



FLORICULTURE

The beautiful process of
becoming

Floriculture

St.ann's college for women,
malkapuram.



Accredited by NAAC with 'A' grade

Submitted by-

1st CBZ AND MICROBIOLOGY

2023-2024



Principal

Dr.Sr. Prema kumari

Designation: Principal

Qualifications: M.Sc. Botany, PhD.



Mentor

Dr.Adi shesu madam

Designation : Asst. Professor

Qualifications : M.Sc. Botany M.Phill,
PhD. Botany

Skill Qualifications: P.G diploma in
environmental studies, PGDCA



Mentor

S.Lakshmi tulasi madam

Designation: Lecturer

Qualifications :M.Sc. Zoology, PhD
(Pursuing)

Skill Qualifications: mushroom
cultivation, Vermi compost, agri-
inputs

I



Acknowledgement

In performing our Assignment, we had to take the help and guideline & support of the one, who deserves our greatest gratitude. The completion of this assignment gives us much Pleasure. We would like to show our gratitude to Adishesu madam, Dr.sr.Prema kumari (Principal), S. Lakshmi tulasi madam, for giving us this assignment the purpose of which was to increase our knowledge and to do some practical work.



Preface

The book contains some information of floriculture. Here we mention, how floriculture is also influencing our India economy and marketing strategies And the types of flowers used in medicines. The flowers looks so beautiful and sensitive but effect is great. the products that we make from flowers gives us more benefits, smell of flowers take us to peaceful world and gives us relaxation. The Floriculture also gives work to labor. It gives an aesthetic value, used in landscaping, home décor etc.

**For contact e-mail us on:
geethikabotcha@gmail.com**

Content

Topics

Authors

Introduction.....	1~V.Moulika
Floriculture in India	2-3~G.Manemma
History of Floriculture	4~G.Aparna
Scope of Floriculture	5~Ch. Sailaja
Types of Floriculture	6-13~k. Sailaja
Types of flower used for cultivation.....	14-17 ~Sanjana kumari
Process of cultivation.....	18-21~K. Prathima Sharon
Stages of Floriculture	22-23~R. Alekya
Precautions	24-26~S. Pravallika
Prior to harvest.....	27-28~K. Rama Lakshmi
Harvesting	29-31~B. Geethika
After harvest care.....	32~G. Santhoshi
Importance of cool and high temperature	33-34~N. Nikshaya sree
Water quality check for cut flowers.....	35~G. Anusha
Chemical preservation of flowers	36-37~Ch. Rohini kumari
Floriculture products ...	38-39~Samran Nisha Begum
Medicinal flowers	40-48~M. Vandana sai durga
Flower Decorations	49-51~M. Sharmila Deepika
Nursery	52-53~G. Rebekah parimila
Green house technology	54~D. Latha sree
Marketing	55~D. Shymala
Export	56-57~S. Amulya
Demand and supply	58~A. Lahari
Floriculture businesses	59~S. Nookaratnam
Economic point of view	60-61~D. Satyawathi
Floriculture industry	62-64~K. Sowmya swaraj
Government schemes for Floriculture	65-66~B. Ramya

Introduction

~Moulika

Floriculture is a branch of horticulture. Floriculture or flower farming is the study of growing and marketing flowers and foliage plants. Floriculture includes cultivation of flowering and ornamental plants for direct sale or for use as raw materials in cosmetic and perfume industry and in the pharmaceutical sector. It also includes production of planting materials through seeds, cuttings, budding and grafting. In simpler terms floriculture can be defined as the art and knowledge of growing flowers to perfection. The persons associated with this field are called floriculturists.

Worldwide more than 140 countries are involved in commercial Floriculture. The leading flower producing country in the world is Netherlands and Germany is the biggest importer of flowers. Countries involved in the import of flowers are Netherlands, Germany, France, Italy and Japan while those involved in export are Colombia, Israel, Spain and Kenya. USA and Japan continue to be the highest consumers.

Known as the “International Code of Botanical Nomenclature,” the code is based on a two-name (binomial) system developed by the famous botanist Linnaeus. Each plant is given a first name and last name, generally based in Latin, that is unique to each species.

Floriculture in India

~ G.Manemma

Floriculture is an age old farming activity in India having immense potential for generating gainful self-employment among small and marginal farmers. In the recent years it has emerged as a profitable agri-business in India and worldwide as improved standards of living and growing consciousness among the citizens across the globe to live in environment friendly atmosphere has led to an increase in the demand of floriculture products in the developed as well as in the developing countries worldwide. The production and trade of floriculture has increased consistently over the last 10 years. In India, Floriculture industry comprises flower trade, production of nursery plants and potted plants, seed and bulb production, micro propagation and extraction of essential oils.

The Government of India identified floriculture as a sunrise industry and accorded it 100 percent export oriented status.

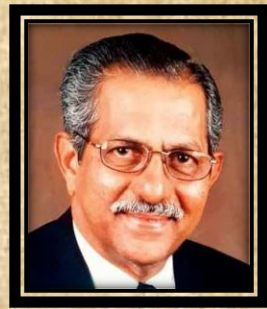
Floriculture products mainly consist of cut flowers, pot plants, cut foliage, seeds bulbs, tubers, rooted cuttings and dried flowers or leaves. The important floricultural crops in the international cut flower trade are rose, carnation, chrysanthemum, gerbera, gladiolus, orchids, anthurium, tulip and lilies. Floriculture crops like gerberas, carnation, etc. are grown in green houses. The open field crops are chrysanthemum, roses, gaillardia, lily marigold, aster, tuberose etc.

According to Horticulture Crops for 2018-19 statistics, the total area under flower crops was 303 thousand hectares. Total area under floriculture in India is second largest in the world and only next to China. Production of flowers was estimated to be 2910 thousand MT of which loose flowers accounted to 2263 thousand MT and cut flowers to 647 thousand MT. Fresh and Dried cut flowers dominate floriculture exports from India. Among states, in terms of production, Karnataka stands first with a total of 253.24 thousand tons. In terms of area, Kerala is the leader in floriculture with about 53.26 thousand hectares under floriculture cultivation. Other major flower growing states are 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. The expert committee set up by Govt. of India for promotion of export oriented floriculture units has identified Bangalore, Pune, New Delhi and Hyderabad as the major areas suitable for such activity especially for cut flowers. Of the four zones identified as potential centers for flower production namely Bangalore, Hyderabad, Pune and New Delhi, the area around Bangalore and Pune have got the advantage of ideal climatic conditions where the temperature ranges between 15 to 30°C. In view of this, the units established in these locations do not require either cooling or heating system. As a result maximum number of units has been established in these locations. There are more than 300 export oriented units in India. APEDA (Agricultural and Processed Food Products Export Development Authority) is the registering authority for such units.

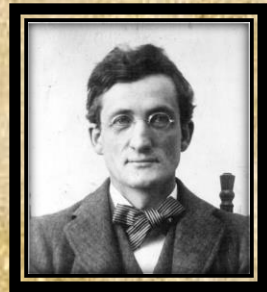
History of floriculture

~Aparna

M.H. Marigowda is considered the Father of Indian Horticulture



L.H. Bailey is considered the Father of American Horticulture.



The first recorded evidence of Floriculture dates back to the early 1500s when flowers were grown in greenhouses in Holland. Today, Floriculture is a multibillion-dollar industry with a global reach. In the United States, Floriculture is a nearly \$20 billion industry, with California being the top producer of flowers. India has a long tradition of floriculture. References to flowers and gardens are found in ancient Sanskrit classics like the Rig Veda (C 3000-2000 BC), Ramayana (C 1200-1300 BC), Mahabharata (prior to 4th Century BC), Shudraka (100 BC), Ashvagodha (C 100 AD), Kalidasa (C 400 AD) and Sarangdhara (C 1200 AD). It wasn't until 1599 that the first practical greenhouse was designed by Jules Charles, a French botanist. The greenhouse was built in Leiden Holland, primarily to grow medicinal tropical plants and citrus fruits.

Scope of Floriculture

~Ch. Sailaja

Industrial Floriculture has a lot of promise. Soil, environment, manpower, transportation, and demand are all significant factors in deciding the scope of Commercial Floriculture. People now realise the value of open space, parks, and gardens for leisure, peace of mind, leisure, and unpolluted air as almost all major cities expand rapidly to meet this rapidly increasing population, cement concrete, the jungle is also evolving at the same time, and thus people now realise the importance of open space, parks, and gardens for relaxation, peace of mind, recreation, and unpolluted air.

