and uncertainties of prices. These problems were reiterated in a study related to Jasmine by Guledagudda (1996) in Dharwad District.
Singh et al (1993) made a behavioral analysis on market arrivals and prices of potato in Punjab by making use of multiplicative model and harmonic analysis. It was concluded, that in spite of a rising trend in arrivals, prices of potato also increased significantly. During post-harvest period (December-February) owing to the excessive supply of potato in the market, prices ruled very low, whereas during lean period (July-November) indices of price remained high and ranged widely.

Autkar et al (1994) examined the trends in the seasonal fluctuation in arrivals and prices of Kagzi limes; estimated the marketable quantity of fruit and fruit wastage at the farm level; and investigated the prospects for a Kagzi lime processing unit in Vidarbha region, Maharashtra, India. Data were collected from eight markets in Akola and Buldana districts during 1989/90 and from 300 growers in 50 villages. It was found that market arrivals in the post harvest period created a glut, which depressed prices and caused considerable losses for lime growers. Developing agro-processing industries, especially farmer cooperative processing units, would help in regulating supply, and hence farmers' income.

Vedini (1994) studied the major problems of Jasmine growers in Mysore District as inadequacy of financial resources, lack of technical know-how, non-availability of labour, incidence of pests and diseases, etc. The author revealed that high commission charges, inadequate transport facilities, high cost of transportation were the major problems faced by Jasmine growers while marketing of their produce in the District.
Behe and Nelson (1995) surveyed the Consumers at two garden centres of Alabana to determine their preferences for geranium characteristics, which were red, pink, white, coral and lavender flower colour, plain green, green with white zone and green with dark zone patterns of leaf variegation. Lavender cultivators with a white leaf zone pricing at $1.39 was the most preferred than the white cultivators with plain green leaf (snow white) pricing at $2.79. The survey further added that the flower colour was considered as most important characteristic followed by price.

Singh et al (1995) conducted study on seasonal variation in arrivals and their effect on price of wheat in Bihar. The study was based on secondary data obtained from four APMC’s of Bihar. Among the selected markets, Sasasam and Mohania were primary markets and Dhanbad and Bokar were secondary markets. The study indicated that the seasonal variations in arrivals of wheat were more apparent in primary markets than in secondary markets. As much as one third of variations in annual arrivals of wheat were governed by the variation in price in both primary and secondary markets. However, wheat arrivals were more sensitive to their ruling price in secondary markets than that of primary markets.

Yenprediwar et al (1995) attempted to study seasonality and fluctuations in the availability and prices of mosambi, mango, orange, banana, apple and grape at Nagpur, Madhya Pradesh, India. Data are analysed from the period 1987 to 1991. It was found that market arrivals in the post harvest period created a glut, which
depressed prices and caused considerable losses for lime growers. An inverse relationship was observed between arrivals and prices.

**Bagde** (1996) attempted to examine the cyclic pattern of arrivals and prices of selected fruits (apples, grapes, mangoes) in Nagpur market, Maharashtra state, India; A total of 11 commission agents and wholesalers and 30 retailers were selected for the study. Market arrival and price data of the year 1991-92 were obtained from Nagpur market records. A simple tabular method was used to compare the cost, price-spread and margin of different fruits. Marketing efficiency was worked out using the Shepherd formula. An inverse relationship was observed between arrivals and prices. The inefficient marketing system is mainly due to high marketing margins resulting in a lower share to the producer, greater margin to intermediaries and higher prices for the consumer.

**Sharma and Sharma** (1996) attempted to study the variation in wholesale prices of selected vegetables in India. Coefficient of variation in monthly wholesale prices of potato, tomato and onion were 30, 36 and 42 per cent, respectively in Calcutta. However, price variation in Delhi and Calcutta were more than that in Mumbai and Chennai in the case of potato as against high price variation in Mumbai for onion and Calcutta for tomato. Potato prices were less variable as compared to onion and tomato prices. The wholesale prices were low during February-March in potato, tomato and onion.
Kundan et al (1997) analyzed the steady growth of exports of floricultural products from 1980-81 to 1995-96. The exports during 1982-83 were the lowest, which amounted to Rs. 32 lakhs. But, it was increased to Rs. 18 crores in 1993-94 and Rs. 57.80 crores in 1995-96. The export trend showed the Aster growth of Floriculture industry in the Country.

