HORTICULTURE – INTRODUCTION AND BRANCHES

DEFINITION AND CONCEPT OF HORTICULTURE: -

The term 'Horticulture' has been derived from two Latin words – *hortus* means garden and *cultura* means cultivation. Horticulture is defined as "Science and art of cultivating, processing and marketing of fruits, vegetables, nuts and ornamental plants".

As a general term, it covers all forms of garden management, but in ordinary use it refers to intensive commercial production. Scholars have been writing about horticulture for centuries, including ancient Greek and Roman scholars. Among the Romans, Cato the Elder, Varro, Columella, Virgil, and Pliny the Elder stand out. Virgil, better known for his *Aeneid*, set down his reflections on horticulture in the *Georgics*. As a poet, his work on the subject is appreciated more for the way he related the information than for the factual content.

BRANCHES OF HORTICULTURE: -

There are mainly five branches of horticulture dealing with food production, ornamental and aesthetic values as well as having ecological significance. They are – olericulture, pomology, floriculture, nursery management and landscaping.

I. OLERICULTURE: -

Olericulture is a branch of horticulture, which deals with the commercial production of vegetables. Vegetables are a major part of human diet. In India, vegetables are extremely essential because large sections of the people are vegetarian. Vegetables are the best sources of proteins, different elements, vitamins, minerals, organic acids, carbohydrates, fats, etc. Therefore, olericulture has become one of the important branches of horticulture.

The area under vegetable cultivation in India is about 2 million hectares, excluding potato. The greatest demand is by the urban population. Vegetables are mostly herbaceous perennials and they perish on prolonged

storage. Hence, they should be consumed as early possible after harvest. More than twenty vegetables can be grown in the backyard itself for fresh consumption.

In botanical sense, any part of the plant usually eaten either raw or cooked and taken with the main course of a meal is considered as a vegetable. Although vegetables are derived from different parts of plants, a majority of them are from four different families – Brassicaceae, Solanaceae, Cucurbitaceae and Fabaceae. Vegetable crops are broadly classified into nine different groups, root, bulb, legume, fruit vegetable, cucurbits, tuber, rhizome and leafy vegetables.

Olericulture is an ancient art which involves the use of many skills and techniques. It requires the knowledge of planning, planting, propagating, harvesting of the vegetables, etc. Besides these, irrigation techniques, use of specialized equipments and technologies, post harvest management, packaging, marketing, and advertising are other important areas of olericulture where expertise is required. With the help of modern techniques in biotechnology, new hybridization techniques have been developed and high-yielding and improved strains of vegetable crops have found their way into the olericulture industry too.

In general, the vegetable industry or olericulture is divided into three parts –

i. **Home gardening:** It is a branch of olericulture, dealing with production of vegetables for home consumption. Home gardening is still the most important source of vegetable production in many countries.
ii. **Market gardening: I**t is a branch of olericulture, dealing with the production of vegetables for market sale. It is developed from local gardens and farms. It involves intensive production of many kinds of vegetables for large population.
iii. **Truck farming:** It is a specialised branch of olericulture, which deals with large scale commercial production of vegetables for market sale and also for export. It has become one of the most important types of modern vegetable industry.

Suitable season, climatic conditions and soil types are the extremely essential conditions for truck farming. Commercial vegetable farming in temperate climate is based on single cropping pattern, wherein only one plant species is cultivated with yearly rotation. In tropical areas, truck farming involves multiple cropping patterns which involve simultaneous commercial cultivation of two or more crops. It predominates on small farms producing cereal grains, legumes, starchy roots, corms, tubers, etc.

India has shown tremendous progress in olericulture by increasing vegetable production in the post-Independence period. Now it is the second largest producer of vegetables all over the world. It produces over 70 million tonnes of vegetables at a time. Therefore, with the use of innovative modern techniques and skills, olericulture in India is doing fast progress and thereby helping the country to receive foreign currency by exporting best quality vegetables.