Thus, bio-aesthetic planning, which goes hand and hand with town planning, is required to resolve both of these concerns. In today's setting, a floriculture garden in the country yard is an important aspect of everyday life, and it serves as an ornamental.

Types of Floriculture

~K.Sailaja

Floriculture is one of the most potential components of the Horticulture Industry, being important from aesthetic, social and economic points of view. It has the potential for generating employment opportunities round-the-year and earning foreign exchange. In many countries, different floricultural value-added products are the main export items from the agriculture sector.

Let us now look at the importance and uses of commercial floriculture.



Cut flowers

These flowers are harvested with stalk, especially for arrangement in vases, and are lasting. These constitute a major share of the total world trade in floricultural products. Important cut flower crops are rose, carnation, chrysanthemum, orchid, gerbera, liliium, anthurium, gladiolus, narcissus, bird of paradise, heliconia, anemone, ranunculus, tulip, calla lily, etc.

Cut flowers are used in the preparation of bouquets and floral baskets as corsages, flower arrangements and for decoration purposes..

Loose flowers

Loose flowers are plucked from plants without stalk just below the calyx. These are in great demand, especially in Asian countries, and used for making veni, rangoli, bracelets, hair adornments for women and garlands, for garden displays, religious offerings and decorative purposes. Loose flowers comprise rose, chrysanthemum, marigold, jasmine, tuberose, gaillardia, crossandra, barleria, chandni, kaner, hibiscus, spider lily and eranthemum



Cut greens

Cut greens or cut foliages (leaves and stems), which are attractive in form, colour and freshness, are lasting and in great demand. These are used as fillers along with cut flowers in flower arrangements and elsewhere for increasing aesthetic value. These floral produce have various other uses in making attractive fresh floral designs and floral arrangements, such as bouquets, wreaths, decoration of house interiors, etc. Some of the cut foliages in demand are asparagus, ferns, thuja, cupressus, eucalyptus, etc.



Potted plants

Potted plants are of considerable commercial importance for instant gardening and for indoor, as well as, outdoor decoration. These can be easily carried to places, which need to be landscaped immediately. The potted plant industry is growing enormously. Potted plants may be either ornamental foliage or flowering. They are used for indoor decoration at homes, offices, commercial complexes, corporate offices, hotels, malls and other sites for various functions and events. The importance of these plants is increasing because with the growing population and lack of open spaces, one has to depend largely on potted plants for decorating their houses and surroundings. Some examples of potted plants are aglaonema, aralia, azalea, begonia, calathea, chlorophytum, croton, diffenbachia, dracaena, ferns, ficus, kalanchoe, maranta, money plant, etc.



Flower seed and planting material

There is a high demand for quality flower seeds, especially annual ornamentals and ornamental planting material. Different types of soil and climatic conditions in India enable seed production of practically all type of flowers. Flower seeds of annuals are produced in huge quantities for sale. A large number of bulbous plants, such as gladiolus, tuberose, amaryllis, dahlia, lilies, freesia, tulip, calla lily, etc., are multiplied and marketed.



Nursery

Nurseries are meant for multiplying and supplying plants and planting material, and by and large, providing guidance in the growing of ornamentals and maintenance of gardens. An ornamental plant nursery is a lucrative retail or wholesale business for the supply of various type of plants and planting material, such as nursery seedlings or prepared plants of trees, shrubs, climbers, seedlings of annuals and perennials, foliage plants, bulbous plants, cacti and succulents, palms, indoor plants, grasses, seeds, bulbs, etc.



Lawn

It is a green carpet for landscape. Lawn is a well-mown turf made in the field in front of a house or in garden. It is an integral part of the garden, providing a beautiful environment to onlookers and emitting oxygen to the environment as lungs do for the body. Lawn has aesthetic and recreational value too. It also provides a suitable background for flower beds, shrubbery border and specimen tree. It improves the monetary value of a property. In landscape designing and in the establishment of lawns or in sports like cricket, golf, hockey, tennis, etc., different type of grasses are used. The Turf Industry has recently got a boost due to government policies for encouraging various kind of sports.



Perfumes

The demand for natural floral extracts like perfumes from flowers is increasing by the day. Some flowers, such as rose, jasmine, screw pine (kewra) and tuberose are used for the extraction of essential oils for the preparation of perfumes or attar.



Colour pigments

Flowers are used to extract natural pigments. Carotenoids extracted from flowers are used commercially in the pharmaceutical industry, and as food supplements, animal feed additives and food colourants. Marigold petals are used as an important feed additive for poultry birds to add to the yellow colour of egg yolk as the petals are rich in carotenoid pigment. These are also used to prevent humans from dry eye and night blindness. A yellow coloured dye is extracted from chrysanthemum, which is used in food products and cosmetics. Orange-red edible dye is extracted from the arils of *Bixa orellana* (sinduri), which is used in cosmetics and medicines for coating.



Dried flowers

Plants of many species have flowers and foliage for a short period, and their availability is restricted to a particular time span. In the dry flower technique, flowers can be easily dried, preserved and processed to retain their beauty and everlasting character. Some flowers that are air dried and used as dry flowers include dahlia, larkspur, paper flower, annual chrysanthemum, marigold, straw flower, lotus pods, etc.



Combat pollution

Open spaces like parks and plants help check air pollution. Parks are considered as the lungs of cities. The greater use of plants improves our health and also beautifies the environment. Planting different type of plants helps in checking air, water and noise pollution, and prevents soil erosion. Trees provide shade and organic matter, which help improve the microclimate of an area. Parks and gardens also serve as recreation spots and are known to have a positive effect on people's physical and mental health, apart from providing a peaceful atmosphere for meditation.



Aesthetic value

According to the Oxford Advanced Learner's Dictionary, 'aesthetic' is the perception of beauty and the study of its appreciation. 'Aesthetic value' may be described as the theory of the level of beauty of certain natural resources. It is the value or pleasure that anything of beauty gives to humans. Flowers have aesthetic importance in human life and are a symbol of purity, love and peace. Some common aesthetic values of flowers are as follows.



Psychological

Flowers, when given to an ailing person at home, hospital or rehabilitation centre, and to family members or friends, in general, give them peace and make them happy.



Landscaping

Landscaping refers to the treatment given to a piece of land in order to make it attractive and beautiful. Landscaping is becoming common as it beautifies an area, adds calmness and freshness to the surroundings, and increases the property value. It is important for offices, residences, educational institutes, supermarkets, etc., as it is the building's exterior that leaves the first impression on people. Parks and gardens offer a place to people to relax and enjoy the nature's beauty. A lawn is an integral part of a garden and is primarily laid for aesthetic purposes.



Indoor gardening

Growing plants inside a house is known as 'indoor gardening'. It not only makes the appearance of the interiors attractive but also improves the air quality.







**Flower arrangement**

Flower arrangement is the aesthetic and artistic form of flower display, which refreshes and relaxes the mind, and provides a means of livelihood to the arranger. Cut flowers are used for different type of flower arrangements. Flower arrangements can be done on various occasions, such as weddings, birthdays, etc. When flowers are used as a centerpiece in a vase, they add beauty to the table and the entire room.



Flowers used in Floriculture

~Sanjana kumari

Common name	scientific name	
Alpine thistle.	<i>Eryngium planum</i>	
<i>Amaryllis</i>	<i>Hippeastrum</i>	
Amazon lily	Eucharis	
Golden rod	Solidago	
Love in a mist	Nigella	
Peruvian lily	Alstromeria	



Peruvian lily

Alstromeria



Arum Lily

Zantedeschia



Baby's breath

Gypsophila



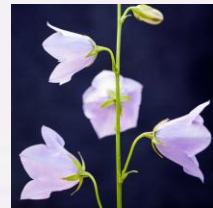
Barberton

Daisy gerbera



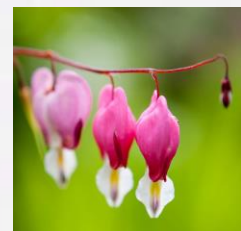
Bell Flower/
Canterbury
Bells

Campanula



Bleeding Heart

Dicentra spectabilis



Blue throatwort

Trachelium



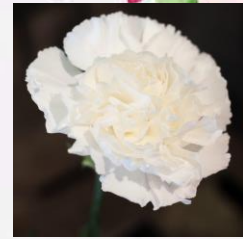
Busy Lizzie

Impatiens



Carnation

Dianthus



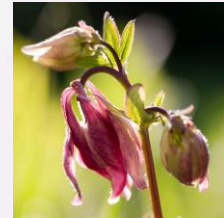
Cockscomb

Celosia



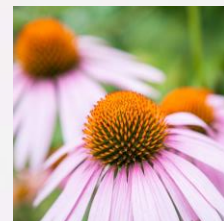
Columbine

Aquilegia



Coneflower

Echinacea



Daffodil

Narcissus



Cornflower

Centaurea



Windflower

Anemone



Tulip

Tulipa



Stock

Matthiola



Statice

Limoniu



Rose

Rosa



Process of cultivation



~K.Prathima Sharon

Are you passionate about floriculture? imagine having your own beautiful floriculture farm. where you can grow and sell amazing blooms. Floriculture as a start-up can be very cost-effective even on a small scale. Here, we will explore the world of floriculture, learn about the best flowers for farming, and discover some valuable tips and techniques to help your Floriculture journey become profitable. So, get ready with your shovels and farming gloves to get to know those fragrant prospective friends of yours.

