CHAPTER I

INTRODUCTION AND DESIGN OF THE STUDY

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CHAPTER I
INTRODUCTION AND DESIGN OF THE STUDY

1.1. INTRODUCTION

Scientists say that there are over 2,70,000 species of flowers that have been documented and are living in the 21st Century. The first plant fossils found were woody magnolia-like plants dating back to 93 million years. Paleobotanists have more recently uncovered tiny herb-like flower fossils dating back to 120 million years. Flowering plants, called angiosperms by scientists, were believed to be already diverse and found in most locations by the middle of the Cretaceous Period, 146 million years ago. A myriad of images of preserved flowers and flower parts [in very fine detail] have been found in fossils located in Sweden, Portugal, England and along the Eastern and Gulf coasts of the United States. Below are a few brief histories of some of today’s best loved flowers.

India has a long tradition of floriculture. References to flowers and gardens are found in ancient Sanskrit classics. The social and economic aspects of flower growing were, however, recognized much later. The offering and exchange of flowers on all social occasions, in places of worship and their use for adornment of hair by women and for home decoration have become an integral part of human living. With changing life styles and increased urban affluence, floriculture has assumed a definite commercial status in recent times and particularly during the past 2-3 decades. Appreciation of the potential of commercial floriculture has resulted in the blossoming of this field into a viable agri-business option. Availability of natural resources like diverse agro-climatic conditions permit production of a wide range of temperate and tropical flowers, almost
all through the year in some part of the country or other. Improved communication facilities have increased their availability in every part of the country. The commercial activity of production and marketing of floriculture products is also a source of gainful and quality employment to scores of people.

Flowers are inseparable from the social fabric of human life. Flowers, being adorable creation of God, are fit for all occasions. In the past, flowers were not of much economic importance. One would grow flowers to fulfill his or her aesthetic desire. At times, flowers were offered for sale to meet the special requirements of people. With the passage of time, drastic changes have come about in the life style of people leading to commercialized cultivation of flowers. Today, flower plants are no longer meant for only window garden but play an important role in the decoration of the living houses and office establishments. The science and art of commercial floriculture has been recognized as an economic activity with the potential for generating employment and earning valuable foreign exchange. In several countries of the world, floricultural products are amongst the main export items of agricultural origin. For any country to diversify its agricultural base geared towards export, the ornamental crop industry presents one of the most interesting and viable options. The aesthetic value of flowers and ornamental plants, their use in social events, overall satisfaction in working with them and high income-generating power are attracting modern entrepreneurs to invest money in the floriculture industry. The demand for flowers and ornamental plants for different needs like religious and official ceremonies, parties, house decoration, weddings, funerals, etc., is on the rise. This demand for fresh flowers and plants is increasing world-wide. The recent liberalization policy of the Government of India has given fillip to commercialized agriculture, particularly horticultural crops. Growing of
flowers has in vogue in India for a long time. Nevertheless, growing of cut-flowers has emerged as an important industry mainly to cater to the needs of the demand in overseas markets. It is being viewed as a high growth industry in our economy. There is a tremendous transformation in our floriculture sector mainly due to the entry of corporates who are producing cut-flowers to meet the emerging demand in the developed countries for floricultural products. The Government of India has also identified floriculture as a niche area with vast potential for export. There are many incentives given by the Government for setting up of floricultural units as Export-Oriented Units (EOUs).

Globally more than 145 countries are involved in the cultivation of ornamental crops and the area under these crops is increasing steadily. The production of flower crops has increased significantly and there is a huge demand for floricultural products in the world, resulting in growing international flower trade. The world consumption of cut-flowers and plants is increasing and there is a steady annual increase of 10 to 15 per cent in all importing countries. Due to globalization and its effect on income, there is growing per capita floriculture consumption in most of the countries. In case of developed countries, the consumption of flowers is closely linked with GNP per capita income and urban population.¹