II. POMOLOGY: -

The technique and art of growing, maintaining and harvesting fruit crops is called pomology. Since time immemorial, fruits have been the source of food for human beings as they used to reap the harvest of fruits and enjoy their flavour and taste. The importance of fruits in human diet cannot be underestimated. They are the chief sources of some of the essential minerals and vitamins. A few of them have high medicinal value. Fresh fruits contain sugars that provide energy without rapid rise in blood sugar levels. The cultivation of fruits has been considered as a highly priced enterprise in recent years as it fetches attractive monetary returns.

There is not any country in the world that cultivates as many fruits as in India. The main reason is that India is in a fortunate position of having rich diversity of agro-climatic conditions and soil. The total production of fruits in India is approximately 8 million tons. Mango is the chief fruit and covers nearly 50% of the total area under fruit cultivation, followed by banana and citrus fruits. Other economically important fruit crops are grapes, guava, papaya, custard apple, pomegranate, sapota and jackfruit. Temperate fruits like apple, pear, peach and plum are grown over an area of about 20,000 ha. Palmyra palm and date palm is not included in pomology but coconut palm is included in view of its economic importance and ornamental value in the juvenile phase.

Pomology is divided into following three branches:

i. **Practical Pomology:** It is referred to as fruit production. Modern scientists refer to pomology as the actual growing of fruits.
ii. **Commercial Pomology:** It is primarily the marketing and disposition of fruits, including their storage, preparation for market and many other areas, transportation and outlets, etc.
iii. **Systematic Pomology:** It is the knowledge of plants as they grow, with their distributions and their habitats.

Fruits vary in numerous ways. Some are borne on trees, others on bushes. Growing fruits is a long-term operation. Fruit trees take a long time to come into bearing. They also require more growth space per plant than vegetables. An area of land in which fruit trees are grown in significant concentration is called an orchard. Fruit trees such as apples, oranges and pear are operationally distinguished from small fruits such as grapes, blueberries and strawberries. A person engaged in cultivating, harvesting and marketing of fruits is a pomologist. Many pomologists have their orchards as a business, for eg. Mango orchards in the Konkan, grape vineyards of Nasik, oranges in Nagpur, apples in Himachal Pradesh, coconut in Kerala, etc.

III. FLORICULTURE: -

According to any botanist, a flower is a modified shoot specialized for carrying out sexual reproduction. It is defined as the part of the plant with either male or female or both reproductive structures. They are considered as the most attractive part of a plant when they are in full bloom.

The floriculture is defined as 'the art and knowledge of growing flowers to perfection'. In horticulture though, floriculture includes not only flowering plants but also decorative foliage plants, cacti and succulent plants, etc. The arts like bonsai, ikebana, etc also come under floriculture. In growing large cities, botanists and horticulturists have been creating awareness about the importance of indoor gardening in limited available space with the help of flower shows. Bonsai, dish gardens and terrariums have received considerable attention when raising indoor gardens. In the rapid global commercialization of agriculture, floriculture has emerged as a fast growing industry. The world trade in floriculture industry is about 50-billion US dollars while India's contribution is just about 3 million. One should thus develop interest in living and growing in the company of flowers as according to Wilberforce, 'lovely flowers are the smiles of God's goodness.'