1. Choose the right flowers:

Selecting the right flowers is crucial for a successful Floriculture adventure. Some flowers are better suited for specific climates or seasons, while others may require more care and attention. Here are some popular and easy-to-grow flowers for small-scale flower farming:
Sunflowers: These resilient flowers exhibit robustness and are available in a variety of lively hues.

Zinnias: Known for their bright hues and long vase life, zinnias are perfect for bouquets.

Marigolds: These vibrant flowers are not only beautiful but also help repel pests.

Cosmos: With delicate petals and a range of colors, cosmos is a great choice for flower farming.

Sweet Peas: Known for their enchanting fragrance, sweet peas are highly sought after.



2. Plan Your Farm Layout :

Before starting your flower farm, plan how you want to arrange your flowers. Consider factors like sunlight exposure, spacing between plants, and ease of maintenance. Create neat and organized beds or rows to maximize space and make it easier to tend to your flowers.



3. Prepare the Soil :

Healthy soil is the foundation of a thriving flower farm. Prior to planting, ensure your soil is fertile and well-drained. Add compost or organic matter to improve its structure and provide essential nutrients for your flowers. Conduct a soil test to determine any deficiencies and adjust accordingly.



4. Start from Seeds or Seedlings:

Decide whether to start your flowers from seeds or purchase seedlings. Seeds offer a wide variety of choices, while seedlings provide a head start. Consider factors like germination time, cost, and availability when making your decision.



5. Practice Proper Watering :

Watering your flowers correctly is essential for their growth and vitality. Most flowers require consistent watering, especially during hot and dry periods. Water deeply, allowing the soil to soak up the moisture, and avoid overwatering, as it can lead to root rot.



6. Implement Pest Control :

Pests can harm your flowers and affect your profits. Implement integrated pest management techniques, such as using beneficial insects, practicing crop rotation, and applying organic pest control methods. Regularly inspect your flowers for signs of pests and take appropriate action if needed.



7. Harvest at the Right Time:

Knowing when to harvest your flowers is crucial for quality and longevity. Each flower has a specific stage when it's best to be picked. Harvesting too early or too late can impact the beauty and vase life of your blooms. Research and observe each flower's ideal harvest time for optimal results.



8. Develop a Marketing Strategy :

To maximize your Floriculture benefits, you need to have a solid marketing plan. Consider selling directly to local florists, farmer's markets, or setting up an online shop. Build relationships with customers, create a strong brand, and use social media to showcase your beautiful blooms.

Stages of Floriculture

~R.Alekya

STAGE 1: FARMING

Land preparation – the soil is prepared to ensure the right nutrients are in place. It is then tested. The soil must possess a pH level of between 5.5 and 7 for the cultivation of roses, have good drainage properties, and be well lit. Planting of the flowers

PRUNING, WEEDING, SPRAYING – roses must be watered three to four weeks after planting. They are pruned regularly.

FERTILISERS – in the case of roses, fertilizers are added three months after planting.

STAGE 2: POST HARVEST SORTING

– flowers are sorted by quality and size, depending on market specifications (for example, into 10s, 20s, 25s or 50s)

CLEANING – they are cleaned to ensure that they are presentable for the series of inspections that they must pass. The flowers are also normally trimmed to the same length at this stage.

GRADING/INSPECTION – the flowers are graded according to their quality (based on freshness, Colour intensity, etc.).

PACKING – the flowers are packed into boxes, which are specially designed to minimize damage when being transported.

TRANSPORT TO AIRPORT – they are then transported to the airport in refrigerated containers to ensure their preservation.

STAGE 3: TRANSPORT TO MARKETS Customs Clearance

AIRFREIGHT TO MARKET – a number of major airlines are heavily involved in the transport of flowers to market countries.

STAGE 4: DISTRIBUTION Customs Inspections

AUCTION INSPECTIONS AND REJECTIONS – when the flowers reach auction, low-quality flowers or flowers which have been damaged in route are rejected. If everything has gone to plan, this normally brings the total amount of wastage to no more than between 3% and 5% of those that passed inspections at post-harvest stage.

AUCTION – when they reach auction, floral company products are then purchased by buyers.

REGIONAL DISTRIBUTION – the transport of the flowers in refrigerated conditions is as rapid as possible to ensure that the flowers stay as fresh as possible.

STAGE 5: RETAIL ASSORTMENTS AND

ARRANGEMENTS – normally at the retail stage flowers are sorted and made into different arrangements to make them appealing to customers.

STAGE 6: CONSUMPTION

PURCHASE – the customer will then purchase the flowers, taking cost factors and intentions for use into consideration.

USAGE – The possibilities for final use for the flower products are diverse, however, normally for decorative or for gift purposes.

Precautions

~S. Pravallika

Resistant varieties

Breeding for pest resistance is a continuous process. Resistant varieties are bred and selected when available in order to protect against key pests. Genetically modified (GM) plants have been used on a large scale in some of the countries in the recent past and have drastically curtailed pesticide use.

Chemical control

Pesticides are used to keep the pest population below economic threshold when the pests cannot be controlled by other means. These are applied when the pest's damaging capacity is nearing the threshold.



Integrated pest management (IPM)

It is a method to control pests by integrating a variety of strategies, such as physical, mechanical, biological, cultural and chemical methods of pest management. The main aim of IPM is to reduce dependence on chemicals, i.e. using them only as a last resort, while at the same time managing pest populations at an acceptable level. It helps to reduce resistance buildup in the pest populations. In the recent years IPM has emerged as one of the modern ways of reducing insect pest damage.

Early detection of pest infestation is important to decide on the appropriate measures to be taken up for effective management of the pest.

General disease management methods for greenhouse crops

- Successful disease control relies on proper disease prevention practices and plant disease diagnosis. Once the major diseases and pest problems have been identified, an integrated pest management (IPM) program can be followed.
- Several important cultural practices to control diseases/insect pests should be integrated into all greenhouse IPM/IDM programs to control diseases and pests. These serve to both prevent and minimize/eradicate diseases and pests.
- Analogous cultural control methods may be applied to specific diseases/pests that are common to several crops.



General pest management strategies under polyhouse

Since the microclimate inside the polyhouse is most congenial for the rapid development of insect pests, successful control of the insect pests depends on several biotic and abiotic factors. Avoidance of pests, early detection of infestation, if any, and timely imposition of correct curative measures are three key factors influencing the success of pest management.

Avoidance of pest entry into polyhouse:

- Use of insect proof nets to avoid lateral entry of insect-pest into the polyhouse.
- Provision of double-door system to avoid accidental entry of insect pests into the polyhouse.
- Maintaining sanitation in and around the polyhouse.
- Inspection of planting materials upon arrival for infestation of any pests.
- Use of ultra-violet radiation absorbing sheets as cladding material for avoiding the entry of insect pest into the polyhouse.

Judicious use of fertilizers and irrigation water to maintain plant health.

Early detection of insect pest infestation:

Detection of insect pest infestation includes scouting and monitoring of insect pests population and maintaining a field data sheet for recording the insect identified, location on the plant, severity of pest and effectiveness of any control measure applied.

Initial infestation of insect pests in the polyhouse begins as isolated spots along the border and entry doors. Proper scouting of the plant must be done to detect infestations, if any. Entire plant has to be inspected properly starting from bottom of the plant including soil surface, then the older leaves, younger tender leaves and new flush growth. It is important to check on the undersurface of the leaves, as most of the insect pests prefer the undersurface of the leaves.