India is bestowed with diverse agro-climatic and ecological conditions, which are favourable to grow all types of commercially important flowers generally found in different parts of the world. It also enjoys the best climate in selected pockets for floriculture during winter months. India is in an enviable position to become a leader in the world floricultural trade because of the prevailing congenial location, overall
favourable climate of liberalization and globalization and also specific incentives by the
government for floricultural development. Specific and authentic quantitative data are
not available for existing production and area under floriculture in India. According to
the horticulture production year book 2001 of National Horticultural Board, an area of
88,600 ha. during 1999-2000 was under floriculture in India with production of 5.09
lakh MT of loose flowers and 680.6 million numbers of cut-flowers. Loose flowers
were grown in 73,536 hectares of land. Flowers are grown under open cultivation and
also under protected cultivation. In the polyhouses, mainly roses are grown for export.
Other exotic flowers like carnations, gerbera, orchids, lilium and other bulbous flowers
are now increasingly produced commercially, both for export and domestic market.
Floricultural exports from India during 1997-98 was Rs.81.20 crore, Rs.96.60 crore in
1998-99, Rs.105.15 crore in 1999-2000 and Rs.190.63 crore in 2000-01. In spite of this
increase in India’s exports, its share in the international flower trade has not increased
during 1995 to 2000 and has remained at around 0.35 per cent. There were more than
300 export-oriented units in India. The total turnover of floriculture business in India in
2005 was Rs.8,174 lakh while it increased to Rs.10,117 lakh by April, in 2007. More
than 50 per cent of the floriculture units are based in South Zone mainly in Karnataka,
Andhra Pradesh and Tamil Nadu. The main importing countries of Indian floricultural
products in order are The Netherlands, USA, Japan, Germany, Italy, Denmark, Egypt,
Singapore, Switzerland, France, Australia, UAE, Belgium and Sri Lanka. During the
year 2007-16, Indian floricultural products were exported to 75 different countries².

In spite of the long and close association with floriculture, the records of
commercial activity in the field are very few. The information on the area under
floriculture and the production generated is highly inadequate. As commercial
floriculture is an activity which has assumed importance only in recent times, there are not many large farms engaged in organized floriculture. In most part of the country flower growing is carried out on small holdings, mainly as a part of the regular agriculture systems. India had exported 27,000 tons of flowers worth Rs.200 crore in the past.

The estimated area under flower growing in the country is about 65,000 hectares. The major flower growing states are Karnataka, Tamil Nadu and Andhra Pradesh in the South, West Bengal in the East, Maharashtra in the West and Rajasthan, Delhi and Haryana in the North. It must, however, be mentioned that it is extremely difficult to compute the statistics of area in view of the very small sizes of holdings, which very often go unreported. This perhaps would be the reason for unrealistically small areas reported for floricultural active states like Maharashtra, Uttar Pradesh and Madhya Pradesh. More than two thirds of this large area is devoted for production of traditional flowers, which are marketed loose e.g. marigold, jasmine, chrysanthemum, aster, crossandra, tuberose.

Flowers are the loveliest objects on earth. They instantaneously suggest beauty because they are associated with things that offer pleasure and delight. Our age-old culture, paintings, art and craft, ideas, emotions, religion, philosophy and social customs exhibit their memory-haunting association with flowers. In short they have played an important role in the course of human civilization and social development. Hence, floriculture has assumed very great significance over the years.

Botanically speaking, flowers form the reproductive organ of any plant. They can be borne singly or in aggregation called florescence. Female and male flowers may
be located on separate plants or on the same plant. Flowers are symmetrical about an axis and are characterized by numerous spirally arranged floral parts. The floral parts are sepals, petals, stamens, anther, pistil and the like, borne on an elongated floral axis and attached below the ovary.\(^3\)

The world would not be as beautiful as it is now but for flowers. For millions and millions of years there were no flowering plants. Evolution of flowering plants changed the very appearance of the world. Flowers in their range of color, size, form and anatomical arrangement, present a plethora of combinations. They range in size from minute blossoms to giant blooms.\(^4\) In some plants, such as poppy, magnolia, tulip, and petunia, each flower is relatively large and prominent and is produced singly, while in other plants, such as aster, snap dragon, calla lily, and lilac these individual flowers are relatively very small and are borne in a distinctive cluster known as florescence.\(^5\)

Many flowers have odd or irregular shapes. In addition to their beauty, flowers also exude a pleasant smell. These qualities make them popular for decoration and as gift for birthdays and other functions and ceremonies. They are also considered as tokens of love. Flowers are planted and grown both inside and around homes, and there is also a wild growth of flowers everywhere in the world except the polar regions.\(^6\) Flowers may be costly or rare or cheap or in abundance but connoisseurs of flowers will always be wealthy in taste. Beautiful flowers are within reach of all. Flowers are so perfect in form and colour that they bring joy and solace to human beings.\(^7\) The flowers so far known to mankind could be classified into three groups according to their life span. They are annuals, biennials and perennials.
1.2. TYPES OF COMMERCIAL FLORICULTURE

In India there are two types of commercial floriculture, viz; traditionally cultivated flowers and modern cut-flowers. They could be explained as follows:

1.2.1. Traditionally Cultivated Flowers

Traditional flowers are those that are cultivated under open field conditions. These flowers are meant for worship, festivals, social occasions, public functions and personal adornments. Most of the traditional flowers are used for making garlands. Traditional flowers such as the rose, jasmine and the tuberose could be used for the production of oil and perfumes as well. Traditional flower cultivators are mostly small and marginal farmers. The other traditionally cultivated flowers are marigold, bachelor’s button, crossandra, marjoram, nerium, cockscomb, chrysanthemum, tulsi, scented green, aster and lotus.