Scope of Floriculture: -

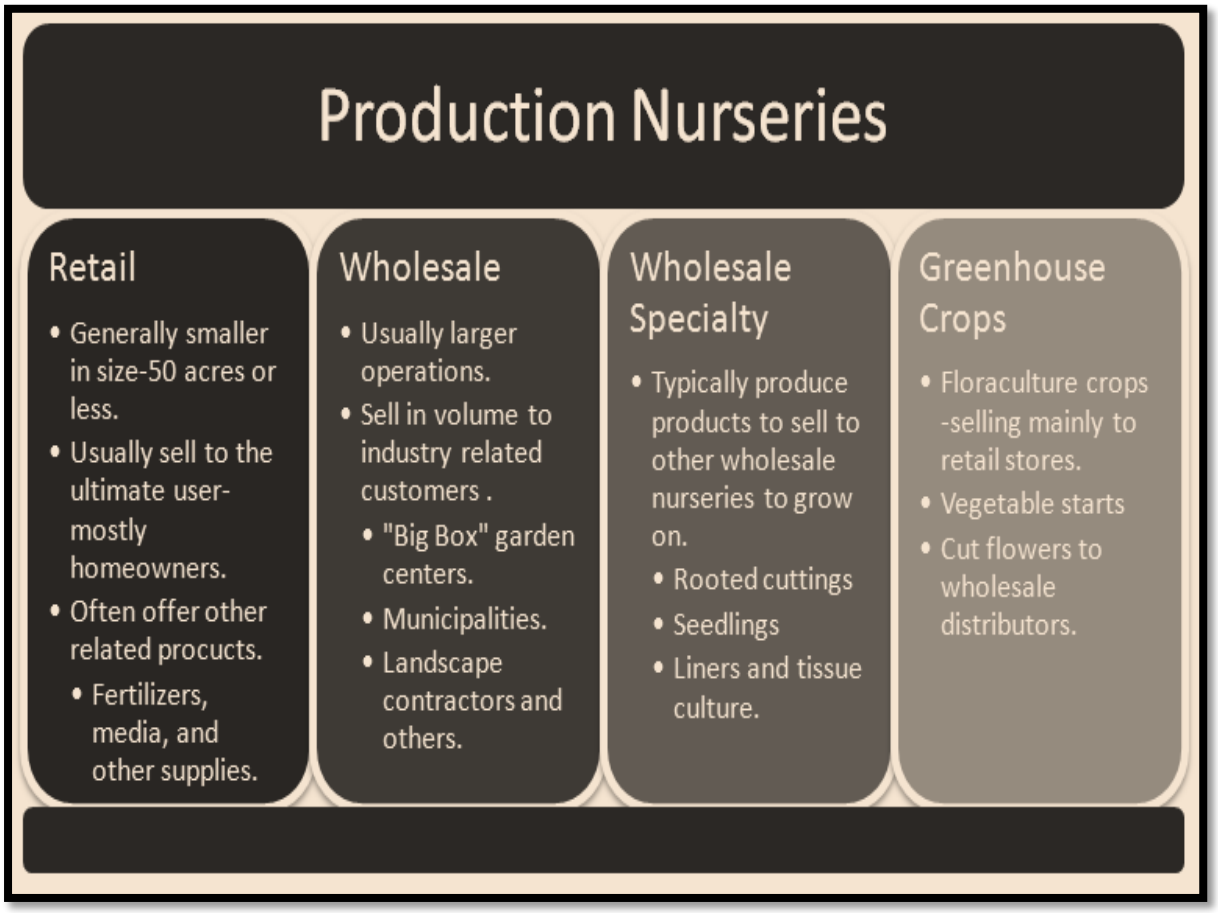
1. Commercially, floriculture can open up great opportunities to our poor farmers and unemployed youngsters.
2. Our country, with its diverse climatic conditions, offers the scope for growing several kinds of commercial flowers.
3. The cultivators / farmers can utilize a part of their land for growing commercial and common flowers like marigold, China aster, *Chrysanthemum*, etc which do not require much care and generally earn more profit than any other crops.