Yellow and blue sticky traps and pheromone traps can be used for monitoring the activity of different insect-pests inside the polyhouse. Sticky cards have to be held 10 – 15 cms above the plant canopy. One to two cards per 100 square meter area are required for monitoring and more than 20 cards per 100 square meter area for mass trapping of the insect-pest. The sticky cards have to be tested twice a week and total number of each insect observed in the card has to be written in field data sheet. Yellow sticky cards attracts whitefly, leaf miner and aphids the most, while blue sticky cards attracts thrips.

Prior to Harvest

~K. Rama Lakshmi

Prior to harvesting: Plants should be healthy and turgid. White plastic buckets and cutting tools (knives or shears) should be cleaned and sanitized. Avoid stacking buckets if the outside is not as clean as the inside. Cutting tools should be sharp. Dull cutting tools can result in crushed stems that reduces water uptake. Buckets should be cleaned and disinfected regularly. Dirt harbors bacteria which clogs the stems of cut flowers. Wash buckets thoroughly using a low-suds biodegradable detergent, rinse in clean water, and give a final rinse with a solution containing 1 ml (0.2 tsp) Clorox (5% hypochlorite) per liter (about a quart) of water, preferably every time the bucket is used. Note that dirt can be easily seen in white buckets vs dark colored buckets. All buckets for harvesting should contain clean water. Many growers also add a biocide to the water. Biocides are chemicals that prevent the growth of bacteria, yeasts fungi and other microorganisms and are commercially available. Microorganisms and the substances that they produce can plug the xylem (water conducting tissue) of the plant, thus blocking the uptake of water. Researchers have shown that there is a strong inverse relationship between the number of microbes in the water and the longevity of cut flowers. Common biocides are calcium or sodium hypochlorite (bleach), aluminium sulphate, and salts of 8-hydroxyquinoline.

Regular household bleach is very short-lived (+/- 4 hours) compared to commercially available slow-release chlorine tablets (about 2-3 days). Many growers use slow release chlorine tablets (Dichloride-s-Triazinetrione Hydrated) in the water at time of harvest. It is important to follow the company's recommendation for the correct dilution rate of the biocide for the specific flowers. In addition to biocides, the pH of the water should be acidified to 3.0 – 5.5 as researchers have demonstrated that flowers absorb more water in acidic solutions than those at higher pH levels. Chemicals such as citric acid, 8- hydroxyquinoline citrate, or aluminum sulfate are generally used to lower the pH of the water. The amount of chemical needed will depend on the alkalinity of the water. Alkalinity is a measurement of the amount of calcium and magnesium carbonates in the water. Water with high alkalinity is highly buffered and will require more chemicals to lower the pH. The pH and the alkalinity of the water source should be analyzed to determine the proper amount of chemical needed to lower the pH to the desirable level. Water testing can be done through a public or private laboratory. High levels of sodium (Na), fluoride (F) or sulfate (SO₄) can be toxic. Avoid using chemical water softeners in any stage of cut flower storage.

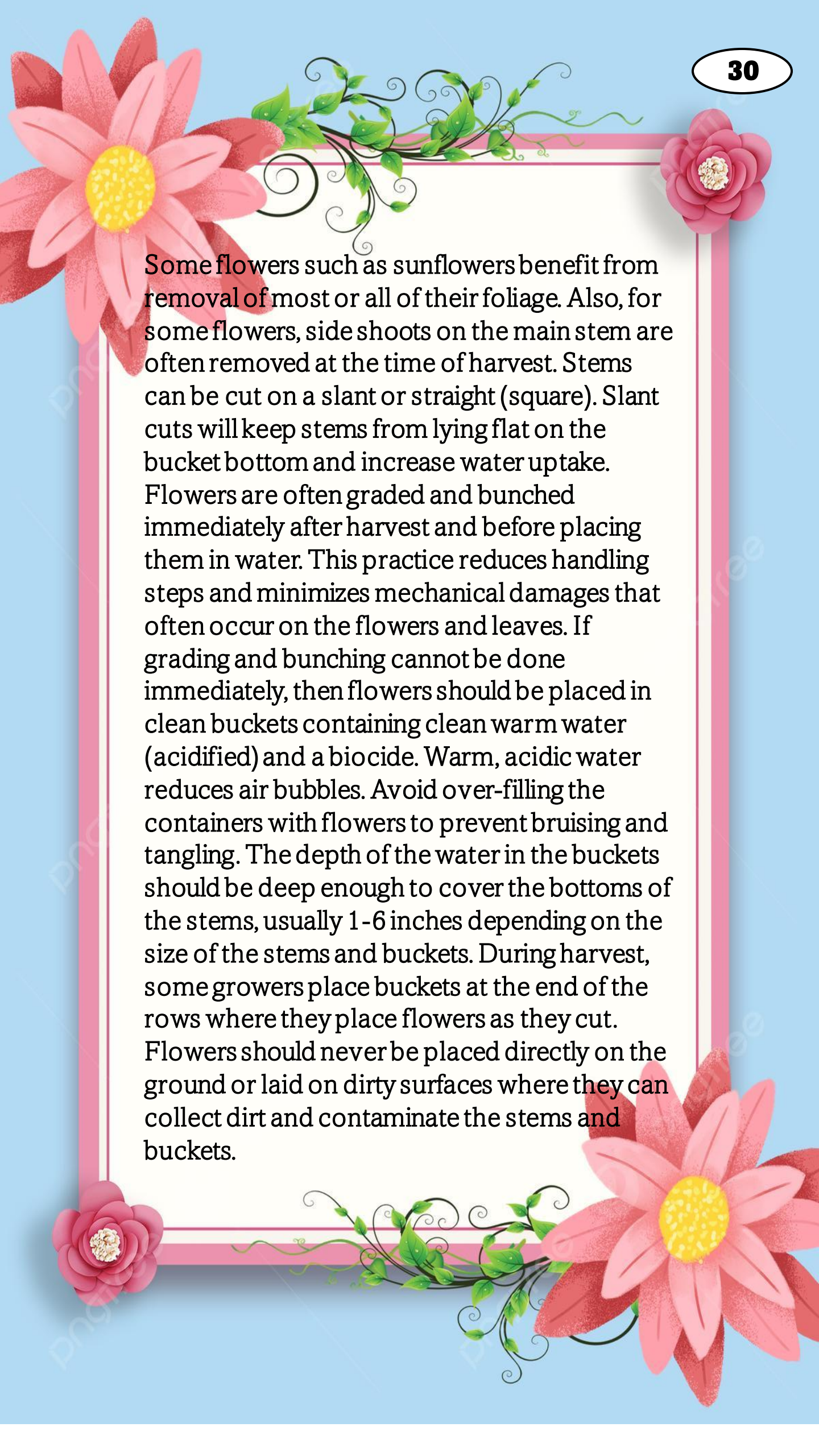


Harvesting

~B.Geethika

Harvest in the morning or evening. Remove foliage on stems that will be below water. Slant cuts will keep stems from lying flat on the bucket bottom and increase water uptake. Never lay flowers on the ground or dirty surface. Disinfect cutting tools frequently, or at least 2 times each day. Grade and bunch flowers immediately after harvest. Bring flowers into the shade and place in clean buckets of clean warm water (acidified) and a biocide. Avoid over-filing containers with flowers. Flowers should be harvested in the morning (after dew has dried) or evening, not during the heat of the day. Ideally, flowers should be harvested in the morning when temperatures are low and plant water content is high. Make cuts to the plant to obtain long, sturdy stems. Remove the foliage on the stems that will be below the water which will decay and encourage bacterial growth.





Some flowers such as sunflowers benefit from removal of most or all of their foliage. Also, for some flowers, side shoots on the main stem are often removed at the time of harvest. Stems can be cut on a slant or straight (square). Slant cuts will keep stems from lying flat on the bucket bottom and increase water uptake. Flowers are often graded and bunched immediately after harvest and before placing them in water. This practice reduces handling steps and minimizes mechanical damages that often occur on the flowers and leaves. If grading and bunching cannot be done immediately, then flowers should be placed in clean buckets containing clean warm water (acidified) and a biocide. Warm, acidic water reduces air bubbles. Avoid over-filling the containers with flowers to prevent bruising and tangling. The depth of the water in the buckets should be deep enough to cover the bottoms of the stems, usually 1-6 inches depending on the size of the stems and buckets. During harvest, some growers place buckets at the end of the rows where they place flowers as they cut. Flowers should never be placed directly on the ground or laid on dirty surfaces where they can collect dirt and contaminate the stems and buckets.