Among the traditional flower crops, marigold deserves special mention. There are two varieties of marigold. They are the local marigold and the African marigold. It is followed by jasmine. It is a typical flower which is known for its fragrance. It is used mostly by women for hair decorations. It is produced in plenty in Tamil Nadu and Karnataka in the south and West Bengal in the east. Crossandra and aster form the remaining two varieties of traditional flowers which are cultivated in vast areas in certain parts of Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra.8

1.2.2. Modern Cut-flowers

Modern cut-flowers are those that are cultivated under controlled conditions in polyhouses or greenhouses. Modern cut-flowers which could be identified by their long stems are used in bouquets and for other decoration purposes. It is very important to
bear in mind that modern cut-flowers include the rose, the tuberose, the gladiolus, the carnation, the lilies, the orchids, the anthurium, the gerbera and the like.

The rose is the principal cut-flower grown all over the country, even though in terms of total area, it may not be so. A larger percentage of the area in many states is used for growing scented rose. They are used mostly at places of worship. It cannot be denied that old rose varieties like Queen Elizabeth, Super Star Montezuma, Papa Meiland, Christian Dior, Eiffel Tower, Kiss of Fire, Golden Giant, and Garde Henkle First Prizes are still popular. In recent times, with the growth of exports, the latest varieties like First Red, Grand Gala, Konfitti, Ravel, Tineka, Sacha, Propheyta, Pareo, Noblesse, Virsilia, Vivaldi and the like are also being grown commercially.9

Gladiolus is the next most important cut-flower crop grown in the country. Earlier, it was considered a crop for the temperate regions and its cultivation was restricted to hill areas, particularly in the north-eastern region. This still continues to supply the planting material to most parts of the county. However, with improved agro-economic techniques and better management, the northern parts of Delhi, Haryana, Punjab, Utter Pradesh, as well as Maharashtra and Karnataka have emerged as the major areas for production of gladiolus.

Tuberose, a very popular cut-flower crop in India, is grown mainly in the eastern part of the country, i.e. West Bengal, and also in northern plains and southern parts. Both single and double flower varieties are equally popular. Tuberose flowers are also sold loose in some areas for preparing garlands and wreaths. The other main cut-flower item is orchid. Its production is mainly restricted in the north-eastern hilly regions, besides, parts of the southern states of Kerala, Tamil Nadu and Karnataka. The main
species grown are Dendrobiums, Vanda, Paphiopedilums, Oncidiums, Phalaenopsis, and Cymbidiums.

1.3. DRY FLOWERS

Dry flowers are natural flowers. Their leaves, florescence and pods are dried and preserved so that they can have lasting value. They are used for various decoration purposes, in bouquets, flower arrangements, creating flower pictures, flower balls, greeting cards, pomanders, festival decoration, sweet smelling potpourri and many items of aesthetic importance.\(^\text{10}\)

Flowers can be dried at home by various methods. The different drying techniques are (i) air drying (ii) oven drying (iii) by using desiccants (iv) by pressing the flowers and foliage. The various flowers that can be used for drying are chrysanthemum, aster, bongainvillea, zinnia, marigold, limonium carnation, dahlia, gerbera, rose, gomphrena to name a few.\(^\text{11}\)

Dry flowers are generally cheap, eco-friendly and biodegradable. They can survive the heat of summer and cold of winter. Any entrepreneur, especially the unemployed women and youth can start the industry of drying flowers on a small scale. Dry flower craft is labour-intensive. Dry flower industry would be a definite money-spinner due to the demand for such products.\(^\text{12}\)

India has emerged as a leading country in the export of dried flowers. Dried flowers worth more than 100 crore are exported annually from India. India exports dry flowers to U.K, Germany, Italy, Netherlands, U.S.A, Japan and Singapore.
1.4. FLORAL OIL INDUSTRY

The floral oil concrete is obtained from jasmine, rose and tuberose. Good field sanitation and cleanliness among the labours involved in the harvesting of the flower increases the recovery percentage of concrete. Jasmine oil is added to blend with every floral scent and hence extensively used as an important perfumery throughout the world.

Rose oil and rose water have their applications from time immemorial. The Arabs were the first to use the technique of extraction of oil from rose. Tuberose oil is one of the most expensive raw materials used in perfumery industry. The single flower tuberose variety gives more oil than the double flower variety.13

The palmarosa oil is obtained from flowering shoot and parts above the ground of the aromatic grass cymbopogon merthini varmotia. The palmarosa oil is one of the most important essential oils of India and is exported. It is used as base for fine perfumery and is valued because of the geranial content. The oil is useful in imparting rose-like aroma to a wide variety of soaps, tobacco products and the like.

