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Center for Smart Agriculture

Applied Hi-Tech Horticulture



Module 1: Introduction of Hi-Tech Horticulture
Session 1: Introduction, scope and importance of Hi-Tech Horticulture



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Hi-Tech Horticulture

Hi-Tech interventions which include high density planting, adoption of improved package of practices, cultivation of fruits, vegetables and flowers with high yielding hybrids





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Advantages of High-Tech Horticulture

- Increase in yield up to 5 to 8 times –high productivity per unit area
- Significant saving in key inputs like water (up to 50%), fertilizers (25%) and pesticides.
- Better growth and uniformity in quality
- Feasible even in undulating terrains, saline, water logged, sandy and hilly lands.



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Hi-Tech horticultural practices

- ❖ Hi-Tech propagation of horticultural crops
- ❖ Developing High Density Planting (HDP) in horticultural crops
- ❖ Micro-irrigation and fertigation in horticultural crops
- ❖ Hydroponics
- ❖ Organic farming in horticulture
- ❖ Design and development of greenhouses for different Agro-climatic conditions
- ❖ Greenhouse Technology for production of cut flowers and high value vegetables
- ❖ Scope of protected cultivation of vegetables in high altitudes.
- ❖ Integrated Pest Management (IPM)
- ❖ New Developments in Post-Harvest Management



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Potential areas for Hi-tech Horticulture

- ❖ Urban and peri-urban areas to meet requirements of fresh produce like vegetables, fruits and flowers round the year.
- ❖ Areas with limited land and water resources
- ❖ Areas where availability of land for cultivation is restricted because of snowfall and where low temperature is prevalent restricting cultivation of crops under open field conditions.
- ❖ Small and marginal land holdings for adopting intensive production technologies
- ❖ As an agri-business enterprise for enterprising youth in rural and urban peripherals



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Integrated Pest Management (IPM)

Integrated Pest Management aims at a judicious use of cultural, biological and chemical control of pests and diseases.



Yellow and Blue sticky trap in polyhouse



Vegetable fly trap



Light trap



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Integrated Nutrient Management (INM)

It refers to maintenance of soil fertility and plant nutrient supply to an optimum level for sustaining the desired crop productivity





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Plasticulture

- ✓ Plasticulture has become a popular hi-tech horticulture technology today
- ✓ The practice of using plastics for commercial horticultural production is termed as 'Plasticulture'
- ✓ Plasticulture reduces temperature fluctuations and moisture fluctuations and also helps in controlling pest and disease infestations.

Example:

- ✓ Greenhouse structures
- ✓ Plastic low tunnels





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Greenhouse Cultivation

- ✓ Protection from adverse climatic conditions
- ✓ Increased yield (4-5 times than traditional planting)
- ✓ Harvesting time can be adjusted
- ✓ Off-season crop production
- ✓ Disease free plants
- ✓ More profit due to continuous supply of produce throughout the year
- ✓ Water saving as use of drip/sprinkle system
- ✓ Barren and uncultivable land may be brought under use
- ✓ Gain of more foreign exchange due to export
- ✓ Useful technology for hybrid seed production
- ✓ Employment generation



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Hydroponics

- Hydroponics is also known as soilless cultivation.
- Hydroponics helps producers grow plants in nutrient solution, without using the standard soil medium.





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Micro-irrigation

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.





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