



# **SunRise University**

Approved by Govt. of Rajasthan vide Sunrise University Act, 2011  
Recognized by UGC Act, 1956 u/s 2 (f)

**Scheme**

**For One year Diploma in  
Horticulture**

**2023-24**

**SCHOOL OF AGRICULTURE**

**SUNRISE UNIVERSITY - ALWAR**



**SUNRISE UNIVERSITY – ALWAR**

**Campus: Bagad Rajput, Ramgarh, Alwar, Rajasthan 301028**

**1<sup>st</sup> YEAR**

<b>PAPER CODE</b>	<b>PAPER NAME</b>	<b>Credit (T)</b>	<b>Credit (P)</b>	<b>Theory</b>	<b>Practical</b>	<b>TOTAL</b>
HORT-111	Vegetable crops Production Technology	2	2	50	50	100
HORT-112	Water Management in Horticultural Crops	2	2	50	50	100
PPATH-113	Crop Diseases and its management	2	2	50	50	100
SCHEM-114	Soil fertility and Nutrient Management	2	2	50	50	100
HORT-115	Principles of Horticulture	2	2	50	50	100
ENTO-116	Insects-Pest and their Management	2	2	50	50	100
AGRON-117	Organic Farming	2	2	50	50	100
<b>Total</b>	-	<b>14</b>	<b>14</b>	-	-	<b>700</b>

Dean

School of Agriculture  
SunRise University, Alwar

# Vegetable Crops Production Technology

## Theory:

Importance of vegetables & spices in human nutrition and national economy, kitchen gardening, brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders, of important vegetable and spices (Tomato, Brinjal, Chilli, Capsicum, Cucumber, Melons, Gourds, Pumpkin, French bean, Peas; Cole crops such as Cabbage, Cauliflower, Knol-khol; Bulb crops such as Onion, Garlic; Rootcrops such as Carrot, Raddish, Beetroot.

## Practical:

Identification of vegetables & spice crops and their seeds. Nursery raising. Direct seed sowing and transplanting. Study of morphological characters of different vegetables & spices. Fertilizer applications. Harvesting & preparation for market. Economics of vegetables and spices cultivation.

# Water Management in Horticultural Crops

## Theory:

Water requirement of horticultural crops – lysimeter studies – Plant water potential climatological approach – use of pan evaporimeter – factor for crop growth stages – critical stages of crop growth for irrigation. Irrigation scheduling – different approaches – methods of irrigation – surface and sub-surface pressurized methods viz., sprinkler and drip irrigation, their suitability, merits and limitations, fertigation, economic use of irrigation water. Water management problem, soils quality of irrigation water, irrigation management practices for different soils and crops. Layout of different irrigation systems, drip, sprinkler. Layout of underground pipeline system.

## Practical:

Study of fertilizer application system, Study of different types of filters, Study of acid treatment and chlorination treatment to avoid clogging in micro-irrigation system, Field evaluation of drip and micro-sprinkler irrigation system Estimation of soil moisture constants and soil moisture by using different methods and instruments, scheduling of irrigation, different approaches, practicing use of instruments, estimation of irrigation efficiency and water requirements of horticultural crops, irrigation planning and

scheduling, soil moisture conservation practices. Visit to Drip and sprinkler Irrigation Installation.

## **Crop Diseases and its management**

### **Theory**

Symptoms, etiology, disease cycle and management of major diseases of following crops: Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight, Horticultural Crops: Mango: anthracnose, malformation, bacterial blight and powdery mildew; Citrus: canker and gummosis; Grape vine: downy mildew, Powdery mildew and anthracnose; Apple: scab, powdery mildew, fire blight and crown gall; Peach: leaf curl. Strawberry: leaf spot Potato: early and late blight, black scurf, leaf roll, and mosaic; Cucurbits: downy mildew, powdery mildew, wilt; Onion and garlic: purple blotch, and Stemphylium blight; Chillies: anthracnose and fruit rot, wilt and leaf curl; Turmeric: leaf spot Coriander: stem gall Marigold: Botrytis blight; Rose: dieback, powdery mildew and black leaf spot.