The major floriculture exports include the sizeable amount of foreign exchange earned by the essential oils, concrete and absolute which constitute the major raw materials for perfumery and cosmetic industries. The major centres for the floral oil business include Europe, USA and Japan, which consume 90 per cent of the global production of floral oil.

1.5. FLOWERS OF MEDICINAL IMPORTANCE

In recent years, the indigenous system of medicine, particularly Ayurveda is attracting modern scientists for finding cures for many challenging diseases. It has been
confirmed by World Health Organization that herbal medicines serve the health needs of about 80 per cent of world’s population, especially for millions of people in the vast rural areas of developing countries. The recent resurgence of plant remedies results from the effectiveness of plant medicines compared to the harmful side effects of most modern drugs.\textsuperscript{14}

1.6. FLOWER EXPORTS FROM INDIA

Indian floriculture industry has been shifting from traditional flowers to cut-flowers for export purposes. After liberalization, the Government of India identified floriculture as a sunrise industry and accorded it 100 per cent export-oriented status. The liberalized economy has given an impetus to the Indian entrepreneurs for establishing export-oriented floriculture units under controlled climatic conditions. In India Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh and Haryana have emerged as major floriculture centres in recent times.

The major importers of live plants and bulbs are Germany, France, Italy, UK, USA and Japan. The major importers of cut-flowers are Germany, USA, UK, UAE, France, Netherlands, Italy and Japan. Indian exports are mainly to European countries including Netherlands, Germany, UK, Italy and France. Netherlands consumes 50 per cent of our total exports. Demand from UK is also increasing. Newer markets in Asia, like Singapore is also opening for Indian flowers.\textsuperscript{15}

India’s share in the global cut-flowers trade in 1995 was a mere 0.3 per cent. India’s share in the world floriculture is negligible. There has been a significance rise in the floriculture exports. More than 300 Export-Oriented Units (EOUs) have been approved in the sector, out of which 255 units are operational. But many of them
operate at 50 per cent of their capacity with redressal of their problems. The floriculture industry thus, may turn to be viable enterprise for earning foreign exchange.

The scope of floriculture is next only to the Information Technology Industry all over the world, and this is growing by leaps and bounds. Floriculture is not just a business but is also a perennial source of income. Floriculture is a very dynamic market today. All private banks, big hospitals, corporate houses, event management companies are using flowers in their offices. Weddings big or small scale, film makers, political parties, exhibition and conference organizers are consuming flowers for decoration purposes, giving another dimension to this “blooming” sector.

1.7. RESEARCH ON FLORICULTURE

Research work on floriculture is being carried out at several research institutions under the Indian Council of Agricultural Research and Council of Scientific and Industrial Research, in the horticulture/floriculture departments of State Agricultural Universities and under the All India Coordinated Floriculture Improvement Project with a network of about twenty centres. The crops, which have received larger attention, include rose, gladiolus, chrysanthemum, orchid, jasmine, tuberose, aster, marigold. The thrust till recently has been on crop improvement, standardization of agro-techniques including improved propagation methods, plant protection and post-harvest management. In view of the fact that most of the cut-flower production is being done under open field conditions, the research efforts generally relate to open cultivation. In recent years, however, technologies for protected cultivation and tissue culture for mass propagation have also received attention. A large number of varieties suitable for cut-flower use, as well as garden display have been developed. Production technology,
particularly the agronomic requirements and control methods for important diseases and insect pests have also been developed. In India’s contribution by the private sector in research activities in floriculture is negligible. 

1.8. INDIAN FLORICULTURE INDUSTRY - PRESENT STATUS

In spite of its long and close association with floriculture, India’s record of commercial activities in this field is not very encouraging indeed. It is alarming to see that it is still in its infancy. The information on the area under floriculture and the production achieved is highly inadequate. As commercial and scientifically managed floriculture is an activity only of a recent origin, there are not many large farms engaged in organized floriculture. In most part of the country, flower growing is carried out on small holdings, mainly as a part of the regular agriculture systems. Floriculture in India is being viewed as a high-growth industry. Commercial floriculture is becoming important from the export angle. The liberalization of industrial and trade polices paved the way for development of export-oriented production of cut-flowers. The new seed policy had already made it feasible to import planting material of international varieties. The Government of India offers tax benefits to new export-oriented floriculture companies, in the form of income tax holidays and exemption from certain import duties. Agriculture and Processed food product Export Development Authority (APEDA), responsible for export promotion and development of floriculture in India, grants subsidies for establishing cold storages, precooling units, refrigerated vans and greenhouses and air freight subsidy to exports. It has been found that commercial floriculture has higher potential per unit area than most of the field crops, and is therefore a lucrative business.
1.9. FLOWER PRODUCTION AREAS IN INDIA

