



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

Center for Smart Agriculture

Protected floriculture



Module 2: Components Pre-requisites for protected cultivation of flower crops

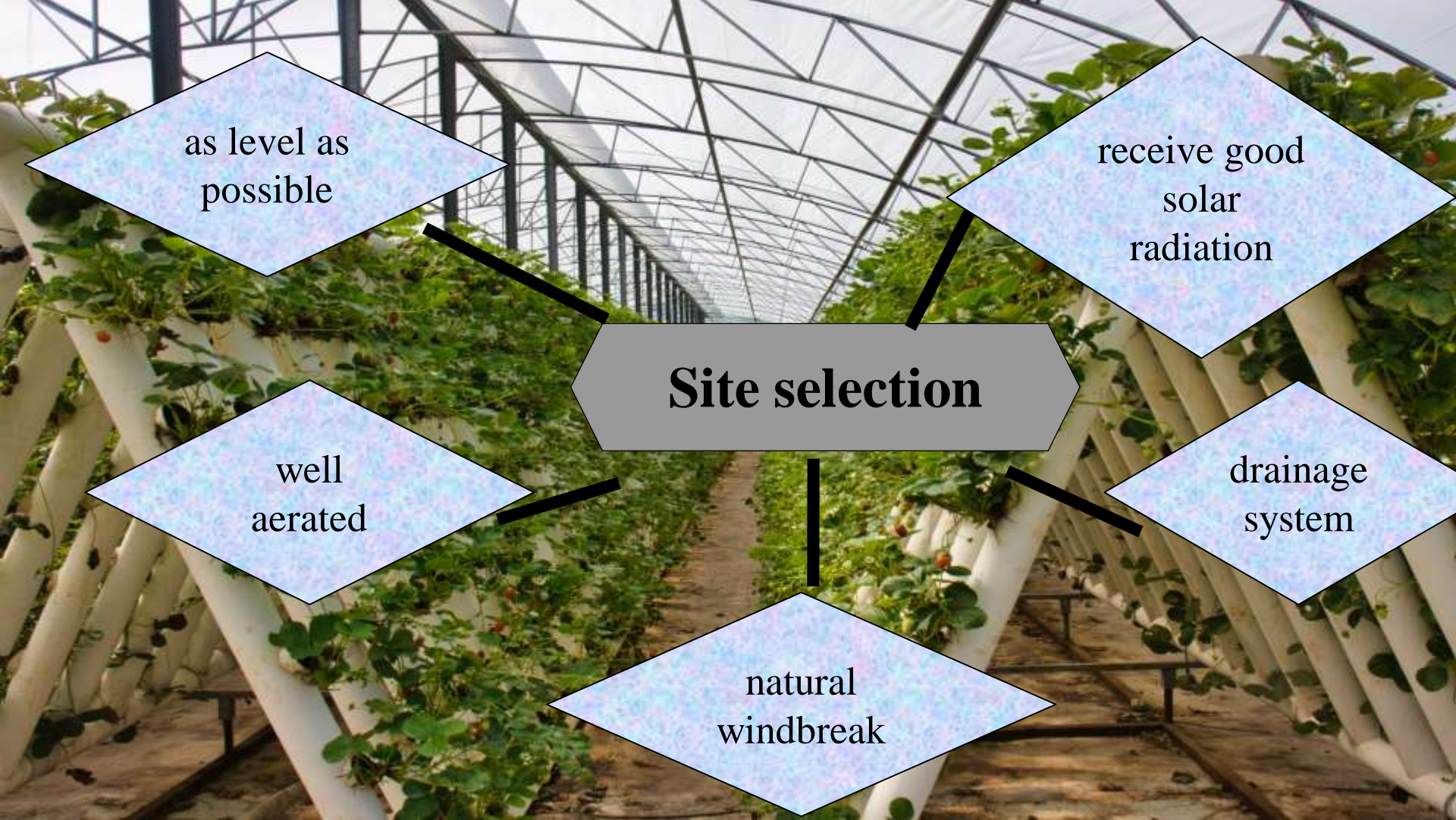
Session 6: Planning & design of protected structure



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

Introduction

- Protected structures are enclosing structure for growing plants, it must admit the visible light portion of solar radiation for the plant photosynthesis and therefore, must be transparent.
- To protect the plants, a greenhouse must be ventilated or cooled during the day because of the heat load from the radiation.
- The structure must also be heated or insulated during cold nights. A greenhouse acts as a barrier between the plant production areas and the external or the general environment.



as level as possible

receive good solar radiation

Site selection

well aerated

drainage system

natural windbreak



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

Structural design

The ultimate design of a greenhouse depends on the following aspects:

- The overall structural design and the properties of the individual structural components.
- The specific mechanical and physical properties which determine the structural behaviour of the covering materials.



