

# Greenhouses (Protected) cultivation: importance, scope, and status

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**Abstract-** Agriculture and related activities have a significant impact on the Indian economy. Following the Green Revolution, various new biotic and abiotic stresses arose as a significant problem. Protected cultivation eliminates these pressures by providing a completely regulated environment. The rising food demand necessitates the consideration of protected farming. Greenhouse is the most practical solution for meeting the goals of protected cultivation. Poly house cultivation has been an important policy in Indian agriculture.

A protected cultivation approach is defined as a cropping strategy in which a regulated micro-climate influences the growth and development of a plant. With the growth of agriculture, numerous protected cultivation approaches have been widely implemented in commercial farming. Among these protective cultivation approaches, green houses, plastic houses, artefact houses, internet houses, and shade houses, among others, are beneficial. A greenhouse is a framed or inflated structure lined with a clear or semitransparent material in which crops can be fully grown under the circumstances of a minimally regulated setting.

## IMPORTANCE OF PROTECTED CULTIVATION

Climate change is becoming an increasingly serious global issue that cannot be ignored. The primary underlying reason is anthropogenic, which includes the unsustainable use of fossil fuels, forest destruction for industrialisation, and fast urbanisation accompanying overpopulation (Mukherjee et al., 2016).

- The crop is protected from the elements such as cold, wind, storm, rain, and frost.
- Controlled circumstances result in increased germination, plant development, and crop maturity.

- Improved manufacturing quality and quantity over a lengthy period of time
- Water usage is optimised, and consumption is reduced by 40-50%.
- Sickness and pests are minimised or eliminated.
- Crops will reach full maturity throughout the year.
- Best technology for industrial production of high-value crops such as flowers, medicinal plants, and so forth.
- Can be used for star drying agriculture products.
- The labour pool's involvement will be minimised.
- Crop cultivation in adverse weather conditions
- Certain crops are grown all year round to meet market demand.
- Crops of high value and high quality, especially organic, farmed for export markets
- Income from small land holdings has been greatly inflated.
- Successful nurseries from seeds or vegetative propagation are ready as and when required.
- More farm self-employment options for educated youngsters.
- Manipulation of the greenhouse's microclimate and bug-proofing features for plant breeding and, as a result, the growth of new varieties and seed production.

## SCOPE OF PROTECTED CULTIVATION IN INDIA

Indian horticulture has a huge potential. If democratically organized, India's prospective fields with a great possibility for protected farming are

1. Cultivation in difficult agro-climates: The bulk of uncultivated land in India is under problematic

circumstances such as barren, uncultivated fallow lands and deserts. Even a part of this space placed under greenhouse horticulture may yield significant dividends for the locals.

2. Greenhouses in and around major cities: There is a year-round high demand for new veggies and ornamentals in major cities. Large cities also have a need for off-season and high-priced commodities. Thus, greenhouse cultivation is pushed to meet urban needs.
3. Agricultural produce export: There is a good worldwide market for farming produce, particularly cut flowers. Promotions of greenhouse cultivation/protected growing of export homeward crops would undoubtedly aid in export promotion.
4. Greenhouses (GH) for plant propagation: Greenhouse technology is now considered to as

an effective solution for raising seedlings and cuttings that require control setting for their growth. The GH facility might improve the capabilities and quality of the production process.

5. Greenhouse technology for biotechnology: Material created by tissue culture should be propagated at a high pace. Controlled environmental conditions, such as aquaculture or Nutrient Film Technique (NFT), are required for plant growth.
6. Greenhouse for rare and healthy plant culture: India boasts a diverse selection of healthful herbs and uncommon plants, such as orchids, that are well-known for large-scale cultivation. The greenhouse may provide the appropriate type of environmental conditions for intense growing of certain plants.

Table 1: Crops Grown under Protected Cultivation

Fruits	Strawberry
Flowers	Chrysanthemum, Carnation, Gerbera, Rose, Lilium, Orchid, Gladiolus, etc.
Vegetables	Tomato, Coloured Capsicum (Yellow and Red Bell Peppers), Cucumber, Broccoli, Red Cabbage, Leafy vegetables, Radish, etc.
Vegetables, Flowers, Tissue	Vegetables, Flowers, Tissue Culture, Clonal for Forestry, Fruit Grafting (like Lemon, Citrus, Mango, Pomegranate, Guava, Litchi, etc.)

