



Protected Cultivation

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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. Protected Cultivation – Greenhouse & Shadenet House. Greenhouse is framed structures covered with UV stabilized plastic films in which crops are grown under partially or controlled environment condition.



Prevents weed growth and acts as barrier to soil pathogens

Accelerates uptake of micro nutrients from the soil by the active root zone. Conserves soil moisture thereby reduces the irrigation water requirement of the crop. Enhances quality of the produce with cleaner crop.

Objectives of Protected Cultivation

- **Protection of plants from abiotic stress** (physical or by non-living organism) such as temperature, excess/deficit water, hot and cold waves, and biotic factors such as pest and disease incidences, etc
- **Efficient water use** with minimum weed infestation.
- **Enhancing productivity** per unit area.
- **Minimising the use of pesticides** in crop production.
- **Promotion of high value, quality horticultural produce.**
- **Propagation of planting material** to improve germination percentage; healthy, uniform, disease free planting material and better hardening.
- **Year-round and off-season** production of flower, vegetable or fruit crops.
- **Production of disease-free** and genetically better transplants.



Limitations of Protected Cultivation

- 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.

Schemes of protected cultivation

- The Government of India executes various schemes for protected cultivation at the central and the state levels to popularise these high-tech plant growing techniques.
- National agencies through their leading schemes viz. National Horticulture Board (NHB), National Horticulture Mission (NHM), Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi Vikas Yojana(RKVVY) creates awareness and provides financial support to the farmers, so that protected farming for high value horticultural crops could be adopted easily.

Scope and Importance

- Cultivation in Problematic Agriculture Zones There is about 75 mha of land in India comprising of such problematic conditions as barren and uncultivable, cultivable wasteland, fallow land, desert, sever cold. If small portion of this put under cultivation using greenhouse technology, the income generation of local habitat could be increased.
- Greenhouse Complexes around Metropolitan and Other Big Cities a conservative estimate reveals that there is a large and sustained demand of fresh vegetables, fruits and ornamental plants throughout the year in almost every big city. These big cities also experience the need of off-season and high value crops. To meet the city requirement greenhouse cultivation may be a right option.
- Export of Agricultural Produce a agriculture in India is being considered increasingly to reduce the foreign trade deficit and there has been good international market for horticulture produce, especially, flowers from India. Promotion and greenhouse cultivation of export oriented crops seems to be possible source of foreign earnings. Such facilities should be constructed near the lifting point to reduce the burden on transportation cost.
- Greenhouse for Plant Propagation Greenhouse technology is being, nowadays, considered as a suitable approach for raising of seedlings and cuttings which require control environment for their growth. The existing nurseries without a greenhouse facility could be converted into a greenhouse for improving the capacity as well as quality of the plant material. Even different type of plant material can be propagated using the greenhouse facility. In temperate climatic zone, the plant propagation through greenhouses would mean a considerable reduction in the total time required for preparation of saplings.
- Greenhouse Technology as Base for Other Biotechnology The hydroponics or nutrient film techniques require control environmental condition of growing plants. Similarly, material generated though tissue culture and biotechnological methods also need to be propagated in control environment.
- Greenhouse technology is the best-suited answer to carry out such type of studies
Cultivation of Rare and Medicinal Plants India has a wide variety of orchids/herbs, which have been identified for large scale cultivation. The greenhouse could provide the right type of environmental condition for the intensive cultivation of these plants.