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

Cont...

- The specific sensitivity of the crop to light and temperature to be grown in the greenhouse.
- The specific requirements relevant to the physical properties of the covering material.
- The agronomic requirements of the crop.



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

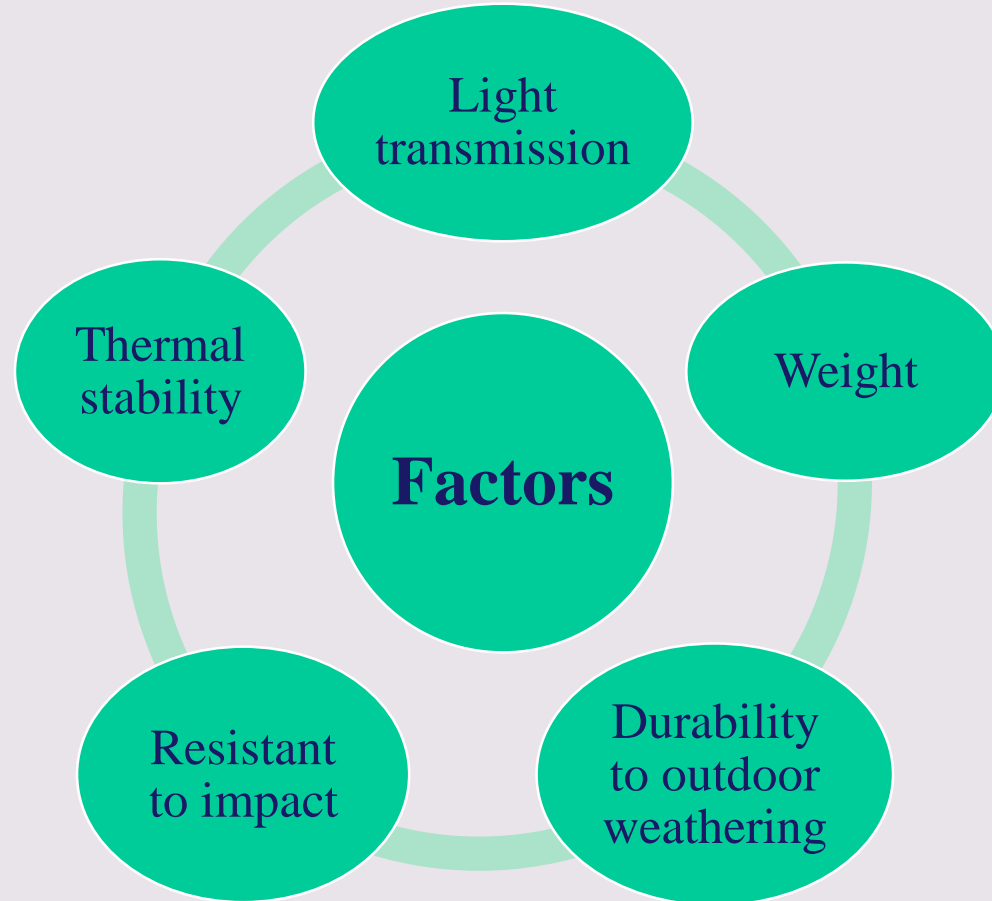
Disadvantages

- These covering materials are short lived compared to glass and plastic panels.
- UV light from the sun causes the plastic to darken, thereby lowering transmission of light, also making it brittle, which leads to its breakage due to wind.
- Condensation causes disease development, development of water logged condition and oxygen deficient inside the greenhouse.



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

Covering materials





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

Cont....

Before selecting the covering material, two important points should be taken into consideration:

- purpose for which greenhouse facility is intended
- service life of material



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

Cont.....

transmit
the visible
light
portion

absorb
the small
amount of
UV

**Ideal covering
material**

minimum
cost

usable life
of 10 to 20
years

reflect or
absorb IR
radiation



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

THANK YOU