Anthura (1998) identified the distribution process as a major bottleneck in selling Anthurium flowers in American market. The growers sent their flower consignment to their importers or brokers (agents) carrying the risk of damage, claims, bad debts and unsold products. The importers sold their flowers to the Wholesalers in large Cities on the east coast of USA taking commission of around 15 percent.

Chengappa et al (1998) highlighted the major production constraints in production of cut flowers as high cost of inputs, irregular supply of electricity, high incidence of pests and diseases, lack of knowledge on production practices, lack of infrastructural facilities, scarcity of trained Labour and non-availability of quality planting materials were significant.

Mitrannavar and Gummagolmath (1998) attempted to analyze the seasonal indices of arrivals and prices of potato in regulated markets of Hubli and Belgaum using three-year data. The study concluded that arrivals were highest in the months of
November in both the markets indicating a glut during harvesting season. However, prices did not decrease during glut season.

Srivastava et al (1998) used ARIMA models for forecasting sugarcane productivity based on the time series data of fifty years (1940-41 to 1989-90) in Bihar. Their findings, therefore, ascertained that the time series data on sugarcane productivity for the state of Bihar was described by an ARIMA (0, 1, 1) model.

Anonymous (1999) stated that earning from the flower exports grew up from Rs 1 crore in 1987-88 to Rs. 29 crore in 1994-95 and it further Rose to Rs 70 crore 1996 – 97. The author revealed that SPA agro was major exporter of Carnation from India with having sale of Rs. 1.5 million. The Carnation fetched higher price of Rs. 9 per stem against to Rose of Rs. 2 per stem.

Anonymous (1999) studied on Greenhouse Cultivation for Orchids. The study revealed that the Orchids stood first among the cut flowers and Orchids were favorites because of uniqueness in their shapes and long vase life. For growing Orchids, humidity was extremely important. In other words, over-watering with a hosepipe was avoided and instead, misters or foggers were preferably installed.

Gajanana and Subramanyam (1999) identified the major constraints in production of Anthurium in Karnataka and Kerala as non-availability of required
quantity and quality of planting materials, high cost of seedlings and incidence of pests and diseases.

Gajanana and Subramanyam (1999) identified the major constraints in marketing of Anthurium as absence of organized markets problem followed by high cost of transportation. Besides exploitation by the intermediaries, delayed payment and purchase of only quality flowers were other constraints faced by the growers in marketing of Anthurium in the study area.

Mali et al (1999) analyzed the trend in arrivals and prices of vegetables (tomato and lady’s finger) in Pune regulated market during the period from 1978-79 to 1996-97. The coefficient of variation of arrivals (56% to 80%) and prices (40% to 80%) of tomato were higher than the variation in arrivals (27% to 60%) and prices (49% to 75%) of lady’s finger. The compound growth rate of arrivals (2.11%) and prices (1.02%) and both the vegetables were significant during the same period and prices of both vegetables showed increasing trend indicating the good integration of Pune regulated/vegetable market.

Mundinamani et al (1999), attempted to study on trends and seasonality in market arrivals and prices of groundnut over the period 1965-66 to 1990-91 from three districts of Karnataka. The study revealed a continuous upward movement and higher monthly seasonal indices immediately after harvest for arrivals in all the markets under study.
Nawadkar *et al* (1999) reported that coefficient of variation of arrivals (22% to 79%) and prices (30% to 55%) of cabbage in Pune regulated market from 1978-79 to 1996-97 were found to be higher. Similar trend in arrivals (31% to 69%) and prices (24% to 54%) observed in cauliflower. The compound growth rate of arrivals and prices (2.20%) of the sole crops were significant in the same period. The seasonal indices of prices and arrivals of both the vegetables inversely related and price of both the vegetables showed an increasing trend indicating good marketing integration for these vegetables.

