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Course: Hi- tech Horticulture (UGE-321)

LECTURE-1

Introduction & importance of Hi Tech Horticulture

Hi Tech Horticulture

Hi-tech horticulture is now widely employed for the profitable commercial production of horticultural products. Hi-tech horticultural practices include Integrated Pest Management (IPM), Integrated Nutrient management (INM), Plasticulture, Greenhouse Cultivation or Protected Cultivation, Hydroponics, Microirrigation or Drip irrigation, Fertigation, Sub-surface Drainage System; Precision Farming; High Density Planting; Hi-Tech Mechanization; Molecular Diagnostic etc.

Integrated Pest Management (IPM)

Integrated Pest Management (IPM) has become a widely practiced Hi-tech horticulture practice now. Integrated Pest Management in horticultural production is one of the key requirements for promoting sustainable agriculture. Integrated Pest Management aims at a judicious use of cultural, biological and chemical control of pests and diseases. Integrated Nutrient Management (INM) Integrated Nutrient Management (INM) also has become a widely practiced Hi-tech horticulture practice now. Integrated Nutrient Management (INM) refers to maintenance of soil fertility and plant nutrient supply to an optimum level for sustaining the desired crop productivity through optimization of the benefits from all possible sources of plant nutrients in an integrated manner. Another important aspect of INM is the enhancing of the Fertilizer Use Efficiency (FUE) by proper placement of fertilizer in close proximity to the rhizosphere of the highest root activity. Integrated Nutrient Management has become one of the common practices among progressive horticulture producers today.

Plasticulture

Plasticulture has become a popular hi-tech horticulture technology today. Plastics have various applications in commercial horticultural production. The practice of using plastics for commercial horticultural production is termed as 'Plasticulture'. Various applications of plastics in horticulture include Protected Cultivation (greenhouse structures; high and low tunnels etc); Plastic Mulching, and Plastic Lining. Plasticulture improves the economic efficiency of production systems and helps in efficient water and energy management. Plasticulture reduces temperature fluctuations and moisture fluctuations and also helps in controlling pest and disease infestations. Plasticulture plays a dominant role in precise irrigation and nutrient applications by reducing wastage of water and nutrients and by reducing soil erosion. Use of plastics has proved beneficial to promote the judicious utilization of natural resources like soil, water, sunlight and temperature.

Greenhouse Cultivation

Greenhouse cultivation or protected cultivation is now quite popular among progressive horticultural producers. This hi-tech horticulture technology offers several advantages over traditional production techniques such as in greenhouse cultivation, horticultural products mainly fruits, vegetables and flowers can be produced under protected cultivation even during their offseasons. Advantages of Green house are - Production of vegetable crops.

- Production of off-season flowers, vegetables
- Production of Roses, Carnation, cut-flowers etc.
- Plant propagation, raising of seedlings.
- Primary and secondary hardening nursery of Tissue cultured plant.
- Growth / Production of rare plants, orchids / herbs, medicinal plants.

Hydroponics

Hydroponics, another hi-tech horticulture technology offers great scope for horticultural producers worldwide. Hydroponics is also known as soilless cultivation. Hydroponics helps producers grow plants in nutrient solution, without using the standard soil medium.

Micro-irrigation

Drip irrigation is now a widely used irrigation practice worldwide. Drip irrigation has many advantages over a standard irrigational procedure. These advantages include optimum utilization of irrigational water, maximum water use efficiency by supplying water within the root system of the plants, and minimum evaporative loss of soil moisture.

Fertigation

The practice of supplying plant fertilizers and nutrients via irrigational water is known as fertigation. Fertigation is usually practiced with drip irrigation. Horticulture business mainly comprises of horticulture food processing, fruit and vegetable retailing and floriculture industry.

Horticulture Food Processing

Spoilage of fresh fruits and vegetables due to their short shelf life and subsequent wastage of large quantities of fruits and vegetables is a major issue even today. There is only one way to minimize this food wastage, that is horticulture food processing. Fruit and vegetable processing holds the key to curtail food wastage down to the possible minimum level. Another major advantage of horticulture food processing is its value-addition. Horticulture food processing forms a major percent of the entire food processing industry. Horticulture foods like fruits and vegetables are processed into various value-added products such as pickles, jams, squashes,

concentrates, marmalade, fruit mixes, canned vegetables, and canned fruits for long-term consumption.