

## Structures, Benches and Containers Used in Protected Cultivation

Chinmaya Jena\*, Kommana Pavani and Kartik Pramanik

Center for Smart Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha- 761211

\*Corresponding author: chinmaya.jena@cutm.ac.in

---

---

### Abstract

India is the second largest producing country in vegetable and fruits in world. Due to increase in population there is increase in demand of horticultural produces. Most of the horticultural produces are seasonal so to get year round of all fruits and vegetables is quite difficult in open field conditions as well due to change in climatic condition and reduction in cultivable land as well biotic and abiotic stresses also causes low productivity and inferior quality production. Now protected cultivation is the only options to get all fruits and vegetables throughout the year with increased production and quality of produces. For successful growing of crops under protected cultivation it's important to choose appropriate structures as well benches and containers used for cultivation. Structures should be selected as per region specific as well crops to be grown. Benches are having advantages of efficient use of land inside structure and increase efficacy of workers. Containers are useful for more vigorous plant growth as well easy handling and intercultural operations.

**Keywords:** Structures, benches, containers, protected cultivation, horticultural crops

---

### 1. Introduction

In Indian Horticulture there is significant increase in production of horticultural produces with a total amount of more than 311.71 million tonnes and India ranks second in horticultural production in world next to China (NHB, 2018). In spite of second largest producing country there is low productivity in India which is due to the adverse climatic conditions like varying range of temperature from 0-48 °C during the year which does not allow year round cultivation of vegetable in open condition. Availability of large quantity produce in market during growing season