4. The government can organize flower shows in society and offer them help right from cultivation to selling of produce.
5. India has made a good progress, and there are many affluent people who can afford to buy flowers and floricultural products. The market will thus extend more.
6. Besides, nursery and quality seed production can be some of the ways to increase foreign exchange through production and sale.
7. By updating our scientific knowledge of growing flowers, we can increase the per hectare yield tremendously.
8. We have enough scope to standardize the production technology to get quality bloom.
9. In India, floriculture being an upcoming field, offers much scope for improvement in several aspects like conservation, domestication, introduction, processing and marketing.
10. Lots of wild / country breeds of flowering plants are threatened by increasing urbanization, industrialization and irrational collection of flowers from the nature. Such risks / challenges can be overcome only when the plants are conserved / protected.
11. The wild plants can be domesticated into potent ornamental sources by taking long term efforts on them.
12. Introduction of flowering plants from the wild to routine cultivation or from other country to India offers a good scope for enriching our ornamental heritage.
13. We have enough scope in the extraction of essences and pigments from flowers particularly which can be used in perfumery industry and dye industry.
14. Research offers a good scope in floriculture. It can include hybridization, mutation, polyploidy, propagation, dwarfing of plants, extending the blooming period, increasing stress tolerance, etc.
15. Modern techniques can be adopted in the field of marketing, storage and transport, grading and packaging of flowers.

IV. NURSERY MANAGEMENT: -

The growth in the horticultural industry today is attributable in part to the growth in the nursery industry. Nursery is the place where planting materials are raised either by seeds or by vegetative means with care before transplanting at the desired site. The word ‘nursery’ is also sometimes used for young saplings raised by seeds. Nurseries provide seedlings to growers who do not want to raise plants from scratch and prefer to take advantage of their convenience. In fact, some plants are difficult to propagate without special conditions that the

home-owner ordinarily cannot provide. Nurseries also grow and sell mature plants in containers for use indoors and outdoors. Nurseries facilitate the work of landscape architects and contractors by providing materials that are ready to be installed on-site enabling a bare ground to be instantly transformed into a lawn with trees and other ornamental plants. Commercial nurseries are equipped to provide ideal conditions for plant growth. By growing plants under a controlled environment, nurseries provide growers a head start on plant production for the season. They start the plants in the greenhouse in winter when growing them outside is impossible. These plants are timed to be ready for transplanting into the field when spring conditions arrive. Nurseries produce a variety of plants – bushes, trees, tubers, roots and other succulent and woody plants. They can handle tropical and temperate plants both because they are equipped to control the plant growth environment. The small scale home-growers can also purchase portable plant growth chambers for use at home.



V. LANDSCAPING: -

Landscaping is the use of ornamental plants and other elements to fulfil aesthetic and functional purposes. The professionals who design such plans are called landscape architects. Since landscaping can

enhance a property, it has become an integral part of home construction. Commercial facilities and other public areas are also appropriately landscaped. Malls, playgrounds, boulevards and parks are examples of public places where ornamental plants are used to enhance the environment aesthetically and make it more functional. The use of plants indoors is called as 'interiorscaping'.

Significance of landscaping:

i. Landscaping offers privacy to the constructed areas in an aesthetically appealing way, for instance in bungalows and villas.
ii. Boundaries created naturally in landscaping provide the required safety to the members.
iii. Once the plants are established, the maintenance is easy and conveniently carried out at the discretion of the owner with full flexibility.
iv. Landscaping gives a natural look to the surroundings in urban areas and offers comfort.
v. A property with good landscape automatically gets good real estate value in the market.
vi. Landscaping helps to blend the urban concrete areas with the natural ones in a subtle and pleasant way.
vii. Recreational grounds can be created in urban areas, which will improve the health of the people.
viii. Ecologically, it is always useful as it reduces noise and air pollution to a large extent.

IMPORTANCE OF HORTICULTURE: -

1. Horticulture is an intensive subset of agriculture that deals with flowers, landscape plants, vegetables, and fruits.
2. Today, horticulture is focused on finding new and environmentally-responsible ways of managing plants and pests to help increase crop and ornamental plant viability.
3. Plants are also very important in environmental protection.
4. They are used to re-vegetate and restore land disturbed by human or natural activities, they control erosion, and they help to clean the air and water.
5. Plants also have an important role in the beautification of urban and rural landscapes and recreation areas.
6. Horticulture is socially important because it improves how we use plants, for food and other human purposes, as well as repairing the environment and personal aesthetics.
7. There are several direct and indirect job opportunities in the field of horticulture. One can be a greenhouse manager, nursery manager, florist, flower grower, researcher, extension officer, sales or marketing officer, teacher, farm manager, etc. Other supporting or service industries also offer good job opportunities.

