

# Unit

## 1



# Introduction To Floriculture

## INTRODUCTION

Ornamental plants and flowers are associated with our civilisation since time immemorial. The first evidence of *pipal* as an ornamental plant comes from the seal of Mohen-jo-daro. Another example during the same period, depicting the use of an ornamental plant resembling weeping willow, comes from the seals of Harappa. There has been a mention of flowers and gardens in our ancient classic literature too.

Although loose flowers were cultivated for domestic uses like making of *veni*, *gajra*, garlands, etc., and for various celebrations, such as marriage, birthday, religious offerings and other social gatherings, cultivation of cut flowers on commercial scale for domestic and export purposes is of recent origin in our country.

Floriculture is an important branch of horticulture, which deals with cut or loose flowers, ornamental plants, such as foliage plants, trees, shrubs, climbers, palms, bamboo, cacti and succulents, dried flowers, essential oils and landscape gardening. Gardening, an important part of the floriculture business, has aesthetic value and is becoming a necessity for pollution-free environment in cities.



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## FLORICULTURE

Floriculture is a branch of horticulture that deals with the cultivation, processing and marketing of ornamental plants vis-à-vis landscaping of small or large areas, and maintenance of gardens so that the surroundings may appear aesthetically pleasant.

Floriculture includes annual (seasonal), biennial and perennial ornamentals, such as cacti and other succulents, bromeliads, trees, shrubs, climbers, bulbous plants, lawn and ornamental grasses, bamboos, orchids, palms, cycads, foliage, bedding, pot and house plants, cut and loose flowers, fillers, ferns, seed and bulb production of ornamentals, dried flowers or plant parts, and other value-added products, such as extraction of essential oils, edible pigments, and their marketing vis-à-vis making and maintenance of gardens.

The Floriculture Industry in India comprises flower production and trade of flowers, nursery and potted plants, seeds and bulbs, nursery, plant rental services, propagation through tissue culture and essential oils extraction.

### Importance and uses of floriculture

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, lily, 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 foliage (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 foliage 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*,



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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



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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 centrepiece in a vase, they add beauty to the table and the entire room.

### **Present status of floriculture in India**

Due to change in lifestyles and increase in the per capita income of people, the demand for floriculture has increased substantially. At present, it has become one of the profit-making trades because of constant rise in the demand of flowers and its products.

- As per the National Horticultural Database, the major flower producing States are Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal Maharashtra, Madhya Pradesh, Gujarat and Haryana.
- The various fields of revenue generation in floriculture includes cut flower production, loose flower production, dry flower, nursery, potted plants, seed industry, extraction of essential oils and value-added products.
- Several seed companies have established production units in major flower growing States to meet the demand of flower seeds.
- Seasonal flowers and seed production is an established business in Punjab, Karnataka and Maharashtra.
- The Government of India has set up six agri-export zones for floriculture in Maharashtra, Sikkim, Tamil Nadu (two zones), Uttarakhand and Karnataka.
- The United States, Germany, the United Kingdom, the Netherlands and the United Arab Emirates are the major countries, which import floricultural produce to India. The Agricultural and Processed Food Products Export Development Authority is responsible for the export, promotion and development of floriculture in India.

### **Prospects of floriculture in India**

Since time immemorial, India has a tradition of growing flowers. In our country, it is considered as a high



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growth industry. Export-oriented flower production has increased due to the government's policies. The scopes of floriculture in India are as follows:

- The opportunities for floriculture are increasing due to various uses of flowers in aesthetic sense, urbanisation and substantially increased purchasing power of people.
- The demand for floricultural plants and their produce, such as bouquet, garland, *veni* and value-added products like dry flowers and potpourris is increasing by the day. They are required in various functions and celebrations.
- Strategically and geographically, our country is well located between major flower markets, i.e., Europe and East Asia.
- The diverse agro-climatic conditions in the country enable the growth of all type of flowers in one season or the other.
- Landscaping has become an integral component of urban horticulture, which apart from adding aesthetic value to a place, protects the environment, reduces air and noise pollution, and promotes ecotourism.
- Lawn establishment and maintenance, a lucrative enterprise, has become an integral part of landscaping. It requires skilled, as well as, unskilled human resources.
- In light of climate change, the scope of turf or lawn grasses, vertical gardening, roof gardening, etc., is on rise.
- Increasing industrialisation and depleting agricultural land have opened avenues for production and marketing of potted plants. These have also opened avenues for plant rentals for interior decoration in hotels, corporate houses, etc.
- The Nursery Industry is coming up as a flourishing enterprise, giving high returns. There is a demand for high quality flower seeds, including F1 hybrids.