*Reddy* (1999) studied on Marketing of Cut roses and divided into two sections viz., Post harvest handling and Marketing. The author stated that most of the cut flowers required special preparation after the harvest and cold chain was must in maintaining the international quality and longer vase life. The study further pointed out that the Netherlands auction centres continued to be major markets for Indian flowers. *Apart from this, Germany, Japan, UK, Switzerland were the major Consumers for Indian flowers. The demand for Indian flowers was being increased in the overseas markets.*

*Yin-Runsheng and Min* (1999) used univariate ARIMA model to forecast timber price using quarterly price sales at Timber Mart South. The results showed that most of the selected pipe pulpwood and saw timber markets in six southern US states can be evaluated using ARIMA models, and that short-term forecasts, especially those of one lead forecasts, are fairly accurate. It is suggested that forecasting future
prices could aid timber producers and consumers alike in timing harvests reducing uncertainty and enhancing efficiency.

Ashok and Vijayakumar (2000) studied the exports of cut flowers grown under the greenhouse. The authors pointed out that the growth of export oriented Floriculture units from 1962-1990 had been slow, from then there was a significant rise in floricultural exports observing remarkable demand in the overseas markets. Netherlands was the biggest exporter (59%) followed by Columbia (10%) and Italy (6%) in the World arena.

Dubey (2000) discussed on integrated development of commercial Floriculture. The author revealed that it was proposed to set up 20 small tissue culture units in private sector among 20 States, where assistance for small tissue culture units was around 25% of the total cost of Rs. 8.8 lakh. The author further revealed that the augmentation in supply of quality flowers was also expected to improve the flower exports, which was identified as an extreme focus area by the Government of India.

Jadhav (2000) identified the major flower growing and exporting States in the Country as Karnataka, Tamil Nadu and Andhra Pradesh. Whereas, Japan, Netherlands and U.S.A. were the leading importing countries of Indian flowers. The author added that the European countries were having the maximum demand for Indian cut flowers, flower buds and dried flowers.
Molla and Atteri (2000) analyzed the price behavior of potato and onion in Delhi wholesale market for the years 1998-99 using multiplicative scheme. They concluded that trend and seasonality components are significant in both time series of arrivals and prices of both the commodities. In addition, arrivals fluctuation played an important role in causing high fluctuation in prices of potato and onion.

Rajeevan and Valasakumari (2000) studied the colour preferences for Anthurium throughout Europe. The study revealed that Italy marked highest preference for orange and rest of the European Consumers were fond of red, scarlet and a whole array of pastels. The red was the most preferred colour in Europe followed by pink and others comprising second tier of preference. The colour was the most important single attribute, however the standard and upright heart shapes of Anthurium were clearly preferred.

Reddy (2000) studied the Cold Chain Requirements in Floriculture and Stated that the cut flower was a more complex organ than seeds, fruits and Vegetables so as to special care taken into consideration while planning for the post-harvest handling procedures for cut flowers. The author further added that in the international market, quality was of paramount importance for success. To maintain the quality and freshness of flowers, the single most important factor was maintaining uninterrupted cold chain from the harvest until the commodity reaches the Consumer.
Ansari and Ahmed (2001) applied ARIMA modeling for time series analysis of world tea prices and industrialized countries export prices. The results of the estimated ARIMA equations imply that the information on the industrialized countries export prices can be forecasted from information on the prices of the previous two periods. They concluded, from the fitted ARIMA models, autoregressive processes generate both price series and there is no influence of external factors.

Arumugam et al (2001) studied the Indian Floriculture. The study highlighted that the favourable agro climatic conditions, abundant water, fertile soil and cheaper labour gave an opportunity to Indian Floriculture industry enter into international markets. The emerging infrastructure in the Country encouraged entering into World Floriculture arena.

Mastny (2001) used ARIMA models, also called Box and Jenkins, models after their developers, is a group of models allowing the analysis of time series with various features. The article demonstrated the possible usage of the Box-Jenkins methodology for the analysis of time series for agricultural commodities. The paper contains a basic mathematical explanation of ARIMA models together with a practical illustration of a price development forecast for a selected agricultural commodity.
Balanagammal et al (2001), ARIMA models were built for the data related to the cultivable area, production and productivity of chosen crops over the period 1956-57 to 1994-95 and to forecast the next five years, considering 1994-95 as the base year. With regard to production, finger millet and groundnut had a decreasing level of production with a decrease in the area of cultivation whereas; sorghum, green gram and red gram the cultivable area decreased though production level increased. With regard to productivity of the crops, maize, black gram, green gram and cotton showed a decreasing trend during the forecasting period while other crops such as rice, sorghum, pearl millet, red gram, sugarcane and groundnut showed a mild increasing trend.