### **Practical**

Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory. Field visit for the diagnosis of field problems. Collection and preservation of plant diseased specimens for Herbarium.

## **Soil fertility and Nutrient Management**

### **Theory:**

**Plant nutrients:-** Soil as a source of plant nutrients. Essential and beneficial soil fertilizers elements, forms of nutrients in soil, mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Measures to overcome deficiencies and toxicities.

Problematic soils Problematic soils- acid,salt affected and calcareous soils,characteristics, nutrient availabilities. Reclamation of soil-mechanical, chemical and biological methods. Soil fertility-Different approaches for soil fertility evaluation. Methods, Soil testing- Chemical methods, critical levels of different nutrients in soil. Plant analysis - DRIS methods, critical levels in plants.Rapid tissue tests. Indicator plants. Biological method of soil fertility evaluation.

Fertilizer recommendation Soil test based fertilizer recommendations to crops. Factors influencing nutrient use efficiency (NUE) in respect of N, P, K,S,Fe and Zn fertilizers. Source, method and scheduling of nutrients for different soils and crops grown under rainfed and irrigated conditions

**Practicals:**

Estimation of available nitrogen in soil. Determination of available phosphorus in soil using spectrophotometer(Olsen's method). Determination of available potassium in soil using flame photometer. Determination of gypsum requirement of soil. Determination of EC and pH of water. Determination of  $\text{CO}_3$ ,  $\text{HCO}_3$  and Cl from water. Determination of Ca, Mg and Na from water. Sampling, processing and preparation of acid extract for the determination of elements from plant tissues. Determination of total nitrogen from plant sample by kjeldahl method. Determination of phosphorus from plant using spectrophotometer

## **Principles of Horticulture**

**Theory:**

Introduction, definition, branches of horticulture and importance of fruits and vegetables in human diet. Scope, current situation and importance of horticulture in Gujarat/India. Propagation of horticultural crops, definition, types, classification, merits and demerits. Methods of propagations. Hormones-Role of hormones in horticultural crops. Principles of pruning and training-need, objectives and scope. Choice of trees and plants

**Practicals:**

Study of horticultural tools and different containers. Preparation of nursery beds and sowing. Study of potting and repotting. Study of propagation by seeds and seed treatment. Study of plant propagation by cutting and layering. Study of propagation by budding and grafting. Study of different types of media and their uses in horticulture. Preparation of different hormone solution . Visit to commercial nurseries.

## **Insects-Pest and their Management**

### **Theory:**

Details of marks of identification, host, nature of damage, life history and management of important pests of field crops Cereals- rice, maize, pearl millet, sorghum and wheat, Pulses-(pigeonpea,chickpea,greengram),Oilseeds-(groundnut,mustard,castor,soybean and sesamum),Cash crops–cotton, tobacco and Sugarcane.

Details of marks of identification, host, nature of damage, life history and management of important pests of horticultural crops-viz., Vegetables-(okra, brinjal, tomato, potato, cabbage, cauliflower, chilli, cucurbits & onion).Fruits (mango ,banana, citrus, guava, pomogranate, aonla, sapota, papaya and coconut)

### **Practicals:**

Field visit to identify damaging stages of important pest and their nature of damage. Pest of Field crops (cereals crops , pulses crops , oil seed crops , cash crops etc.). Pest of Vegetables (okra , brinjal , tomato , potato , cabbage & cauliflower chilly, cucurbits , onion). Pest of Fruits (mango , banana , citrus , guava , pomogranate , aonla , sapota , papaya and coconut). Submission of properly preserved, well arranged and labeled specimens of important pests.

## **Organic Farming**

### **Theory :**

Introduction, concept, relevance in present context; Organic production requirements; Biological intensive nutrient management-organic manures, vermicomposting, green manuring, recycling of organic residues, biofertilizers; Soil improvement and amendments; Integrated diseases and pest management – use of biocontrol agents, biopesticides pheromones, trap crops, bird perches; Weed management; Quality considerations, certification, labeling and accreditation processors, marketing, exports.

### **Practical:**

Raising of vegetable crops organically through nutrient, diseases and pest management; vermicomposting; vegetable and ornamental nursery raising; macro quality analysis, grading, packaging, postharvest management.