

## Protected Cultivation

**Asha Nama<sup>1\*</sup>,**  
**Rakesh Kumar Meena<sup>2</sup>**

<sup>1</sup>Assistant Professor, Department  
of Horticulture, Career Point  
University Kota

<sup>2</sup>Assistant Professor,  
Department of Horticulture,  
Apex University Jaipur



Open Access

\*Corresponding Author

**Asha Nama\***

### Article History

Received: 21.05.2022

Revised: 4.06.2022

Accepted: 10.06.2022

This article is published under the  
terms of the [Creative Commons  
Attribution License 4.0.](https://creativecommons.org/licenses/by/4.0/)

### INTRODUCTION

Protected cultivation is now a general term in the agricultural sector as it has made cultivation easier and more manageable. With this method of cultivation, farmers can easily regulate the climatic conditions of crop production, giving a higher yield. It is a farm practice where plants grow in a regulated environment. In this cultivation approach, all the important cues like temperature, humidity, light etc., are controlled according to the need for plant growth. All the required cultivation situations easily managed according to need. The cultivation approach is healthy and offers huge productivity without any variety of situations. The protected cultivation of plants completely regulated and can be modified to give protection to the crop from harmful climatic conditions. Multiple kinds of protected cultivation are available viz. forced ventilation, greenhouse, naturally ventilated Polyhouse, insect-proof net house, shade net house, plastic tunnel and mulching, raised beds, trellising and drip irrigation. Above said types offer two mechanisms; first is Independent and the second is a combinatorial. Both the mechanisms offer suitable conditions that give protection to the plants from adverse weather. They also increase the length of time to plant or produce plants out of season.



**Protected Cultivation**

### **Importance of Protected cultivation-**

Climate change is becoming a growing global problem that cannot be avoided for a longer time. The significant reason is anthropogenic, that is, the endless use of fossil fuels, deforestation for industrial development and speedy urbanization through overcrowding.

1. Plants are protected from cold, wind, humidity, rain, and frost.
2. Because of regulated environment there is high rate of germination, plant development and fast crops maturation.
3. Enhanced quality & long production value.
4. Water consumption has improved and reduced consumption by 40-50%.
5. Effective use of inputs.
6. Incidence of sickness and pests is decreased or eliminated.
7. The plants will grow fully throughout the year.
8. The best technology for producing more worthy plant industries such as flowers, medicinal plants, etc.
9. It can be used for star drying on farm production.
10. Staff participation will be reduced.
11. Planting of plants under adverse weather conditions.
12. Crop year-round crops to meet market demand.
13. High value and high-quality plants, even fully grown organic plants in export markets.
14. Revenue from small areas exaggerates many times.
15. Successful seed or seed distribution nurseries are suitable if necessary.
16. More employment opportunities available on farms for educated youth.
17. Microclimate manipulation and characteristic evidence of greenhouse plant breeding, thus, the emergence of the latest species and seed production.

### **Objectives of Protected Cultivation-**

Protected cultivation has many advantages, making it now the most widely practiced agricultural practice in India. The objectives of protected cultivation described below-

The main purpose of the cultivation approach is to protect the plants from abiotic pressure, whether physical or inanimate such as temperature, high/low water, hot and cold waves, and biotic cues like pests and diseases, etc. Cultivation in India easily adapts to all natural conditions and climate according to crops. In this way, the correct use of water and weed control can be done. By this means lot of water is saved during the planting season. Protected cultivation enhances productivity in each area. The main reason for higher productivity and more revenue generation. In this way, the use of pesticides is very limited in crop production, which maintains the quality of the plants. The approach offers the high value and quality of horticulture plants. Protected farming increases healthy, uniform, and disease-free planting resources, which improves percentage of growth and provides better stability. This method of cultivation gives disease-free yields and better genetics.

### **Protected Cultivation Structures-**

Protected cultivation structures made up of 3-main components viz. frame, locking material, and air/weather control systems. The structure saves crops from variety of harmful substances like wind, rain, snow, soil, climate moisture, physical, chemical deteriorations, etc. The sealing material designed to give the needed photo synthetically active radiation (PAR) and to retain required heat during cold climate and crop protection from external conditions. Ventilation or climate regulation equipment gives ideal climates so that the plant can produce well in a relatively inexpensive way. A secure planting structure designed to evaluate its size, the need for ventilation or climate control, and stability against adverse factors like wind, snow, heavy rains, hail, etc.

The method comprises determination of the design load from multiple sources like dead load involved in fixing service equipment such as heating, ventilation, air circulation, electricity, lighting, irrigation, etc. Live load repairing staff and hanging plants, etc. Some are snow load and air load.

#### **Strategies for Protected Cultivation-**

Of all the major agricultural problems, there is only one solution, and that is Protected Farming. In this way, farmers can tackle all uncertain and volatile climates, climate change, improper use and limited production of natural resources, local food security and climate change, poor environments, polluted environment due to the use of pesticides, etc. This farming approach usually means providing favorable conditions for crop production and improving the level of artificial production. This method regulates the weather conditions by covering the crop to withstand high or low temperatures or humidity as well as other adverse farming conditions. But get sufficient light for photosynthesis, complete fertilization and irrigation, and some of the best growth and productivity features.

#### **Protected Cultivation of Horticultural Crops-**

Growing vegetables and flowers under secure planting gives higher inputs compared to good management practices, which directly carry out the economic performance of the production system. Proper planning, attention, and protection of the building structure achieve the highest benefits. The main horticulture crops in protected cultivation are capsicum, watermelons, tomato, rose, lilies, orchid, carnation, chrysanthemum, gerbera, cucumber, broccoli, red cabbage and strawberry. Nursery salary and secure agricultural employment have also become very popular.

#### **Benefits of protected cultivation-**

This process reduces the need for Water and Labor. This process, which controls the environment, allows plants to grow at any time of the year. This means that the plants grow

under hot climates where it is not possible to grow the plants under open field conditions. Provides productivity or yield based on high quality per unit area, input per unit, and volume per unit. This microcosm process of this method allows for high quality, free of germs, chemical residues, and pest infestations. This approach also produces educated rural farmers who are self-employed in the agricultural sector.

#### **Limitations of Protected Cultivation-**

1. High initial infrastructure costs (high cost).
2. Lack of capacity of skilled people and their transformation in the area.
3. Lack of technical knowledge of planting crops under protected buildings.
4. All tasks are extremely difficult and require constant effort.
5. It needs close monitoring.
6. Few insects and bacteria in the soil are difficult to control.
7. Repair and maintenance are major obstacles.
8. It requires guaranteed marketing, as investment in resources such as time, effort and money, is expected to be very high.

#### **CONCLUSION**

Nurseries are used commercially to produce exotic (non-native) and off-season vegetables, cut flowers that are exported and to promote high quality seedlings. The economic benefits from high value agricultural products can be significantly increased if planted under greenhouse conditions.

#### **REFERENCES**

- Rakesh Kumar Pattnaik and Smaranika Mohanty. Protected cultivation: importance, scope, and status. Vol. 2(3), pp. 19-21. March, 2021.
- Kang, Yunyan; Chang, Yao-Chien Alex; Choi, HyunSug; Gu, Mengmeng. Current and future status of protected

- cultivation techniques in Asia, *Acta horticulturae*. 2013.
- Mukherjee, A., Rakshit, S., Nag, A., Ray, M., Kharbikar, H. L., Shubha, K. & Burman, R. R., Climate change risk perception, adaptation and mitigation strategy: An extension outlook in mountain Himalaya. In *Conservation Agriculture*. Springer, Singapore. pp. 257-292. 2016.