



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

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



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

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





Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

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.



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

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



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

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



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

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



**Centurion
UNIVERSITY**

*Shaping Lives...
Empowering Communities...*

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





Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities...*

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





Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

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



**Centurion
UNIVERSITY**

*Shaping Lives...
Empowering Communities...*

Hydroponics

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





**Centurion
UNIVERSITY**

*Shaping Lives...
Empowering Communities...*

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.





Centurion
UNIVERSITY
Shaping Lives...
Empowering Communities...