- Protected or hi-tech cultivation of cut flowers has a great future in our country. Here, one can increase the area under intensive flower production to increase floricultural exports.
- Extraction of essential oils, natural dyes, and pharmaceutical and naturaceutical compounds from flower plants is also an important activity, and is emerging as a lucrative business.

## **Classification of ornamental plants**

Ornamental plants can be classified in the following manner.

### **Based on life span**

#### ***Annuals***

Plants, which complete their life cycle—from seed germination to seed production in one growing season, are called ‘annuals’. They complete life cycle—seed germination, growth, flowering, seed formation and die in one growing season or year. They require replanting every season. They are mostly grown through seeds and are commonly called ‘seasonal’, for example China aster, coreopsis, gomphrena, marigold, petunia, tithonia, verbena, zinnia, etc.

#### ***Biennials***

These are plants that complete their seed-to-seed life cycle in two seasons or years. Usually, most of the temperate seasonals are biennial in nature as they complete vegetative growth in one season or year and flowering to seed formation in another season or year, such as amaranthus, celosia, hollyhock, pansy, snapdragon, etc. These require replanting.

#### ***Perennials***

These are plants having a life cycle that is more than two years. These produce seeds or flowers every year once the bearing starts. They do not require replanting. Perennials are, usually, categorised into two groups.



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### *Woody perennials*

These comprise most of the trees, shrubs and vines, which have woody stems and branches, such as *Cassia siamea*, *C. fistula*, *Peltophorum*, *Cassia biflora*, *Lawsonia alba*, *Hibiscus rosa-sinensis*, *Petrea volubilis*, *Quisquallis indica*, *Vernonia eleagniaefolia*, etc.

### *Herbaceous perennials*

These include plants with soft and herbaceous (non-woody) main stalk, such as anthurium, bird of paradise, geranium, gerbera, heliconia, pelargonium, periwinkle, portulaca, perennial balsam, sweet violet, viola, etc.

## Based on season of growth

### **Winter season annuals**

Winter season annuals are hardy. These can grow during the rigours of winters and withstand low temperatures. The seeds of annuals are sown in September-October and the seedlings are transplanted during October-November. Examples are candytuft, antirrhinum, larkspur, nasturtium, pansy, petunia, phlox, sweet sultan, verbena, etc.

### **Summer season annuals**

These annuals are grown during the summer season and can bear high temperatures to produce flowers. The seeds are sown in February-end or the beginning of March, and the seedlings are transplanted in the end of March or April. Examples are cosmos, gaillardia, gomphrena, kochia, portulaca, sunflower, tithonia, zinnia, etc.

### **Rainy season annuals**

These are grown in the rainy season and can produce flowers under high humidity and rain as compared to other annuals. The seeds are sown in June and the seedlings are transplanted in July. Examples are amaranthus, balsam, celosia, cock's comb, gaillardia, etc.



## Based on market value

### **Loose flowers**

Loose flowers are harvested without stalk. Examples are barleria, bedding dahlia, calotropis, chrysanthemum (spray type), *chandni*, crossandra, eranthemum, gaillardia, jasmine, *kamini*, *kaner* (yellow and red), lotus, marigold, rose (fragrant *desi* type), shoe flower (*hibiscus*), sunflower, tuberose, water lily, etc. They are used for making *rangoli*, *gajra*, *veni*, garlands, and offered for worship at home, as well as, religious places.