According to the Indian Horticulture (2015-16), the acreage under flower cultivation has increased from 1,44,000 hectares in 2006-07 to 1,91,000 hectares in 2010-11 and further to 2,49,000 hectares in 2015-16.17 The major flower growing states are Tamil Nadu, Karnataka, and Andhra Pradesh in the South, West Bengal in the East, Maharashtra in the West and Haryana, Chhattisgarh in the North. It must, however, be mentioned that it is extremely difficult to compute the statistics of the area in view of the very small sizes of the holdings, which very often go unreported. This perhaps is the reason for unrealistically small areas under flower growing, reported for a state which is known for its floricultural activity like Maharashtra, Uttar Pradesh and Madhya Pradesh. More than two thirds of this area is devoted for production of traditional flowers, which are marketed as loose flowers e.g. marigold, jasmine, chrysanthemum, aster, crossandra, tuberose, nerium, marjoram and the like. The area under cut-flower crops (with stems) used for bouquets, arrangements and the like has grown in recent years, with growing affluence and the trend of using flowers as gifts. The major flowers in this category are rose, gladiolus, tuberose, carnation, orchids and more recently lilliums, gerbera, chrysanthemum, gypsophila and the like.

1.10. FLORICULTURE IN TAMIL NADU

Floriculture is a blossoming industry in Tamil Nadu. It has tremendous potential for growth in terms of production, employment, income and export. In 2006-07, Tamil Nadu had about 26,730 hectares under floriculture with annual production of 218.06 lakh tons. Now it is increased to 98,500 hectares under floriculture with annual production of 390.75 lakh tons. On the basis of climatic condition and scope for raising flowers, Tamil Nadu has been divided into seven zones for purposes of effective development of floriculture under the commercial floriculture policy. They are:
1. Hosur Zone (Hosur and Denkanikottai Taluk of Dharmapuri District)
2. Chennai Zone (Kancheepuram and Thiruvallur District)
3. Hill Area Zone (Nilgiris, Kodaikanal, Yercaud, Kairyan at Lagiri Hills)
4. Kanyakumari Zone (Kanyakumari District and Tenkasi Taluk in Tirunelveli District)
5. Madurai Zone (Madurai and Dindigual Districts, Arupukottari Taluk of Virudunagar District, Sivagangai Taluk of Sivagenga District and Mandapam Taluk of Ramanathapuram District)
6. Coimbatore Zone (Coimbatore and Erode Districts)
7. Tiruchirapalli Zone (Manapparai Taluk)

Hosur, Chennai, Hill Area, Kanyakumari and Coimbatore Zones have been identified as potential areas for cut-flowers production. There is already a well-developed dry flower industry in Tamil Nadu. A number of tropical flowers, foliages, and grasses are utilized to make different designs in dry flower arrangements. Dry flower units are located in Tuticorin, which has a good potential for improving the dry flower industry.

1.11. FLORICULTURE IN KANYAKUMARI DISTRICT

Kanyakumari District has been identified as a fabled centre for the production and marketing of flowers. No wonder, Kanyakumari District is treated for all practical purposes as a centre for the abode of the aroma of flowers.

1.12. PRODUCTION OF FLOWERS IN KANYAKUMARI DISTRICT

The weather, soil and water conditions at Kanyakumari District are suitable for the production of flowers. People believe that flower production was started in the early eighteenth century in Kanyakumari District. Travancore king identified this area as
suitable for flower cultivation, and different kinds of flowers were produced and distributed to various parts of erstwhile Travancore state, especially, Padmanabha Temple at Thiruvananthapuram and Iyyappan Temple at Sabarimala, for offering to the local deities. Flower cultivation is the primary occupation in this village, as more than 80 per cent of the people are actively involved in activities such as cultivation, harvesting, distribution, garland making and marketing. The flowers produced in Kanyakumari District are Jasmine (Pitchi), Jasmine (Malligai), Rose, Bachlor’s Button (Vadamalli), Marigold (Krenthi), Marjoram (Marikolunthu), Nerium (Arali), Crossandra (Kanakambaram), Chrysanthemum (Chevanthi), Sacred Basil (Tulsi), Cockscomb (Kozhikondai), Scented Green (Pachai) and Tuberose (Champanki). Plucking of these flowers starts early in the morning around 5.00 a.m. Youngsters, elders and school children, irrespective of their age or occupation are engaged in this work.

1.13. STATEMENT OF THE PROBLEM

In general, characteristics of many agricultural producers are not found in the case of flowers. Firstly, all flowers are highly perishable; they require careful handling and speedy disposal and hence the market remains localized. Therefore, flower production is necessarily confined to places close to the markets in big cities. To minimize losses, the trade requires vigilant personal attention and close cooperation among the traders. Flowers require much preparation to the market, involving special skill. For these reasons, farmers do not show interest in the trade.

