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# Center for Smart Agriculture

## Protected floriculture



**Module 1:** Importance and types of protected structure  
**Session 1:** Scope and importance of protected cultivation



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## Introduction

Protected cultivation is a process of growing crops in a controlled environment. This means that the temperature, humidity, light and such other factors can be regulated as per requirement of the crop. This assists in a healthier and a larger produce. There are various types of protected cultivation practices. Some of the commonly used practices are forced ventilated greenhouse, naturally ventilated polyhouse, insect-proof net house, shade net house, plastic tunnel and mulching, raised beds, trellising and drip irrigation.



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## Importance

- India experiences climatic extremes such as floods, droughts and other climatic abnormalities that cause crop losses regularly or damages resulting in economic losses to the farmers. Simultaneously, the demand for quality agricultural produce has increased over the last decade. This provides better opportunities for the Indian farmers to adopt protected cultivation technologies as per region and suitability of the crops.
- Economic returns from the high value agricultural produce can be increased substantially when grown under greenhouse conditions.
- Greenhouses are mostly used as rain shelters, particularly in high rainfall areas of India such as North-eastern states and coastal regions.



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## Objectives

- (i) Protection of plants from abiotic stress and biotic factors.
- (ii) Efficient water use with minimum weed infestation.
- (iii) Enhancing productivity per unit area.
- (iv) Minimising the use of pesticides in crop production.
- (v) Promotion of high value, quality horticultural produce.
- (vi) Propagation of planting material to improve germination percentage, healthy, uniform, disease-free planting material and better hardening.
- (vii) Year-round and off-season production of flower, vegetable or fruit crops.
- (viii) Production of disease-free and genetically better transplants.



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## Advantages of Protected Cultivation

- Throughout the year four to five crops can be grown in a greenhouse due to availability of required plant environmental conditions.
- The productivity of the crop is increased considerably.
- Superior quality produce can be obtained as they are grown under suitably controlled environment.
- Gadgets for efficient use of various inputs like water, fertilizers, seeds and plant protection chemicals can be well maintained in a green house.
- Effective control of pests and diseases is possible as the growing area is enclosed.
- Percentage of germination of seeds is high in greenhouses.



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- Agricultural and horticultural crop production schedules can be planned to take advantage of the market needs.
- Different types of growing medium like peat mass, vermiculate, rice hulls and compost that are used in intensive agriculture can be effectively utilized in the greenhouse.
- Export quality produce of international standards can be produced in a greenhouse and self-employment for educated youth.
- When the crops are not grown, drying and related operations of the harvested produce can be taken up utilizing the entrapped heat.
- Greenhouses are suitable for automation of irrigation, application of other inputs and environmental controls by using computers and artificial intelligence techniques.



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## Limitations

- High cost of initial infrastructure (capital cost).
- Non-availability of skilled human power and their replacement locally.
- Lack of technical knowledge of growing crops under protected structures.
- All the operations are very intensive and require constant effort.
- Requires close supervision and monitoring.
- A few pests and soil-borne pathogens are difficult to manage.
- Repair and maintenance are major hurdles.
- Requires assured marketing, since the investment of resources like time, effort and finances, is expected to be very high.



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**THANK YOU**