Misra et al (2001) stated that Floriculture was a viable Agri-business in the Country having considerable foreign exchange earnings. The industry played a prime role in generating employment, promoting greater involvement of women and enhancement of exports. The authors further Stated that centrally sponsored scheme on commercial Floriculture with an outlay of Rs. 14.29 crore was launched for improving supply of quality planting material and technology transfer through demonstration and training, and Bangalore, Srinagar and Pune were identified as model Floriculture Centres under FAO assistance.

Natarajan (2001) revealed that IT revolution has swept the entire socio-economic milieu forming an integral part of our day-to-day life across income and age groups. Flowers no more seen commodities for specific purposes as products or
messengers to convey specific meaning on specific occasion. Hence there was a special care to be taken while packing the flowers. The whole trend has been changed in consumption of flowers in domestic as well as in overseas markets. The World trade in flowers was expected to grow at the faster rate. Cut flower segment in Floriculture was not only an attractive segment but also a profitable one if approached rationally the World over.

Reddy (2001) stated that India’s first and only flower auction centre at Bangalore run by KAIC and played pivotal role in organizing buyer and seller interaction and maximizing the flower prices. The author further stated that the organized flower auction centre was established by KAIC in association with South India Floriculture Association (SIFA) and Karnataka Flower Growers Marketing and Processing Co-operative Society. The auction days, time, auction procedure, types of flowers being auctioned and method of auction have been explained well.

Wim Mieremet (2001) stated that Gerbera cultivation emerged as a very important option for progressive farmers in many parts of India particularly one in Maharashtra. The cultivation practices depended on local climate, soil and other conditions. In this study, the Growers were advised to consult scientists in nearby Agriculture universities to fine-tune and these guidelines as per their localized micro-climate and soil conditions.
Muralimohan (2002) concluded that the quality of Roses preferred for exports should have long stems ranging from 40-100 cms and reach the customers in the form of tight buds. The stems should be sturdy, clean with the leaves for about 4-6 from the bottom.

Satya Sundaram (2002) estimated the flower exports from India during 1997-98 was of Rs. 810 million and of Rs. 1327 million in 2000-01, it was a rise of 63.8 per cent in three years. The export earnings from Floriculture was low as compared other flower exporting countries in the World due to varieties of problems faced by Indian exporters.

Shivprasad (2002) studied the problems in marketing of Anthurium in Madikeri taluk of Coorg District. The author highlighted that non-availability quick mode of transportation, lack of efficient infrastructure and low light intensity during winter brought down the flower production in the District.

Vijayendra Hegde (2004) has examined the economics of mango nursery enterprise under both production as well as trading condition in Bangalore (Urban) and Dharwad districts. The financial feasibility analysis indicated that Dharwad region higher B: C ratio of (2.13) compared with Bangalore region with 2.01 as B: C ratio.
Gangawar et al (2005) studied the economic evaluation of kinnow cultivation in Punjab, Rajasthan, and Himachal Pradesh. The benefit cost ratio was found to be 1.425 for the over all orchard group. Study revealed that investment in kinnow orchards has been found to be profitable.

Ladaniya (2005) conducted a study to examine the channels of marketing, price spread, marketing efficiency, pattern of arrivals and prices; compared the economics of fresh grape marketing vis-a-vis raisin marketing; and estimate losses of fresh grapes at farm, wholesale and retail level in selected areas and markets in Maharashtra, India. The marketing channels identified were: (1) grower-commission agent-retailer-consumer for local and distant markets; and (2) grower-commission agent-trader-retailer-consumer for distant upcountry markets. Marketing efficiency was 1.27 when produce was directly sold by producers to retailers. When produce was sold to traders in vineyard, efficiency was 0.50, with producers of 33.65 per cent in consumer's rupee. In longer channels, efficiency was 0.48, with producer's share of 32.50 per cent in consumer's rupee. Raisin making was profitable and earned Rs. 50 500 in addition to marketing grapes. Marketing of raisins was through commission agents. Losses in grapes were 1-1.25 per cent at farm, 5.5-8.65 per cent at wholesale and 12.25-16 per cent at retail level. Negative correlation coefficient was recorded in monthly prices and arrivals of fresh grapes at national level and major markets in Maharashtra.