JOBS IN HORTICULTURE: -

There are two types of job sectors if one pursues horticulture as a higher field of study – direct and indirect jobs.

Direct Jobs: -

A large number of jobs require knowledge and training in horticulture. The level of training could be vocational or at the college level. The work may be indoors or outdoors. Intense manual labour or paperwork in the office may be involved. Many jobs in horticulture require a high school diploma and a short course in horticulture or agriculture. Konkan Krishi Vidyapeeth at Dapoli near Ratnagiri, Maharashtra offers a graduation and post-graduation course in Horticulture and Agriculture. A college education provides in-depth knowledge

of the field and offers job opportunities at supervisory or managerial levels and to conduct research. The following are selected categories of jobs that require varying degrees of familiarity with horticulture:

1. Greenhouse manager or worker
2. Nursery manager or worker
3. Florist
4. Flower grower
5. Researcher
6. Extension officer
7. Sales or marketing officer
8. Teacher / Guide
9. Farm manager

Certain jobs do not require any familiarity with horticulture by way of formal training. For example, one can find numerous jobs in the greenhouse that requires only an ability to follow directions and instructions and a sense of responsibility. Many workers in the greenhouse perform jobs such as watering, transplanting, filling pots with media, harvesting produce and so on. Job prospects for those who pursue formal training in horticulture or agriculture are very bright.

Indirect Jobs: -

The ornamental industry has spawned a number of supporting or service industries, including the following:

1. **Research:** Many scientists are engaged in developing new and improved types of vegetables, fruits and ornamentals. These new cultivars may have wider and better adaptation, be higher yielding and of higher nutritional quality, and have other qualities depending on breeding objectives. Research is conducted in both private and public sectors to find solutions to problems in the horticultural industry. College-level training is required to adequately prepare for a career in research. Research institutes invest a great amount of human and financial resources in developing new cultivars, which is why commercial seed companies sell their improved seeds at premium prices. Apart from improving the agronomic and nutritional qualities of plants, horticultural scientists also devote considerable time to improving the aesthetics of ornamentals and the quality of products.

2. **Chemical industry:** The horticulture industry depends on large amounts and varieties of chemicals, including fertilizers, pesticides and growth hormones. Many companies are involved in producing chemicals that are used to enhance plant production and the quality of produce. Agrochemicals are an integral part of modern high-input production practices. The increasing trend towards ensuring a safer environment has been the impetus for the creation and enforcement of laws and guidelines for the judicious and safe use of chemicals. Crop production using little or no chemicals, called organic farming, is gradually gaining popularity.
3. **Machinery:** Engineers design and produce tools and machinery for use in the production of horticultural plants. Machinery and implements are available for preparing land, planting, cultivating, spraying, harvesting, storing and packaging. These aids enable large-scale production of horticultural plants to be undertaken. Home garden versions of some of this machinery and equipment are available.
4. **Distribution:** Horticultural products are transported from the areas of production to marketing outlets. Because of their largely perishable nature, horticultural produce and products require special handling in transportation to retain their quality for a long time. Certain items require refrigeration during storage. Horticulture has spawned an elaborate transportation and distribution network. Because most horticultural products are harvested and used fresh, the ability to preserve quality in transit is critical to the industry. In certain cases, the produce is harvested before it ripens in order to increase its shelf life. Home gardeners have the advantage of ready access to vine-ripened and fresh produce.

Numerous jobs are available in these four general areas at various levels. These jobs can be obtained by persons trained in fields other than horticulture, such as basic science, engineering, economics, marketing, agribusiness, genetics and post harvest physiology.