



Principles and Practices of Green House Technology

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Greenhouse technology, also known as protected cultivation or controlled environment agriculture, involves creating an artificial environment to cultivate crops under controlled conditions. This technology has revolutionized modern agriculture by extending the growing season, optimizing crop growth, and improving overall productivity. Greenhouses provide a sheltered space where temperature, humidity, light, and other environmental factors can be managed to create ideal conditions for plant growth, irrespective of external weather conditions. There are several types of green house structures based on the different conditions like structure, materials used and based on the life.

Introduction

A greenhouse is a special structure that is designed to regulate the temperature and humidity of the environment inside. There are different types of greenhouses, but they all have large areas covered with transparent materials that let sunlight pass and block it as heat. The most common materials used in modern greenhouses for walls and roofs are rigid plastic made of polycarbonate, plastic film made of polyethylene, or glass panes. When the inside of a greenhouse is exposed to sunlight, the temperature increases, providing a sheltered environment for plants to grow even in cold weather.

Principles of Green House Technology

A greenhouse (also called a glasshouse) is a building where plants are grown under controlled micro environment. These structures range in size from small sheds to very large buildings. A miniature greenhouse is known as a cold frame. A greenhouse is a framed or inflated structure with different types of covering materials, such as a glass or plastic roof and frequently glass or plastic walls; it heats up because incoming visible solar radiation (for which the glass is transparent) from the sun is absorbed by plants, soil, and other things inside the building. Air warmed by the heat from hot interior surfaces is retained in the building by the roof and wall.

Purpose of The Green House

1. To promote tomato growing in the cooler areas
2. To promote the growing of tomatoes throughout the year in both cool and warm areas

Advantages of a Green House

1. Higher yields can be realized/intensive production per unit area
2. High quality produce.



3. Minimized cases of diseases
4. Market timing for optimum profit.

Classification according to lifespan and materials used

1. Frames can be covered with glass, rigid fiber glass, rigid double-wall plastics
 - a) Permanent green houses
 2. Metal frame-work and covered with glass with automated cooling/heating systems e.g. in research stations
 - b) Semi permanent green houses
 3. Metal frame-work but covered with plastic film/paper (Recommended for established farmers)
 - c) Temporary green houses: Wooden frame-work covered with plastic film /paper. (This is recommended for small scale farmers).

Classification According to Structural Shape of Frame

According to structural shape of frame green house are of the following types:

a) Attached Greenhouses

i) Lean-to: A lean-to greenhouse is a half greenhouse, split along the peak of the roof, or ridge line Lean-to's are useful where space is limited to a width of approximately seven to twelve feet, and they are the least expensive structures shows a green house constructs on a two story house. The disadvantages include some limitations on space, sunlight, ventilation, and temperature control. The height of the supporting wall limits the potential size of the lean-to. The wider the lean-to, the higher the supporting wall must be. Temperature control is more difficult because the wall that the greenhouse is built on may collect the sun's heat while the translucent cover of the greenhouse may lose heat rapidly. The lean-to should face the best direction for adequate sun exposure. Finally, consider the location of windows and doors on the supporting structure and remember that heavy rain might slide off the roof of the house onto the structure and may pose other difficulties.

ii) Even-span: An even-span is a full-size structure that has one able end attached to another 897 building usable. It is usually the largest and most costly option, but provides more space and can be lengthened. The even-span has a better shape than a lean-to lean air circulation to maintain uniform temperature , An even-span can accommodate two to three benches for growing crops.

iii) Window-mounted: A window-mounted greenhouse can be attached on the south or east side of a house. This glass enclosure gives space for conveniently growing a few plants at relatively low cost. The special window extends outward from the house a foot can contain two or three shelves.

b) Freestanding (detached) Structures: Freestanding greenhouses are separate structures they can be set apart from other buildings to get more sun and can be made as large or small as desired .

c) Tunnel Greenhouse : shows typical low cost plastic tunnels greenhouses with passive heating with dimensions. These greenhouses are also known as miniature greenhouses. In this design, a curved wood or bamboo is used for supporting frame work. These type of green houses are used for protecting plants against low temperature, wind, rain and hails, insects and bird. Low tunnel greenhouses are normally built for one cropping period. Low tunnel green house (quick hoops) are inexpensive and can be used to grow vegetables in winter or cold seasons.

Conclusion

In designing a greenhouse with effective cooling and heating systems requires careful consideration of various factors. Proper ventilation, shading, insulation, and heating solutions are essential for maintaining optimal conditions for plant growth throughout the year. When

horticultural crops are grown under green house they attain certain benefit when they are grown in open field condition like temperature maintain, relative humidity and incidence of pest and disease is low. Also it enhances the productivity and production of the crops grown. Different types of greenhouse posses its own advantage and disadvantage. For large scale production even-span type of green house can be adopted.

References

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