ROHINI COLLEGE OF ENGINEERING & TECHNOLOGY

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Department of Agricultural Engineering

Course Name : **Protected Cultivation**
Course Code : **AI3015**
Regulation : **R2021**
Year/Semester : **III / 06**
Faculty : **Mr. ARUNPANDIAN N (Asst. Professor)**

UNIT - III

PROTECTED CULTIVATION OF FLOWER CROPS

PART 1 : INTRODUCTION TO PROTECTED FLORICULTURE TECHNOLOGY

1.1 Concept and Significance of Protected Cultivation in Floriculture

· Definition: Growing flower crops under modified/controlled environments using structures like greenhouses, polyhouses, net houses, and shade houses
· Objectives: Year-round production, superior quality, higher productivity, resource efficiency, and export-oriented cultivation
· Global Context: Netherlands, Israel, Kenya, Colombia as leaders; India's emerging role in cut flower exports

1.2 Types of Protected Structures

Structure Type	Covering Material	Climate Control	Suitable Crops	Cost Range
Low-cost Polyhouse	Single-layer polyethylene (200 micron)	Natural ventilation	Seasonal flowers	Low
Naturally Ventilated Polyhouse	UV-stabilized polyethylene	Roof/side vents	Roses, carnations	Medium
Fan-Pad Greenhouse	Polycarbonate/ double poly	Active cooling/heating	Gerbera, orchids, anthurium	High
Shade Net House	HDPE knitted nets (35-75% shade)	Temperature reduction	Foliage plants, propagation	Low-Medium
Glass Greenhouse	Float glass/acrylic sheets	Full climate control	High-value export crops	Very High

1.3 Environmental Control Systems

· Temperature Management: Heating (hot air/water), cooling (pad-fan, fogging, misting)
· Light Management: Shading screens, supplemental lighting (LED, HPS)
· Humidity Control: Humidifiers, dehumidifiers, ventilation strategies
· CO_2 Enrichment: Burners, liquid CO_2 systems (1000-1500 ppm optimal)
· Irrigation Systems: Drip, sprinkler, boom, ebb-and-flow systems.