Flowers and foliage stems should always be kept clean. In addition to clean buckets, cutting tools should be regularly disinfected. Some growers place a bucket containing disinfectant solution and clippers at the end of the row to encourage harvesters to easily exchange used tools for clean ones as they finish a row. It is best to harvest small quantities at a time and bring them into a cool area and place them into the prepared buckets. Buckets placed under portable tents or patio umbrellas work well to create shady areas and reduce heat in the field. A shady area lowers the temperature, reduces water loss and respiration rate of the flowers, and therefore increases the postharvest life and quality of the flowers.



After Harvest Care

~G.Santhoshi

Move flowers to a cool area. Recut stems under water. Place flower in solutions depending on the need of the flowers. After harvesting, flowers are then moved to a cool area where stems can be recut and placed in solutions depending on the specific need of the flowers. Once harvested, flowers continue to transpire and will wilt rapidly. Most flowers will fully recover from wilting if recut and placed in a warm, rehydration solution. Stems are recut by removing about an inch of the end of stems under water prior to placing them in their solution. This helps prevent air bubbles in the water conducting tissue. Air bubbles reduce the uptake of solutions. Always treat flowers before they are sleeved to hasten uptake into the stem.

Importance of Cool Temperatures and High Relative Humidity

~N. Nikshaya sree

Proper temperature management is an important factor for maintaining the quality and vase life of cut flowers. As storage temperatures increase, respiration and water loss increases and wilting occurs. It is important to cool harvested flowers to remove field heat. For convenience only, flowers to be sold on that same day can be placed outdoors. Those intended for market at another time should be moved to a cooler as soon as possible with temperatures as close to 33F (most flowers), 41-43F (some flowers such as zinnias and gerberas) or 50F (chilling sensitive flowers) in order to best preserve quality. The best practice is to harvest flowers at their optimum stage and store them at the lowest possible temperature you can provide without causing freezing or chilling injury. For sales in retail garden centers and farm stands, all handling and sales should be conducted in a shady area (as cool as possible). Generally, the lower the temperatures, the longer the flowers last. Most flowers will retain their quality if stored at temperatures near the freezing point (33F).

Others, such as those originating from subtropical and tropical regions, develop chilling injury if stored at temperatures below 50F. Symptoms vary depending on plant species and may include darkening or water-soaking of the petals and death of flowers. Flowers such as anthurium, bird-of-paradise, heliconia, certain orchids, as well as others that are susceptible to chilling injury are best stored at temperatures above 50F. Relative Humidity is another factor that affects uptake of solution. There were several recommendations in the literature for suggested relative humidity ranging from 75% to 99%. High relative humidity reduces transpiration and keeps flowers from drying out.

Water quality

~G. Anusha

Water Quality, Hydrating Solutions

Buckets and water used for cut flowers should be clean, buckets disinfected regularly and biocides (unless organic) be added to the solution. Replace the solution often to avoid allowing the solution to become cloudy, which indicates of the presence of high counts of microbes. Dirty water contains bacteria that will prevent uptake of water.

Another important factor is the specific ions contained in the water. Water quality that is good for human consumption may not be good for cut flowers. For example, fluoride in fluoridated municipal water is very toxic to flowers such as gerbera, gladiolus, and freesia and significantly reduces the vase life of these flowers. Water softeners and water containing high levels of sodium and iron are also toxic to some flowers and should not be used.

Chemical preservation

~Ch. Rohini kumari

Chemical preservation uses a variety of chemical preservatives to maintain the life of cut flowers, which can be generally classified into three types:

1. energy supply type, such as sucrose, fructose or glucose, providing nutrient source for cut flowers, regulating water balance and maintaining normal cell permeation, which is conducive to the quality improvement of cut flowers

2. Water balance improvement type such as adding a bactericide e.g. hydroxyquinoline sulphate to the organic acid which can lower the pH value of the solution can effectively inhibit the blockage of the water conduit caused by bacterial growth and promote the water absorption of flowering branch. The addition of inorganic salts such as K^+ , $NiSO_4$, $CoCl_2$ can increase the turgor of the petal cells, which is conducive to the maintenance of the water balance of the cut flowers.

3. Mature hormone-inhibiting type, mainly ethylene inhibitors and growth regulators, such as Ag^+ , STS, AOA, ethanol, and cytokinein, which have a significant effect on slowing down the senescence process of cut flowers.

In practical operations, it is recommended to effectively combine the chemical preservation technique with packaging fresh-keeping technique to improve the comprehensive preservation effect of cut flowers. The bactericide, the ethylene inhibitor may be applied to the inner layer of the corrugated cardboard or the inner layer of plastic packaging. Or the bactericide and ethylene inhibitor may be stirred into the plastic raw material to produce plastic bag as the inner packaging of fresh cut flower to improve the preservation effect.

Products from flowers

~Samran Nisha Begum

Perfumes: Capturing floral scents for delightful fragrances.



Essential Oils: Extracted from flowers for aromatherapy and more.



Dyes: Flowers create natural dyes for fabrics and crafts.



Teas: Herbal teas often feature floral ingredients.



Medicines: Many traditional medicines use flower extracts.



Honey: Bees collect nectar from flowers to make honey.



Cosmetics: Flower extracts in skincare and makeup products.



Potpourri: Dried flowers for lovely scented arrangements.



Floral Art: Artists create stunning paintings and drawings.



Jewellery: Real flowers preserved in resin for unique pieces.



Edible Flowers: Culinary delights and garnishes.

Wreaths: Decorative circles of dried or fresh flowers.



Candles: Flower-inspired designs and scents.



Wedding Bouquets: Beautiful arrangements for special days.



Fragrant Sachets: Small bags of dried flowers for aromas.



Medicinal flowers

~M.Vandana sai durga

1. Abscess root

Scientific name: *Polemonium reptans*

Medicinal Uses:-It is used to reduce fever, cough, Swelling, inflammation, and cough.

2. Alfalfa:-

Scientific name: *Medicago sativa*

Medicinal uses:-It is also used for high cholesterol, asthma, osteoarthritis, rheumatoid arthritis, diabetes, upset stomach, and a bleeding disorder called thrombocytopenic purpura

3. Avaram Senna:-

Scientific name: *Senna auriculata*

Medicinal uses:-The root is used in decoctions against fevers, diabetes, diseases of urinary system and constipation. The leaves have laxative properties. The dried flowers and flower buds are used as a substitute for tea in case of diabetes patients. The powdered seed is also applied to the eye, in case of chronic purulent conjunctivitis.

4. Blessed thistle-

Scientific name: *Cnicus benedictus*

Medicinal uses:-Used during the Middle Ages to treat bubonic plague. In modern times, herbal teas made from blessed thistle are used for loss of appetite, indigestion and other purposes.

5. Blue snakeweed

Scientific name: *Stachytarpheta cayennensis*

Medicinal uses:-Extracts of the plant are used to ease the symptoms of malaria. The boiled juice or a tea made from the leaves or the whole plant is taken to relieve fever and other symptoms. It is also used for dysentery, pain, and liver disorders.

6. Borage-

Scientific name: *Borago officinalis*

Medicinal uses:-Used in hyperactive gastrointestinal, respiratory and cardiovascular disorders, such as gastrointestinal (colic, cramps, diarrhea), airways (asthma, bronchitis), cardiovascular, (cardiotonic, antihypertensive and blood purifier), urinary (diuretic and kidney/ bladder disorders).

7. California poppy-Used for trouble sleeping (insomnia), aches, nervous agitation, bed-wetting in children, and diseases of the bladder and liver. It is also used to promote relaxation.

8. Chamomile-

Scientific name: *Matricaria recutita* and *Anthemis nobilis*

Medicinal uses:-It has been used over thousands of years for a variety of conditions, including hay fever, inflammation, muscle spasms, menstrual disorders, insomnia, ulcers, wounds, gastrointestinal disorders, rheumatic pain, and hemorrhoids etc.

9. Clove-

Scientific name: *Syzygium aromaticum*

Medicinal uses:-Its dried flower buds are a popular spice and are also used in Chinese and Ayurvedic medicine. It is used for upset stomach and also to treat toothache problems.

10. Common Chickweed-

Scientific name: *Stellaria media*

Medicinal uses:-It has been used as a remedy to treat itchy skin conditions and pulmonary diseases. Modern herbalists prescribe it for iron-deficiency anemia (for its high iron content), as well as for skin diseases, bronchitis, rheumatic pains, arthritis and period pain

11. Common Hepatica-

Scientific name: *Anemone hepatica*

Medicinal uses:-Historically used to treat liver diseases, it is still used in alternative medicine today. Other modern applications by herbalists include treatments for pimples, bronchitis and gout.