Production of flowers is a profitable business to various cultivators, and this is an important crop which helps to increase the economic condition of the flower cultivators. But marketing of flowers remains highly unorganized. Flowers are
marketed through agents in markets. The agents pay the cultivators after deducting their commission. Further, cultivators have to bribe bus drivers and conductors to ensure that their produce is transported on time to the market. Once the flowers are transported to the market, cultivators have no control over them. They never come to know, for what price their flower is sold in the market. They have to accept whatever their agent gives.

Marketing of flowers poses more problems compared to other agricultural commodities, as they have a high degree of perishability, steady decline in price, greater number of middlemen and are grown mostly by the small and marginal cultivators. Further, the flower cultivators are affected by the problems like time of sales, price fluctuation, non-availability of fertile seedling, high wage rate, non-availability of labours, high transport cost, high commission and malpractice by the middlemen. On the other hand, inadequate technical know-how and government’s apathetic attitude have compounded the problems of production and marketing of flowers. Flower cultivators are, thus, facing a number of difficulties in marketing the produce.

There is a need to boost up the marketing of flowers. The efforts made by the government to improve the marketing system, could improve the efficiency and help in increasing the producer's share in the consumer’s rupee, in the case of food grains and oil seeds to a great extent. But very little has been done in the case of flowers, for improving the marketing efficiency.

Flower marketing is largely confined to the private traders who are virtually in the grip of a few commission agents. The interest of the flower cultivators has been grossly neglected causing severe financial losses. The middlemen manipulate the situation by offering low price to the cultivators under the pretext of low demand and
falsely rejecting the produce in the name of sub-standard. Sometimes, the flowers also get accumulated in a particular region due to the climatic conditions or due to the strike by transport owners.

The problem of cultivators in marketing the product is serious. The marketers have to make payments before or after harvest, transport and market the products. There may be many problems in different stages. The problems may relate to production or transportation, preservation, price, area, transportation and other related aspects.

The present study, covering the problems of both production and marketing, provides a purposeful area for useful analysis. The natural climate like flood, cyclone may affect the production of flower. With all these limitations, the cultivators have to cultivate and earn profit. Moreover, financial constraints and lack of adequate infrastructure for marketing of flower are the problem areas, which are to be studied at length.

1.14. COVERAGE OF THE STUDY

1. The study area selected is Kanyakumari District in the State of Tamil Nadu.

2. The present study is production and marketing of flowers in Kanyakumari District. Earlier studies conducted were related to horticultural aspects and gave less importance to marketing. The present study deals with cultivation and marketing aspects, and analyses the problems and prospects from the marketing angle.

3. Marketing strategies may differ among the cultivators and marketers, and hence, separate analysis is made to find out the effectiveness of the marketing strategies followed.
4. Related studies are present at the state and at national level, but this study, covering the comprehensive strategies of flower production and marketing in Kanyakumari District, is lagging.

1.15. PERIOD OF THE STUDY:

The field survey was carried out from November 2015 to October 2016 for the primary data collection.

In order to estimate the trends in area, production and productivity of flowers, a period of ten years from 2007 to 2016 was taken up for this study.

1.16. OBJECTIVES OF THE STUDY

In Kanyakumari District, production and marketing of flowers occupies a predominant position. The broad objective of the study is to highlight the various aspects. The following are the prime objectives of this study:

1. To study the cultivation practices connected with flowers.
2. To analyse the strategies and problems of the cultivators.
3. To examine the various marketing practices adopted by the marketers.
4. To analyse the problems faced by the marketers and consumers.
5. To suggest the measures to improve the marketing efficiency of cultivators and marketers.

1.17. HYPOTHESES

➢ There is no significant relationship between the level of educational qualification of cultivators and the type of cultivation in Kanyakumari District.
There is no significant relationship between the experience and the type of cultivation in Kanyakumari District.

There is no significant relationship between the area of cultivation and the type of cultivation in Kanyakumari District.

There is no significant relationship between the area of other crops cultivation and the type of cultivation in Kanyakumari District.

There is no significant relationship between the total area of cultivation and the type of cultivation in Kanyakumari District.

There is no significant relationship between the use of fertilizers and the type of cultivation in Kanyakumari District.

There is no significant relationship between the frequency of using fertilizers for cultivation and the type of cultivation in Kanyakumari District.

There is no significant relationship between the level of educational qualification and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the experience and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the investment and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the investment in other marketing and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the total investment and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the experience in other business and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the procuring flowers and the type of marketing activities in Kanyakumari District.
There is no significant relationship between the procuring flowers from other Districts and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the marketing activities outside the District and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the use of public transportation and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the marketing method and the type of marketing activities in Kanyakumari District.

