

Center for Smart Agriculture

Applied Hi-Tech Horticulture



Module 1: Introduction to Hi-Tech Horticulture Sessions 5: Design of Polyhouse



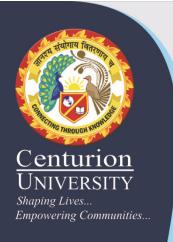
Protected Cultivation

Protected cultivation is the modification of the natural environment to achieve optimum plant growth with high economic return.



Types of Polyhouse

- 1. Low cost or Naturally ventilated polyhouses.
- 2. Medium cost or Partial climate controlled polyhouses.
- 3. High cost or Fully climate controlled polyhouses
- 4. Plastic low tunnels
- 5. Net houses



1. Low cost or Naturally ventilated polyhouses.

- Low initial investment
- Constructed with locally available material such as bamboo, timber etc.
- ❖No specific control devices for regulating environmental parameters inside the polyhouse. Suitable during cold weather, especially in hilly areas.

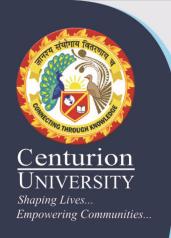




Medium cost or Partial climate controlled polyhouses.

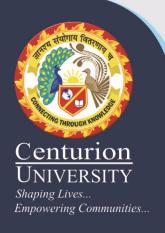
- The structural frame is made up of galvanized iron pipes.
- * Exhaust fans are used for ventilation, these are thermostatically controlled.
- ❖ Cooling pad is used for humidifying the air entering the polyhouse.
- ❖ These are suitable for vegetable cultivation during mild winter and mild summer for the low hills in NW Himalayas.





High cost or fully climate controlled polyhouses

- Consists of sensors.
- Frame is made up of iron or aluminum.
- Designs are dome shaped or cone shaped.
- These are highly durable, 5-6 times costlier.
- ❖Growing medium used in these type of greenhouses are Peat, Perlite, Vermiculite, Rock wool.
- ❖ In India coco fibres and rice husks are used as growing media as these materials are cheaper.
- ❖ Fertigation and pesticide sprays are done by fogging machine

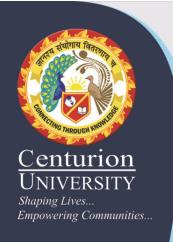








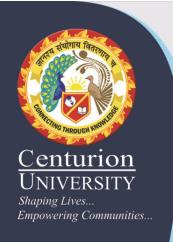
High cost or fully climate controlled polyhouses



Plastic low tunnels

- Miniature form of polyhouse
- ❖ Protect the plants from rains, winds, low temperature, frost and other vagaries of weather
- ❖ Provide the best way for off season vegetable nursery production by modifying the microclimate around the plants
- ♦ Nursery bed of size 3x1x0.15 m
- A portable low plastic tunnel of size 3.5x1.20x1.0 m size with polythene sheet of 120 GSM is put on the nursery bed

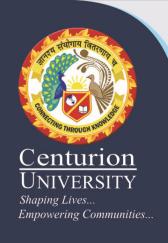




Net houses

- ❖ Simple framed structure or small row like structure.
- ❖ Nets of 40 and higher mesh are effective.
- Control entry of flying insect.
- **Save crop from viral disease.**
- ❖ Netting to maintain an environment which also provide isolation from insect borne pollen.
- * Netting allow controlled sunlight for the hardening of new plants taken out from nursery.





THANK YOU