12. Common hollyhock-

Scientific name: *Alcea rosea*

Medicinal uses:-It is used to control inflammation, to stop bedwetting and as a mouthwash in cases of bleeding gums. Used to treat pain, stomach ulcers, wound healing, diabetes etc.

13. Corn Flower

Scientific name: *Centaurea cyanus*

Medicinal uses:-The dried flowers are used to make medicine. People take cornflower tea to treat fever, constipation, water retention, and chest congestion. They also take it as a tonic, bitter, and liver and gallbladder stimulant.

14. Cotton Lavender:-

Scientific name: *Santolina chamaecyparissus*

Medicinal uses:-People take cotton lavender for digestion problems, premenstrual syndrome (PMS), worms, yellowed skin (jaundice), swelling, and muscle spasms. Lavender cotton is sometimes applied directly to the skin to repel insects. It has a very strong smell.

15. Daisy-

Scientific name: *Bellis perennis*

Medicinal uses:- Used to treat coughs, bronchitis, disorders of the liver and kidneys, and swelling (inflammation).

16. Dandelion-

Scientific name: *Taraxacum officinale*

Medicinal uses:-

It was most commonly used historically to treat liver diseases, kidney diseases, and spleen problems.

17. Feverfew-

Scientific name: *Tanacetum parthenium*

Medicinal uses:-

Traditionally used for the treatment of fevers, migraine headaches, rheumatoid arthritis, stomach aches, toothaches, insect bites, infertility, and problems with menstruation and labor pain during childbirth.

18. Field Scabious-

Scientific name: *Knautia arvensis*

Medicinal uses:-

Used in herbal medicine as a blood purifier and as a treatment for eczema and skin disorders. externally used for treating cuts, burns and bruises.

19. Fumitory-

Scientific name: *Fumaria officinalis*

Medicinal uses:-

Traditionally thought to be good for the eyes and to remove skin blemishes. In modern times herbalists use it to treat skin diseases and conjunctivitis, as well as to cleanse the kidneys.

20. Garden Angelica-

Scientific name: *Angelica archangelica*

Medicinal uses:-used in the traditional Austrian medicine internally as tea or tincture for treatment of disorders of the gastrointestinal tract, respiratory tract, nervous system, and also against fever, infections, and flu.

21. Goldenseal-

Scientific name: *Hydrastis canadensis*

Medicinal uses:-It was used traditionally by Native Americans to treat skin diseases, ulcers, and gonorrhea. More recently, the herb has been used to treat the respiratory tract and a number of other infections.

22. Ground ivy-

Scientific name: *Glechoma hederacea*

Medicinal uses:-It has been used as a "lung herb". Other traditional uses include as an expectorant, astringent, and to treat bronchitis. The essential oil of the plant has been used for centuries as a general tonic for colds and coughs, and to relieve congestion of the mucous membranes.

23. Hyssop-

Scientific name: *Hyssopus officinalis*

Medicinal uses:-It is used for digestive and intestinal problems including liver and gallbladder conditions, intestinal pain, intestinal gas, colic, and loss of appetite. It is also used for respiratory problems including coughs, the common cold, respiratory infections, sore throat, and asthma.

24. Japanese hawkneed-

Scientific name: *Youngia japonica*

Medicinal uses:-The plant is antitussive and febrifuge. It is also used in the treatment of boils and snakebites.

25. Jasmine-

Scientific name: *Jasminum officinale*

Medicinal uses:-used for liver disease (hepatitis), pain due to liver scarring (cirrhosis), and abdominal pain due to severe diarrhea (dysentery). It is also used to prevent stroke, to cause relaxation (as a sedative), to heighten sexual desire (as an aphrodisiac), and in cancer treatment and also used in dermatology as either an antiseptic or anti-inflammatory agent.

26. Karvy-

Scientific name: *Strobilanthes callosus*

Medicinal uses:-It is used as anti-inflammatory, antimicrobial herbal drug, and anti-rheumatic

27. Lavender-

Scientific name: *Lavandula angustifolia*

Medicinal uses:-

It's helps to improve sleep, treat skin blemishes, relieve pain, reduce blood pressure, lessen menopausal hot flashes, combat fungus growth, and potentially promote hair growth.

28. Lotus-

Scientific name: *Nelumbo nucifera*

Medicinal uses:-

antioxidant, hepatoprotective, immunomodulatory, anti-infective, hyperlipidemic, and psychopharmacologic activity.

29. Marigold-

Scientific name: *Calendula officinalis*

Medicinal uses:- The flowers and leaves of marigold have anti-inflammatory, antipyretic, antimicrobial, and antiepileptic effects.

Marigolds are generally administered in tinctures, ointments, and infusions to treat wounds for inflammation of the skin and mucous membranes.

30. Minnieroot, fever root, snapdragon root-

Scientific name: *Ruellia tuberosa*

Medicinal uses:- In folk medicine and Ayurvedic medicine it has been used as a diuretic, anti-diabetic, antipyretic, analgesic, antihypertensive, gastroprotective, and to treat gonorrhea.

31. Platycodon, balloon flower

Scientific name: *Platycodon grandiflorus*

Medicinal uses:-

It is used as relieving cough and asthma and to have anti-tumor, antimicrobial, anti-inflammatory, anti-cancer, anti-allergy, improved insulin resistance, and cholesterol-lowering properties.

32. Robert geranium

Scientific name: *Geranium robertianum*

Medicinal uses:-

In traditional herbalism, it was used as a remedy for toothache and nosebleeds and as a vulnerary (used for or useful in healing wounds).

33. Snowdrop-

Scientific name: Galanthus

Medicinal uses:-It contains an active substance called galantamine, which is an acetylcholinesterase inhibitor. Galantamine (or galanthamine) can be helpful in the treatment of Alzheimer's disease, treatment of traumatic injuries to the nervous system and also as an emmenagogue, which stimulates or increases menstrual flow and so can induce an abortion in the early stages of pregnancy.

34. Holy basil-

Scientific name: Ocimum tenuiflorum

Medicinal uses:-It decrease pain and swelling. They also might lower blood sugar in people with diabetes.

35. Verbena-

Scientific name: Verbena officinalis

Medicinal uses -It is used for sore throats and respiratory tract diseases.

36. Veronica-

Scientific name: Veronica officinalis

Medicinal uses:-

These are used in traditional medicine for the treatment of rheumatism, hemoptysis, laryngopharyngitis, hernia, lung and respiratory diseases (e.g., against cough or as an expectorant). They also have properties such as antiscorbutic and diuretic, as well as wound healing

Also used to cure sinus and ear infections.

37..Yellow lady's slipper

Scientific name: *Cypripedium parviflorum*

Medicinal uses:-

Used in native remedies for dermatitis, tooth aches, anxiety, headaches, as an antispasmodic, stimulant and sedative.

38.Wild pansy-

Scientific name: *Viola tricolor*

Medicinal uses:-used externally to treat mild seborrheic skin diseases such as dandruff, itching, cradle cap and acne. also used to treat cancer.

39.White Snakeroot-

Scientific name: *Ageratina altissima*

Medicinal uses:-Root tea has been used to treat diarrhea, kidney stones, and fever. A root poultice can be used on snakebites.

40.White Buttercup-

Scientific name: *Turnera subulata*

Medicinal uses:-used for arthritis, nerve pain, blisters, ongoing (chronic) skin problems, bronchitis, gastrointestinal, and respiratory ailments.

Flower decorations

~M. Sharmila Deepika

There are many different ways to incorporate orchid flowers into your wedding décor. Some of these include the following:

1. Entrance

You can have orchid flowers right at the entrance of the venue. This is a great way to let people know what to expect in terms of aesthetics when they walk in!



2. Groom's Entry

Many people use flowers to decorate the groom's car. Instead of sticking with regular flowers like roses, you go the extra mile and use orchids instead. They can really pop, especially on light coloured cars



3. Table Centerpieces

You can use them to create a bouquet at the centre of every table.



4. Mandap Decoration

You can use these flowers to decorate the Mandap area. The poles around the area can be decorated with these flowers.



5. Hair Accessories

You can add stray orchids to your hair to add a fun element to them.



6. Rangoli

You can create a floral rangoli at the entrance of the venue with orchids in different colors.