There is no significant relationship between the bulk purchase and the type of buying activities in Kanyakumari District.

There is no significant relationship between the frequency of buying and the type of buying activities in Kanyakumari District.

1.18. OPERATIONAL DEFINITION OF THE CONCEPT

The following are the definitions of the major and important concepts used in this study.

1.18.1. Floriculture

Floriculture means flower farming or cultivation of flowers and ornamental plants for floral industry. The Indian floriculture industry comprises the flower trade, nursery plants, potted plants, bulb and seed production, micro propagation materials and extraction of essential oils from flowers.

1.18.2. Traditional Flowers or Loose Flowers

Traditional flowers are those cultivated under open field cultivation. These include Jasmine, Tuberose, Crossandra, Marigold, Bachelor’s Button, Nerium, Rose, Marjoram and Cockscomb.
1.18.3. Modern Flowers or Cut-flowers

Modern flowers or cut-flowers are cultivated under protected Greenhouse, Polyhouses cultivation and are used with long stem. These include Rose, Gladiolus, Carnation, Lilies, Orchids, Anthurium, Gerbera and the like.

1.18.4. Urban Area

An urban area is the region surrounding a city. Most inhabitants of urban areas have nonagricultural jobs. Urban areas are very developed, meaning, there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs. An urban area includes the city itself, as well as the surrounding areas. Many urban areas are called metropolitan areas.

1.18.5. Semi-urban Area

The difference between semi-urban areas and rural areas is the development of the geographic area and environment. A semi-urban area is between urban and rural, or partly urban.

1.18.6. Rural Area

Rural areas are the opposite of urban areas. Rural areas, often called "the country," have low population density and large amounts of undeveloped land. Usually, the difference between a rural area and an urban area is clear. Rural areas are located outside towns and cities.

1.18.7. Flower Cultivation Land

Gardens could be divided into three categories: they are large scale gardens with an area of above one hectare, medium scale gardens with 0.5 to 1 hectare and small scale gardens which cover land below 0.5 hectare.
1.18.8. Production Cost and Return
The terms refer to the cost involved in the production of the crops. It includes both direct and indirect costs involved in the production. The production cost and return is calculated for one hectare to each crops in small, medium and large scale garden.

1.18.9. Wholesaler
A wholesaler will sell his product in bulk quantities to retailers, allowing the retailer to take advantage of a lower price than if he were to buy single items. The wholesaler will typically buy goods direct from the manufacturer, but could also buy from a reseller. In either case, the wholesaler gets large discounts for buying large quantities of goods.

1.18.10. Retailers
A retailer is a person or business that sells goods to the public.

1.19. METHODOLOGY
Research methodology is a scientific and systematic way to solve the formulated research problem. It includes the plan of research activities starting from collection of reviews to report preparation. The research methodology deals with research methods and takes into consideration the logic behind the methods.

The methodology adopted in the present study includes the selection of the study area, research design, the sampling technique, the collection of data, the pilot study and pretest and framework of analysis.
The study required both primary and secondary data. Primary data were collected from cultivators, marketers and consumers with the help of a well-structured interview schedule. Secondary data were collected from various books, journals, reports, websites, agents’ manuals and records, both published and unpublished.

The interview schedule was designed with the help of experts in the field with due care. The pretest was conducted among 30 flower cultivators, marketers and consumers in the District. Based on the feedback, certain modifications, additions and deletions were carried out to prepare the final schedule. The final schedule was used to collect the data from the flower cultivators, marketers and consumers.

1.20. SAMPLING DESIGN
1.20.1. Sampling Procedure

In Kanyakumari District, varieties of crops are cultivated. Among them, flower, paddy, coconut and banana constitute the major crops cultivated in Kanyakumari District. This study concentrates on aspects related to cultivators, marketers and consumers. The area of study selected for this research in Kanyakumari District.

The population of the study area cannot be determined since it is unorganized (not registered). Hence the sample design was obtained from a particular number of sample respondents. As far as the present study is concerned, the investigator proposed to collect the data required from the sample population by adopting sampling technique. Cochran’s formula for calculating sample size was used when the population was unknown. Cochran developed a formula to calculate a representative sample for proportion as:
Where, \( n_0 \) = is the sample size

\( Z \) = is the selected critical value of desired confidence level

\( p \) = is the estimated proportion of an attribute that is present in the population

\( q = 1 - p \)

\( e \) = is the desired level of precision

For example, suppose we want to calculate a sample of a large population whose degree of variability is not known assuming the maximum variability, which is equal to 50\% (\( p = 0.5 \)) and taking 95\% confidence level with ±8\% precision, the calculation for required sample size will be as follows:

