

# JOB ROLE – FLORICULTURIST (PROTECTED CULTIVATION)

Sector – Agriculture

(Qualification Pack Code: AGR/Q0702)



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# **UNIT 2: TYPES OF PROTECTED STRUCTURES AND THEIR COMPONENTS**

## **Session 1: Types of Protected Structures**

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# Session Objectives

The student will be able to

- Describe protected cultivation structures
- Explain advantages of protected structures

# Introduction

Protected cultivation aims to modify the micro climate of the plants by selective control of environment for the protection of the crops from biotic and abiotic stresses for healthy and safe crop production, notably all round the year including the off-season.

Different types of protected structures can be adopted for off-season and round the year cultivation of flowers and ornamental crops. Commonly used protected structures are low tunnels, walk-in tunnels, net houses, greenhouses and mist chambers. These structures vary in their shape, design, height and size.

# Types of Protected Structures

## 1. Tunnels

- Low tunnel,
- Walk-in tunnel

## 2. Net houses

- Insect Proof net house
- Shade net house,

## 3. Greenhouse

## 4. Mist chamber

# Tunnels

- These are the temporary structures, looks like a tunnels,
- Tunnel structures are two types viz., low tunnel and walk-in tunnel.

# 1) Low Tunnel

- Size of low tunnel is 1 X 1 m height and width
- Made by using GI pipes, Plastic pipes, Bamboo strips, steel wire or iron rod etc.
- Low tunnels are covered with transparent plastic films having thickness of 30-50 microns





## 1) Low Tunnel

- Generally used for raising nursery or to protect the young transplanted plants against the harsh outside environments for few days/months.
- Operations carried out from outside like watering or spraying as, a person can't enter inside the structure.

# Advantages of Low Tunnels

- Low tunnels are generally recommended for cultivation during winter season
- Provide protection against wind, rain, frost and snow
- Suitable for raising a healthy nursery and early vegetable crops

## 2) Walk in Tunnel

- Structures are made by using GI pipes, Bamboo poles.
- Width and central height of the structure is about 2.0-2.5 m with a length of up to 30 m.
- These tunnels can be used especially for cultivation of off-season nursery and flowers.



# Advantages of Walk-in Tunnels

- Inside these structures one can walk inside, it is therefore named as walk-in tunnels.
- Suitable for small farmers to cultivate nursery and flowers

# Net House

Net house is covered by different types of nets and these structures are divided into two types depending upon the type of material:

**1) Insect Proof Net house**

**2) Shade net house**

# 1) Insect Proof Net House

- Framed structure are covered with UV stabilized, insect proof Nylon net



## 1) Insect Proof Net House

- Mesh size of covering material could be 40-50 per square inch to prevent the entry of insect-pests.
- In rainfed, areas this structure would be better than other protected structures
- Round the year nursery can be raised

# Advantages of Insect Proof Net House

- Grow off –season flower crops
- Production of quality seedlings
- Restrict the incidence of pests and diseases



## 2) Shade Net House

- Structure covered with a geo textile material known as shade net.
- Shade net can be of different colours and percentage of shade factors



## 2) Shade Net House

- Used mainly to control the UV rays and high intense solar radiation
- Cooling effect inside the structure, minimises the loss of water through evaporation
- Due to this the quality and colour of the flowers inside these structures improves.

# Advantages

- Control the high intensity of solar radiation
- Protect the plants from frost and large insects

# Greenhouse

- A framed permanent structure covered with a transparent or translucent material for partial control of plant environment
- Protected structure works on the principle of **greenhouse effect**, it is therefore named as Greenhouse structures



# Advantages of Greenhouse Cultivation

- Off season or demand driven crop cultivation
- Crops can be grown under any time under any climatic conditions
- Complete control of rainfall, hailstorm, snowfall, frost, sunshine etc.

# Advantages of Greenhouse Cultivation

- Complete control of animal, birds and insect-pest attack
- Flower crops can be grown continuously throughout the year
- Generate employment opportunities

# Mist Chambers

- Permanent greenhouse structures equipped with fan, pad, misting, hanging fogger and humidifier system
- They are covered with polyethene or glass and shade net cladding materials.

# Mist Chambers

- In these chambers more humidity and moisture content in atmosphere is created for rooting and callusing purposes during the plant propagation.
- It is also beneficial in hardening of tissue culture plants
- The chambers can be used for round the year propagation of plants



# Summary

In this session you have learnt about the protected cultivation structures and their advantages

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