

# SYLLABUS FOR ASSISTANT PROFESSOR, HORTICULTURE TECHNOLOGY

## Unit 1. Production Technology of Flowers

**Introduction to Flowers production** ; Scope and significance in global trade, Global cut flower production and varietal diversity, IPR issues affecting trade- Commercial Greenhouse production of Major cut-flowers, filler and foliage crops.

**Commercial cultivation of major flower crops in open environment. Growing environment requirements:** Types of greenhouses, greenhouse . Environment control management: temperature, light, humidity, air,

CO<sub>2</sub>. Containers, substrates, and nutrient and weed management in protected, fertigation, Soil requirements and artificial growing media, Special horticulture Techniques like use of growth regulators, forcing and year round flowering and targeting for specific markets

**Management of Pests Disease and physiological disorders Post harvest requirements of crops including quality standards, harvest indices packaging, storage and transport** Economics of production of major flower crops , **Marketing strategies, branding, value addition , export requirements etc.**

**Unit 2. Value addition in Floriculture:** Production and export opportunities in value-added floral products, Supply chain management in the value addition process; **Dried flowers** Raw material procurement, preservation, and storage, Techniques in dry flower making, **Value addition of loose flowers, Value addition in cut flowers:** flower arrangement styles , containers and accessories. Value chain in natural pigments and essential oils, Packing and storage, marketing and considerations for concrete and essential oils

**Unit 3 LANDSCAPE DESIGN:** Principles & Elements of Design, Formal and informal garden styles, Plant scape and hardscape components of landscape design Major garden design types Landscaping for specific situations: institutions, industries residents, hospitals, roadsides, traffic islands, dam sites, IT parks, corporates. Vertical garden, roof garden, bog garden, sunken garden, rock garden, Clock garden, colour wheels, temple garden. Bio-aesthetic planning, Eco-tourism and its relationship with landscaping, Theme parks water scaping, xeriscaping, hardscaping

**Unit 1 : Introduction:** Overview of commercial fruit varieties of regional, national, and international importance for temperate, subtropical, tropical fruit crops and plantation crops

**Unit 2: Propagation and Rootstocks:** Recent trends in fruit propagation methods,

Influence of rootstocks on fruit production of temperate, subtropical, tropical fruit crops and plantation crops

**Unit 3: Planting and Cropping Systems:** Planting systems and their impact on fruit crops, High density plantations systems in fruit crops, Cropping systems for efficient fruit production; Root Zone and Canopy Management, Nutrient management practices for optimal fruit growth, Water management techniques in fruit cultivation; Fertigation and Bio-Regulators: Role of fertigation in providing nutrients to fruit crops; Abiotic Factors and Physiology of Fruit Production, Physiology of flowering, pollination, fruit set and role of honeybees in cross-pollination and fruit yield; Physiological Disorders and Quality Improvement: Causes and remedies of physiological disorders in fruit crops, Importance, Advantages and factors affecting Canopy Management; Techniques to manipulate the canopy for efficient light interception, utilization and distribution; Spacing considerations for efficient land area utilization in canopy management; Classification of canopies based on growth habit and characteristics, Canopy Development and Management in Relation to Growth, Flowering, Fruiting, and Fruit Quality: Micro Irrigation and Fertigation: Importance of micro irrigation

and fertigation; Harvesting, Grading, Packing, Storage, and Ripening Techniques: Maturity indices for fruit harvest, Techniques for grading, packing, storage, and ripening of fruits;

**Unit 4: Specific Fruit Crops and Cultivation:** Cultivation practices for specific fruit crops: mango, banana, citrus, papaya, guava, sapota, jackfruit, pineapple, annonas, avocado, aonla, pomegranate, ber, apple, pear, quince, grapes, plums, peach, apricot, cherries, litchi, loquat, persimmon, kiwifruit, strawberry; Cultivation of nuts: walnut, almond, pistachio, pecan, hazelnut Minor fruits: mangosteen, carambola, bael, wood apple, fig, jamun, rambutan, pomegranate.

Importance & scope of vegetables. General principles of vegetable production. Area and production of vegetable crops in India, climatic and soil requirements, commercial varieties / hybrids, sowing / planting times and methods, seed rate and seed treatment, nutritional and irrigation requirements, inter-cultural operations, weed control, mulching, physiological disorders, harvesting, post-harvest management, plant protection measures and seed production techniques in vegetable crops and related problems.

## UNIT-2

Origin, classification, cytogenetics, floral biology and breeding behaviour of different vegetables; methodology for the improvement of different self-and cross-pollinated vegetable crops including breeding for disease and insect resistance; Role of

molecular markers in the evolution and characterization of vegetable crops.

### **UNIT-3**

Role of auxins, gibberellins, cytokinin's and abscisic acid; Application of synthetic hormones, plant growth retardants and inhibitors for various purposes in vegetable crops

### **UNIT-4**

Production technology, breeding, post-harvest management and plant protection measures of underutilized vegetable crops (Asparagus, Elephant foot yam, lima bean, Sweet gourd, spine gourd and pointed gourd).

### **UNIT-5**

Organic farming in vegetable production. Importance, principles, perspective, concept and component of organic production of vegetable crops. Methods for enhancing soil fertility, mulching, raising green manure crops. Indigenous methods of compost, Panchagavya, Bio-dynamics, preparation etc.

### **SPICES, PLANTATION, MEDICINAL & AROMATIC PLANTS**

Role of plantation crops in the national economy, Export potential of plantation crops, Intellectual Property Rights (IPR) issues related to plantation crops, Clean Development Mechanism (CDM) and its relevance to plantation crops, Classification and varietal wealth of plantation crops, Plant multiplication techniques, including in vitro multiplication, Systems of cultivation for plantation crops, Multitier cropping and its benefits, Precision farming

techniques for plantation crops; Specific plantation crops and their cultivation: Coffee and tea, Cashew and cocoa, Rubber, palmyrah, and oil palm, Coconut and arecanut, Wattle and betel vine; Climatic and soil requirements for spice cultivation; Commercial varieties and hybrids of spice crops, Site selection and layout planning for spice cultivation, Physiological disorders in spice crops; Harvesting methods for spice crops, Post-harvest management of spice crops, Plant protection measures for spice crops, Seed planting material and micro-propagation techniques; Protected cultivation techniques for spice crops; Specific spice crops and their cultivation: Black pepper, Cardamom, Clove, Cinnamon and nutmeg, Allspice, Turmeric, Ginger and garlic, Coriander, fenugreek, cumin, fennel, ajwain, dill, celery, Tamarind, Garcinia, Vanilla.

### **POST HARVEST TECHNOLOGY**

Maturity Indices and Harvesting Practices; Respiration and transpiration processes in fruits and their implications; Understanding the physiological and biochemical processes involved in fruit ripening; Role of ethylene in fruit ripening and strategies for ethylene management; Factors contributing to post-harvest losses in fruits and

their prevention; Pre-cooling techniques and treatments to maintain fruit quality prior to shipment. Post-harvest Treatments; Different storage; Common physical injuries; Packing methods and transportation; Fruit Preservation and Processing; Dried and Dehydrated Fruit Products, Nutritionally Enriched Fruit Products and Fermented Beverages, Packaging, Food Safety Standards.

**Note:-**

If any aspirant has any observation with regard to syllabus, he/she may write mail on:  
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