\( p = 0.5 \) and hence \( q = 1 - 0.5 = 0.5; e = 0.08; Z = 1.96 \)

So, \( n_0 = \frac{1.96^2 \times 0.5 \times (0.5)}{(0.08)^2} = 150.0625 = 150 \)

The type of research is descriptive. For the present kind of research, 150 samples were the minimum number of cultivator, marketer and consumer respondents. However, respondents were selected by quota sampling method is followed for the study. It is shown in the Table 1.1.
TABLE 1.1
Distribution of Selected Respondents

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Respondents</th>
<th>No. of Selected Respondents from each Category</th>
<th>Total No. of Selected Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cultivators</td>
<td>Semi-urban area 75 75</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rural area</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Marketers</td>
<td>Wholesalers 80 80</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retailers</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Consumers</td>
<td>Urban area 120 120</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rural area</td>
<td></td>
</tr>
</tbody>
</table>

Sources: As complied by the researcher.

1.21. TOOLS OF ANALYSIS

The collected data had been processed with the help of appropriate statistical tools. The statistical tools were selected on the basis of the objectives of the study and also the nature of data included for the analysis. The details of statistical tools and their relevance of application are summarized below:

1.21.1. Chi-Square Test

The Chi-Square Test is the widely used non-parametric statistical test that describes the magnitude of discrepancy between the observed data and the data expected to be obtained with a specific hypothesis.

The observed and expected frequencies are said to be completely coinciding when the $\chi^2 = 0$ and as the value of $\chi^2$ increases the discrepancy between the observed and expected data becomes significant. The following formula is used to calculate Chi-square:
\[ \chi^2 = \frac{(O - E)^2}{E} \]

Where,

\( O \) = Observed frequency

\( E \) = Expected frequency computed by

\[ E = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total} \ (N)} \]

The required degree of freedom is calculated by the formula

\[ (r - 1) \ (c - 1) \]

Where

\( r \) = number of rows

\( c \) = number of columns

The computed value of \( \chi^2 \) is compared with the table value of \( \chi^2 \) for a given degree of freedom and at a given significance level. If the calculated value exceeds the table value, then the difference between the observed frequencies and expected frequencies is said to be significant. On the other hand, if the computed value is less than the table value, then the difference between the observed frequencies and expected frequencies is considered insignificant.

1.2.1.2. Likert Scale – Weighted Average Score

Likert scales are developed by utilizing the item analysis approach, wherein, a particular item is evaluated on the basis of how well it discriminates between those persons, whose total score is high and those whose score is low. It consists of a number of statements which express either a favourable or unfavourable attitude towards the given object to which the respondent is asked to react. Each response is given a
numerical score to record and then weights are being imposed according to the importance of the problem. The scores are then multiplied by the weights to arrive at the Weighted Average Score (WAS). With the help of this technique, the social impact of flower cultivators, marketers and consumers are assessed.

1.21.3. Garrett’s Ranking Technique

Garrett’s ranking technique was used to rank the preference indicated by the respondents on different factors. As per this method, respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula:

$$\text{Precent position} = \frac{100 \times (R_{ij} - 0.5)}{N_j}$$

Where

- $R_{ij}$ = Rank given for the $i$th variable by $j$th respondents
- $N_j$ = Number of variable ranked by $j$th respondents

With the help of Garrett’s Table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean value of score is calculated. The factors having highest mean value is considered to be the most important factor.

The primary data collected from the respondents and the secondary data compiled from the publications and records of agricultural department regulated market were analyzed using appropriate techniques.
1.22. LIMITATION OF THE STUDY

The study takes into consideration only the Kanyakumari District. Therefore, the present study has certain limitations. They are:

(i) The researcher felt difficult to collect primary data from the cultivators, marketers and consumers because of their lack of knowledge about the social conditions of their life and also majority of the respondents are not in the practice of maintaining standardized books of accounts. Hence, the information furnished by the respondents is only from their memory.

(ii) Similarly most of the marketing functionaries are hesitant to disclose the actual quantity and value of sales.

(iii) The income and expenditure are considered on the basis of the figures provided by the sample respondents.

1.23. CHAPTER SCHEME

The study contains six chapters.

- The first chapter comprises introduction, importance of the study, statement of the problem, coverage of the study, period of the study, objectives of the study, hypotheses, methodology, sampling design, tools of analysis and limitations of the study.
- The second chapter deals with review of previous studies.
- The third chapter provides a brief sketch of the profile of the study area.
- The fourth chapter is concerned with the cultivation practices and problems of cultivators.
- The fifth chapter treats with the problems of marketers and consumers.
- The sixth chapter deals with the summary of findings, conclusion and suggestions.
REFERENCES


17. *Indian Horticulture Database*, 2015–16.