### **Cut flowers**

Cut flowers are fresh flowers, flower buds or spikes harvested along with their stalks attached to the flowers, the length of stalks being specified to individual flowers. Examples of cut flowers are alpinia, anthurium, antirrhinum, bird of paradise, carnation, freesia, gerbera, gladiolus, gypsophila, heliconia, iris (bulbous), lupins, narcissi, orchid, rose (improved varieties), scabiosa, statice, tuberose, watsonia, etc. They are mostly used for bouquets and for vase arrangements.

### **Flowers yielding value-added products**

They are used as raw material in industries for the extraction of essential oils and also for preparing edible products, such as *gulkand*, rose water and pigments as natural colours. They are also used as dry flowers, such as acroclinum, jasmine, marigold, rose, etc.

## Based on plant type

### **Herbaceous**

Lilium, verbena, viola, etc.

### **Shrubs**

Bougainvillea, jasmine, lawsonia, hamelia, nyctanthes, rose, tecoma, etc.

### **Trees**

Gulmohar, *palash*, *amaltas*, *kadamb*, pride of India, etc.



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### **Climbers and creepers**

Adenocalymma, antigonon, Rangoon creeper, *madhulata*, petrea, thunbergia, etc.

### Based on mode of propagation

#### **Bulbous plants**

Lily, narcissus, tuberose, tulip, etc.

#### **Cormous plants**

Crocus, gladiolus, tritonia, watsonia, etc.

#### **Rhizomatous plants**

Canna, hedychium, iris, lotus, etc.

#### **Tuberous plants**

Begonia, dahlia (root tuber), etc.

## Practical Exercise

### Activity

**Identify common flowers and ornamental plants.**

**Material required:** Pen, pencil, practical notebook, herbarium file, etc.

#### **Procedure**

- Visit a nearby nursery, garden or flower market.
- Collect the specimen of various ornamental plants or flowers available there.
- Identify and list the collected flowers.
- Maintain a herbarium record or paste flower images on the practical notebook.
- Classify the flowers on the basis of their life cycle, season of growth and growth behaviour.

### Check Your Progress

#### **A. Fill in the Blanks**

1. Plants with soft and non-woody main stalk are known as \_\_\_\_\_ perennials.
2. Trees, shrubs and vines come under \_\_\_\_\_ perennials.



3. Plants that complete their life cycle in one year are known as \_\_\_\_\_.
4. Plants that complete their life cycle (seed-to-seed) in two seasons or two years known as \_\_\_\_\_.
5. The Government of India has set up \_\_\_\_\_ agri-export zones for floriculture.
6. Plants grown inside a house known as \_\_\_\_\_ plants.
7. A \_\_\_\_\_ is an integral part of a garden.
8. Nurseries are meant for multiplying and supplying \_\_\_\_\_ material.
9. Cut greens or green foliage are used as \_\_\_\_\_ with cut flowers in flower arrangement.

**B. Multiple Choice Questions**

1. Floriculture is a branch of horticulture that deals with the \_\_\_\_\_.  
 (a) processing of vegetables    (b) planting crop  
 (c) production of fruits        (d) cultivation of flowers
2. Cut flowers are harvested \_\_\_\_\_.  
 (a) with stalk                      (c) without stalk  
 (b) with whole plant              (d) with leaves
3. The perception of beauty and study of its appreciation is called \_\_\_\_\_.  
 (a) aesthetic value                (c) cosmetics  
 (b) pharmaceuticals              (d) cultivation

**C. Subjective Questions**

1. Describe the following:  
 (i) Floriculture  
 (ii) Cut flowers  
 (iii) Cut greens
2. Describe the prospects of Indian floriculture.
3. Describe lawn and state its importance.
4. What is indoor gardening?
5. Give two examples of the following ornamentals:  
 (i) Shrubs  
 (ii) Trees  
 (iii) Annuals  
 (iv) Herbaceous perennials

#### D. Match the Columns

A	B
1. Annuals	(a) China aster
2. Biennials	(b) Hollyhock, pansy
3. Perennials	(c) <i>Cassia fistula</i> , <i>Hibiscus rosa-sinensis</i>
4. Rhizomatous plants	(d) Canna, iris, lotus
5. Cormous plants	(e) Crocus, gladiolus
6. Tuberous plants	(f) Lily, tuberose, tulip

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