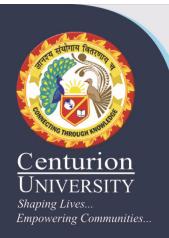


Center for Smart Agriculture Applied Hi-Tech Horticulture



Module 1: Introduction to Hi-Tech Horticulture **Session 7:** Types and uses of glazing materials in greenhouse



Glazing Classifications

Type I

Thin films, 2-8 **mills** .002 - .008" inch Polyethylene, EVA, PVC films, and polyester

Type II

Flexible plastics FRP, polycarbonate, acrylics, plastic fused to glass

Type III

Rigid materials – float glass, tempered class, rolled patterned glass





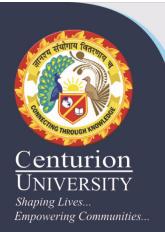
Glass:

Advantage: Glass lets in most of the light at 90% or above Glass transmits and holds more light than alternative plastic panels Glass is easily sourced and is sustainable Glass last a long time With glass, there are plenty of upcycling opportunities

Disadvantages of Glass:

Heavy Fragile Needs a strong framework Skill is required to assemble Takes longer to assemble





Acrylic:

An alternative to glass is acrylic and it is easy to cut to size

Advantages of Acrylic

- ✓ Lower price
- ✓ Lightweight and easy to transport
- \checkmark Durable with good impact strength
- \checkmark Acrylic insulates better than glass
- ✓ High light transmittance at around 85% when new and can be manufactured to stay clear for

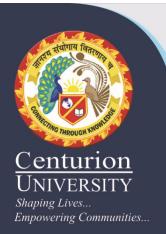
longer

✓ Easy to install

Disadvantages of Acrylic:

- ✓ Energy use in the manufacture
- ✓ Short lifespan

 \checkmark Not readily biodegradable and lack of recycling uses



Plastic Films

Flexible plastic films, including polyethylene, ethylene tetrafluoroethylene (Tefzel), polyvinyl chloride (PVC), and polyester, have been used for greenhouse coverings

✓ Plastic film is currently the leading greenhouse covering for two reasons.

 ✓ First, film plastic greenhouses with permanent metal frames cost less than glass greenhouses.

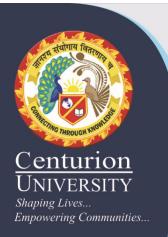


Polyethylene Film

Polyethylene, sometimes also known as polythene or poly, has always been and still is the principal choice of film plastic for greenhouses in most of the world.

 ✓ The major advantage of polyethylene film plastics is cost, which are considerably less expensive to purchase and install than glass.

✓ Polyethylene film is very light in weight. Thus the film does not require a structural support system.

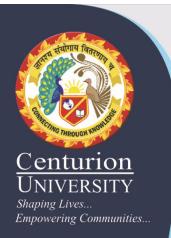


Tefzel Film

The most recent addition of greenhouse film plastic covering is Tefzel T2 film (ethylene tetrafluoroethylene).

The light transmission is 95 percent and is greater than that of any other greenhouse covering material.

A double layer has a light transmission of 90 percent.



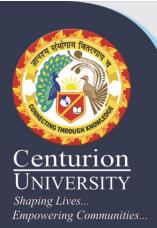
Polyvinyl Chloride (PVC) Film

✓ Polyvinyl chloride has a number of properties that make it desirable as a covering.

✓ PVC has excellent resistance to wear.
✓ Oxidation has little effect on PVC, but heat and light break down PVC film in 2 to 3 years.

✓ PVC film reduces the transmission of long wavelength infrared radiation, resulting in less heat loss at night using PVC as a covering than using polyethylene.





THANK YOU