7. During Ceremonies

If you're in the mood of extra extravagance, you can shower your guests in orchid petals instead of roses or marigolds when the Baraat walks in!



Nursery

~G.Rebekah parimila

Nursery - floriculture nursery, place where plants are grown for transplanting, for use as stock for budding and grafting, or for sale. Commercial nurseries produce and distribute woody and herbaceous plants, including ornamental trees, shrubs, and bulb crops. A nursery is a place where plants are propagated and grown to a desired size. In a word, a nursery is a centre of seedling production where seedlings are produced and taken care of until transplantation in the main field. Mostly the plants concerned are for gardening, forestry, or conservation biology, rather than agriculture. They include retail nurseries, which sell to the general public; wholesale nurseries, which sell only to businesses such as other nurseries and commercial gardeners; and private nurseries, which supply the needs of institutions or private estates. Some will also work in plant breeding. Plants in a nursery A "nurseryman" is a person who owns or works in a nursery. Some nurseries specialize in certain areas, which may include: propagation and the selling of small or bare root plants to other nurseries; growing out plant materials to a saleable size, or retail sales. Nurseries may also specialize in one type of plant, e.g., groundcovers, shade plants, or rock garden plants. Some produce bulk stock, whether seedlings or grafted trees, of particular varieties for purposes such as fruit trees for orchards or timber trees for forestry. Some producers produce stock seasonally, ready in the spring for export to colder regions where propagation could have been started earlier or to regions where seasonal pests prevent profitable growing early in the season.

Propagation Nurseries produce new plants from seeds, cuttings, tissue culture, grafting, or division. The plants are then grown out to a salable size and either sold to other nurseries that may continue to grow the plants out in larger containers or field grow them to desired size. Propagation nurseries may also sell plant material large enough for retail sales and thus sale directly to retail nurseries or garden centers (which rarely propagated their own plants).

Nurseries may produce plants for reforestation, zoos, parks, and cities. With Tree nurseries in the U.S. producing around 1.3 billion seedlings per year for reforestation. Nurseries grow plants in open fields, on container fields, in tunnels or greenhouses. In open fields, nurseries grow decorative trees, shrubs and herbaceous perennials. On a container field nurseries grow small trees, shrubs and herbaceous plants, usually destined for sales in garden centers. These have proper ventilation, sunlight etc. Plants may be grown by seeds, but the most common method is by planting cuttings, which can be taken from shoot tips or roots.



Greenhouse technology in flower production

D.Latha sree

In present scenario of increasing demand for cut flowers protected cultivation in green houses is the best alternative for using land and other resources more efficiently. In protected environment suitable environmental conditions for optimum plant growth are provided which ultimately provide quality products. Green House is made up of glass or plastic film, which allows the solar radiations to pass through but traps the thermal radiations emitted by plants inside and thereby provide favorable climatic conditions for plant growth. It is also used for controlling temperature, humidity and light intensity inside. On the basis of basic material used, building cost and technology used, green houses can be of three types-Low-cost greenhouse: The low-cost green house is made of polythene sheet of 700 gauge supported on bamboos with twines and nails. Its size depends on the purpose of its utilization and availability of space. The temperature within greenhouse increases by 6-10°C more than outside. Medium-cost greenhouse: With a slightly higher cost greenhouse can be framed with GI pipe of 15 mm bore. This greenhouse has a covering of UV -stabilized polythene of 800 gauge. The exhaust fans are used for ventilation which are thermostatically controlled. Cooling pad is used for humidifying the air entering the chamber. The greenhouse frame and glazing material have a life span of about 20 years and 2 years respectively. Hi-tech greenhouse: In this type of green house the temperature, humidity and light are automatically controlled according to specific plant needs. These are indicated through sensor or signal-receiver. Sensor measures the variables, compare the measurement to a standard value and finally recommend to run the corresponding device. Temperature control system consists of temperature sensor heating/cooling mechanism and thermostat operated fan. Similarly, relative humidity is sensed through optical tagging devices. Boiler operation, irrigation and misting systems are operated under pressure sensing system. This modern structure is highly expensive, requiring qualified operators, maintenance, care and precautions. However, these provide best conditions for export quality cut flowers and are presently used by large number of export units.

Marketing

~D. Shymala

There are two main variations of value chains in the African floriculture industry: one for large-scale flower production and one for small-scale floriculture. Large-scale producers are vertically integrated across the whole floriculture process. Small-scale farmers normally sell their products to larger distribution and sale companies with offices in their countries, who transport the products to markets abroad.

In India, marketing of cut flowers is much unorganized. In most of the Indian cities flowers are brought to wholesale markets, which mostly operate in open yards. From here the flowers are distributed to the local retail outlets which more often than not operate in the open on-road sides, with different flowers arranged in large buckets. In the metropolitan cities, however, there are some good florist show rooms, where flowers are kept under controlled temperature conditions, with considerable attention to value added service. The government is now investing in setting up of auction platforms, as well as organized florist shops with better storage facilities to prolong shelf life. The packaging and transportation of flowers from the farms to the retail markets at present is very unscientific. The flowers, depending on the kind, are packed in gunny bags, bamboo baskets, simple cartons or just wrapped in old newspapers and transported to markets by road, rail or by air. However, the government has provided some assistance for buying refrigerated cargos and built up a large number of export oriented units with excellent facilities of pre-cooling chambers, cold stores and reefer vans.



Export

~S. Amulya

In spite of an abundant and varied production base, India's export of floricultural product is not encouraging. The low performance is attributed to many constraints like non-availability of air space in major airlines. The Indian floriculture industry is facing with a number of challenges mainly related to trade environment, infrastructure and marketing issues such as high import tariff, low availability of perishable carriers, higher freight rates and inadequate refrigerated and transport facilities. At the production level the industry is faced with challenges mostly related to availability of basic inputs including quality seeds and planting materials, efficient irrigation system and skilled manpower. In order to overcome these problems, steps must be taken to reduce import duty on planting material and equipment, reduce airfreight to a reasonable level, provide sufficient cargo space in major airlines and to establish model nurseries for supplying genuine planting material. Training centres should be established for training the personnel in floriculture and allied areas. Exporters should plan and monitor effective quality control measures right from production to post harvesting, storage, and transportation.



Indian exports mostly target the events like:

- Christmas
- New Year
- Mothers Day

Floricultural Exports from India;

- Dry Flowers - U.S, Europe, Japan, Australia, Far east, RUSSIA
- Fresh Cut Flowers- Europe, Japan, Australia, middle east, U.S.A
- Loose Flowers- expatriate Indians in gulf
- Cut Foliage- Europe
- Potted Plants- UK



Demand and supply

~A. Lahari

The demand for flowers is seasonal as it is in most countries. The demand for flowers has two components: a steady component and a seasonal component. The factors which influence the demand are to some extent different for traditional and modern flowers.

Traditional Flowers: The steady demand for traditional flowers comes from the use of flowers for religious purposes, decoration of homes and for making garlands and wreaths. This demand is particularly strong in Kerala, Karnataka, Tamil Nadu, Odisha and West Bengal, as the use of flowers for above mentioned purposes is part of their local culture. The bulk of seasonal demand comes from festivals and marriages. The demand is generally for specific flowers.

Modern Flowers: The bulk of the steady demand for modern flowers comes from institutions like hotels, guest houses and marriage gardens. The demand is concentrated in urban areas. With increasing modernization and globalization the demand for modern flowers from the individual consumers is likely to grow enormously as the trend of “say it with flowers” is increasing and the occasions which call for flower giving will continue to present themselves. Although there is an increasing demand for modern flowers from individuals, institutions continue to be the dominant buyers in the market. The price of these flowers also depends on their demand and varies accordingly.

Floriculture Business

~S. Nookaratnam

There is a high scope in both floriculture and horticulture wherein Floriculture businesses produce fresh and dried flowers and foliage for a mixture of markets such as wholesale flower markets, florists and retail outlets, and in some cases for export. Industrial Floriculture has a lot of promise. Soil, environment, manpower, transportation, and demand are all significant factors in deciding the scope of Commercial Floriculture. People now realise the value of open space, parks, and gardens for leisure, peace of mind, leisure, and unpolluted air as almost all major cities expand rapidly to meet this rapidly increasing population, cement concrete, the jungle is also evolving at the same time, and thus people now realise the importance of open space, parks, and gardens for relaxation, peace of mind, recreation, and unpolluted air. Thus, bio-aesthetic planning, which goes hand and hand with town planning, is required to resolve both of these concerns. In today's world, a floriculture garden in a country yard is an important feature of everyday life. G.G.N. Certified Floriculture. The G.G.N. label is a globally recognized symbol of good farming practices. It stands for accredited, responsible farming and accountability, and it's intended to help customers make educated choices about their grocery shopping. The G.G.N. label can be applied to flowers and ornamental items produced on farms and nurseries with GLOBALG.A.P. accredited production processes – or certification from a GLOBAL G.A.P. equivalent analysed scheme.