#### STATUS OF PROTECTED CULTIVATION IN WORLD

Greenhouse food production is now a developing reality all over the world, with an estimated 405,000 hectares of greenhouses covering all continents. There are already more than 55 nations in the globe where agricultural farming is taking place on a substantial scale under cover, and it is continuously developing at a rapid rate globally

In India, protected cultivation technology for business production is hardly 3 decades recent (DRDO). It is around two centuries old in industrialized nations such as Japan, Holland, Russia, the United Kingdom, China, and others. China began protected agriculture in the 1990s, and today the globe beneath protected cultivation in China is about 0.5 million hectares, with vegetables taking up 90% of the area. China alone has more agricultural food producing land area under protection than the other continents combined. In 2020, there were about four million hectares of protected vegetable (including melon and watermelon) output in China, accounting for more than ninety fifth

of all protected production in China and more than eightieth of all protected vegetable production worldwide. Protected agricultural facilities in Asia range from low-cost polytunnels made of usable materials that rely entirely on natural solar power input to exorbitantly expensive and intricate plant factories that rely almost entirely on artificial energy input. Several agricultural crops (including some unique to Asia) and plant stages (including transplants, instrumentality plants, plants to harvest fruits and vegetables, and so on) may be produced profitably under various types of protected cultivation. With the widespread use of protected farming in Asia, there is constant new development in agriculture crop analysis, production, and development within the related sectors (Kang et al., 2013).

Israel is one country that has made extensive use of this technology by producing high-quality fruits, vegetables, and flowers in water-stressed desert areas. Many thousands of acres square measure presently behind glass in the United States, as well as an equivalent amount of territory in England and the

Kingdom of The Netherlands, where gardening beneath glass was performed over a century ago.

#### STATUS OF PROTECTED CULTIVATION IN INDIA

The Indo-Israel greenhouse cultivation initiative, begun in New Delhi, was India's first exposure to really advanced protected farming of vegetables and alternative highvalue agriculture production. The Indian Agricultural Analysis Institute (IARI) was founded in 1998, shortly after the country established diplomatic ties with India. However, once the Israeli consultants departed the Asian nation at the end of this five-year project in 2003, IARI remained to care for the capability, renaming it the Centre for Protected Cultivation Technology (CPCT). It has managed to refine and up market the technology in the last 10 years, lowering prices while also developing greenhouse structures to fit local circumstances. By the end of the twentieth century, the globe under greenhouse farming reached around one hundred ten ha in Asian nation and world over 275,000. (Kang et al., 2013). This space should have expanded by 10% if not more during the previous decade. States that have continually increased the area from 2007 to 2012 under protected cultivation are from Andhra Pradesh. Gujarat and Maharashtra are two states in India. Haryana, West Bengal, Tamil Nadu, and Punjab. Maharashtra, as well as Gujarat has a total size of 5, 730, 23 hectares of land 4, 720. 72 hectares of protected land, respectively. cultivation till the end of 2012. Currently, the entire area covered by protected horticulture in our nation is around 30,000 hectares. The following states have protected crop space: Maharashtra, Karnataka, Himachal Pradesh, & North-Eastern States, Uttarakhand, Tamil Nadu & Punjab. Tomato, capsicum, melons, rose, gerbera, carnation, and chrysanthemum are the most significant crops planted under protected horticulture.

#### CONCLUSION

Greenhouses are used professionally to grow exotic (non-native) and off-season crops, export-grade cut flowers, and quality seedlings. When high-value agricultural products are cultivated in greenhouses, their economic returns can be significantly improved.

#### REFERENCES

- [1] Government of India. *Horticultural Statistics at a Glance 2017*; Horticulture Statistics Division, Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India: New Delhi, India, 2017.
- [2] Government of India. *Mission for Integrated Development of Horticulture, Operational Guidelines*; Horticulture Division, Department of Agriculture, and Cooperation, Ministry of Agriculture and Farmers Welfare, Government of India: New Delhi, India, 2014.
- [3] Mukherjee, A., Rakshit, S., Nag, A., Ray, M., Kharbikar,
- [4] Kang, Yunyan; Chang, Yao-Chien Alex; Choi, Hyun-Sug; Gu, Mengmeng, (2013). Current and future status of protected cultivation techniques in Asia, *Acta horticulturae, ISSN : 0567-7572*.