Economic point of view

~D. Satyawathi

Floriculture is one among many fast emerging ventures around the world. It has the potential in being a money-maker industry hence becoming economically very important. Flowers can be used as ornaments for domestic use as well as exported for decoration purposes providing more return than any other agricultural crop.

It is also economically valuable as the station period of a flower crop is very less compared to the other crops. Nowadays floriculture is also referred to as the production of high-value cut flowers such as Rose, Gladiolus, Carnation, Orchids, Tuberose, Anthurium, Liliun, Gerbera, etc. These Cut flower crops can be used for decorations or making bouquets and their sustainability has increased and their share of the total trade has also been improved. Making dry flowers is presently the trend and the extraction of natural colors and oils from them. The demand for good quality flowers seeds and ornamental plant materials is presently the Global ornamental crop industry is worth more than 70 billion US dollars. Globally the consumption of flowers is approximately 35 million US dollars.

Floriculture is generating self-employment opportunities more and more every year and in this field, the opportunities are as many as the nature of work itself.

A larger than 3 lakh hectares area is used for floral production in various countries across the world. Currently, more than 145 countries are involved in floriculture on the commercial scale

The floriculture industry can be joined by a farm, state manager planting expert, or supervisor in any project coordination research and teaching can be some other approaches for employment in floriculture marketing is emerging as a potential segment of this field for different Ventures work can also be done as a consultant lab architect, etc but requires proper training hence it provides different career opportunities.

Floriculture industry

~K. Sowmya swaraj

Growing Industry: India's floriculture industry has been growing at 15-20% annually. It has huge potential given the varied agro-climatic conditions.

Export Earnings: India earns significant foreign exchange through export of cut flowers, dry flowers, floral decorative's etc. It ranks 11th in the global cut flower export.

Domestic Market: With rising incomes and awareness, domestic flower demand from festivals, occasions, weddings etc. is growing rapidly in Indian cities.

Employment Generation: Floriculture provides jobs to over 2 million farmers and farm workers especially women. It plays an important role in rural livelihoods.

Linkages with Horticulture: Flower farming can boost horticulture sector by diversifying cropping patterns and ensuring year-round utilization of land resources.

Ecological Advantage: Flower cultivation does not deplete soil health like many conventional crops. Several varieties even grow well in degraded/saline soils.

Research & Development:

With strategic R&D, India can develop new advanced varieties and technologies to strengthen the sector.

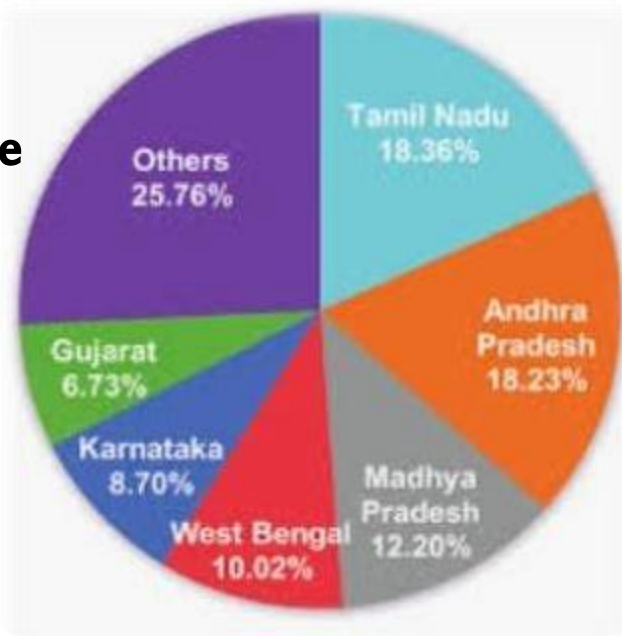
Foreign Exchange Earner: Floriculture has significant potential to augment farm incomes, boost exports and curtail trade deficit through focused development.

Scope for Value Addition: There is scope to add value through processing activities like cut flowers, pot pourri, essential oils etc. to maximize benefits.



The percentage of floriculture production throughout the world

The percentage of floriculture production in India



Government programs and policies

~ Ramya

Department of Agriculture and Cooperation under the Ministry of Agriculture is the nodal organization responsible for development of the floriculture sector. It is responsible for formulation and implementation of national policies and programmes aimed at achieving rapid agricultural growth through optimum utilization of land, water, soil and plant resources of the country. Production of cut flowers for exports is also a thrust area for support. The Agricultural and Processed Food Products Export Development Authority (APEDA), the nodal organization for promotion of agri exports including flowers, has introduced several schemes for promoting floriculture exports from the country. These relate to development of infrastructure, packaging, market development, subsidy on airfreight for export of cut flowers and tissue-cultured plants, database up-gradation etc. The 100% Export Oriented Units are also given benefits like duty free imports of capital goods. Import duties have also been reduced on cut flowers, flower seeds, tissue-cultured plants, etc. Setting up of walk in type cold storage has been allowed at the International airports for storage of export produce. Initiatives have also been launched for the benefit of exporters by providing cold storage and cargo handling facility for perishable products at various international airports. Direct subsidy up to 50 percent is also available in cold storage units. Besides, subsidy is also provided by APEDA on improved packaging materials to promote their use. To attract entrepreneurship in floriculture sector, NABARD is providing financial assistance to hi-tech units at reasonable interest rates.





Several schemes have been initiated by the Government for promotion and development of the floriculture sector including “Integrated Development of Commercial Floriculture” which aims at improvement in production and productivity of traditional as well as cut flowers through availability of quality planting material, production of off season and quality flowers through protected cultivation, improvement in post harvest handling of flowers and training persons for a scientific floriculture. Many state governments have set up separate departments for promotion of floriculture in their respective states. 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 (20) centres. The key focus areas are crop improvement, standardization of agro-techniques including improved propagation methods, plant protection and post harvest management. In recent years, however, technologies for protected cultivation and tissue culture for mass propagation have also received attention. A large number of promising varieties of cut flowers have been developed. All these efforts indicate the government’s commitment for improving the sector and creating a positive environment for entrepreneurship development in the field.

Conclusion

Floriculture has emerged as an important agribusiness, providing employment opportunities and entrepreneurship in both urban and rural areas. National Horticulture Board helps one to establish a flower business. Agricultural and Processed Food Products Export Development Authority helps entrepreneurs with cold storage facilities and freight subsidies. It has been found that Commercial Floriculture has higher potential per unit area than most of the field crops and therefore a lucrative business. During the last decade there has been a thrust on export of cut flowers. The export surplus has found its way into the local market influencing people in cities to purchase and use flowers in their daily lives. Floriculture thus, offers a great opportunity to farmers in terms of income generation and empowerment. Small and marginal farmers may also use every inch of their land for raising the flower and foliage crops. Floriculture also offers careers in production, marketing, export and research. One can find employment in the floriculture industry as a farm manager, plantation expert, supervisor or project coordinator. Besides, one can work as consultant or landscape architect with proper training. In addition, floriculture also provides career opportunities in service sector which include such jobs as floral designers, landscape designers, landscape architects and horticultural therapists. Research and teaching are some other avenues of employment in the field.

Thank you note

We are grateful to our honorable Dr.Sr. Prema Kumari (Principal of our college) for supporting and encouraging and allowing us to write a book.

We would also like to thank to our most respected Adi shesu madam for acknowledging us to write a book. Your encouragement and support and guidance help us in all aspects of this book. Thank you madam for giving encouraging us to write a book. Further, we would like to work in various activities with you just like now

We would also like to thank to our most respected Lakshmi tulasi madam for your encouraging supportive words and your guidance helped us in all ways. We want you to support and help us in future activities also as you supported us now.

Reference

- We also referred some of the PPT's Some of the information is referred from Library
- We referred the above information through some websites of Google

Slide share website:

<https://www.slideshare.net/>

Vikaspedia: <https://vikaspedia.in/>

The University of Massachusetts

Amherst: <https://www.umass.edu/>

Thank

you



Floriculture

**St. Ann's college for women,
malkapuram.**
