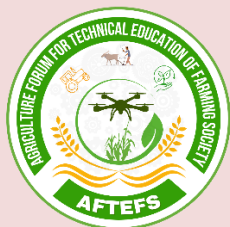


AGRICULTURE FORUM FOR TECHNICAL EDUCATION OF FARMING SOCIETY

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Protected Cultivation through Polyhouses

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INTRODUCTION

Agriculture is highly dependent on weather conditions. Excess rainfall, high temperature, frost, strong winds, pests and diseases can adversely affect crop growth and productivity. Protected cultivation is a modern agricultural technology that provides a controlled or partially controlled environment for growing crops.

A polyhouse is a structure covered with transparent or translucent polyethylene material that protects crops from unfavourable environmental conditions. Inside the polyhouse, important factors such as temperature, humidity, light, irrigation and nutrient supply can be managed according to crop requirements.

Polyhouse cultivation is particularly useful for high-value vegetables, flowers, nursery plants and other crops that require better environmental management.

2. What is a Polyhouse?

A polyhouse is a protected structure generally made using a framework of GI pipes, steel or other suitable materials and covered with a transparent polyethylene sheet.

The basic structure consists of:

**Frame → Polyethylene Cover → Ventilation →
Irrigation/Fertigation → Crop Beds → Crop**

Depending on the design and level of technology, a polyhouse may be naturally ventilated or equipped with cooling, fogging, shading, heating and automated environmental-control systems.

3. Why is Polyhouse Cultivation Important?

Open-field farming exposes crops directly to changing weather conditions. Polyhouses provide a protective environment that can reduce the effect of adverse weather and allow farmers to manage production more efficiently.

Major advantages include:

- Protection from heavy rainfall and strong winds
- Partial protection from extreme temperatures
- Better management of humidity and irrigation
- Reduced exposure to some pests and diseases
- Efficient use of water and fertilizers
- Higher-quality produce
- Possibility of off-season production
- Better utilization of land
- Potentially higher returns from high-value crops
- Improved production planning

Polyhouses can therefore support precision-oriented and climate-resilient agriculture.

4. Crops Suitable for Polyhouse Cultivation

A wide range of crops can be cultivated under protected conditions.

Vegetables

- Tomato, Capsicum, Cucumber, Chilli, Lettuce, Leafy vegetables

Flowers

- Rose, Gerbera, Carnation, Chrysanthemum, Marigold

Nursery Plants

- Vegetable seedlings, Flower seedlings, Fruit planting material, Ornamental plants

The choice of crop should depend on local climate, market demand, technical feasibility and expected profitability.

5. Important Components of a Polyhouse

A polyhouse consists of several important components that help maintain suitable crop-growing conditions. The structure and polyethylene cover provide support and protection, while the ventilation system regulates temperature and humidity. Drip irrigation and fertigation ensure efficient water and nutrient supply. Shade nets, insect-proof nets and monitoring equipment further support healthy crop growth and effective management.

6. Production Process

Polyhouse cultivation begins with proper site selection and construction, followed by soil or media preparation and selection of suitable crops and healthy planting material. Planting is followed by drip irrigation, fertigation, training, pruning, and integrated pest management. Timely harvesting, grading, packaging, and marketing ensure better quality, productivity, and profitability.

7. Benefits of Polyhouse Cultivation

Polyhouse cultivation offers several benefits, including off-season production, better crop quality, efficient water and nutrient use, and higher productivity. It protects crops from adverse weather conditions and reduces production risks. Controlled conditions also improve resource efficiency and profitability. Additionally, polyhouse farming generates employment opportunities in nursery raising, cultivation, harvesting, grading, packaging and marketing.

8. Government Support and Subsidy

The Government of India promotes protected cultivation through horticulture development programmes. Assistance for structures such as polyhouses and other protected cultivation technologies is generally provided through schemes implemented by the Ministry of Agriculture & Farmers Welfare and State Horticulture Departments, subject to applicable guidelines and beneficiary eligibility.

The Mission for Integrated Development of Horticulture (MIDH) is an important programme supporting horticultural development, including protected cultivation components.

The exact subsidy amount or percentage depends on the type and specification of the structure, crop, area, state norms and applicable scheme guidelines. Therefore, farmers should contact their District Horticulture Officer or State Horticulture Department before construction to confirm the latest subsidy provisions.

Farmers should not construct the structure assuming that every polyhouse automatically receives subsidy. Approval, technical specifications, documentation and other conditions may apply.

9. Investment and Profitability

The investment required for a polyhouse depends on its size, design, structure, covering material, irrigation system, fertigation equipment, cooling facilities and level of automation.

Major expenses include:

- Polyhouse structure
- Covering material
- Drip irrigation

- Fertigation system
- Planting material
- Crop-support systems
- Labour
- Fertilizers and plant-protection inputs
- Packaging and transportation

Profitability depends on crop selection, market price, yield, input cost, labour, structure cost and utilization of the polyhouse.

High-value crops such as capsicum, cucumber, tomato, flowers and nursery plants may provide attractive returns when production and marketing are properly managed.

10. Marketing of Polyhouse Produce

Production should always be linked with a marketing plan. Farmers can sell produce through:

- Local markets, Wholesale markets, Retailers, Hotels and restaurants, Supermarkets, Direct consumer sales, FPOs, Farmer markets, Contract buyers

Grading, attractive packaging and direct marketing can improve price realization.

11. Precautions for Successful Polyhouse Farming

Farmers should select a suitable site with good drainage and access to water and roads. The structure should be technically sound and maintained regularly.

Important precautions include:

- Use good-quality planting material.
- Maintain proper ventilation.
- Avoid excessive irrigation.
- Monitor temperature and humidity.
- Maintain sanitation inside the structure.
- Remove diseased plants promptly.
- Follow integrated pest management.

- Maintain irrigation and fertigation equipment.
- Keep production records.
- Plan the market before planting high-value crops.

CONCLUSION

Protected cultivation through polyhouses is an important technology for producing high-value crops under better-managed environmental conditions. It can help farmers improve productivity, quality, resource-use efficiency and market opportunities. Polyhouse farming requires technical knowledge, regular monitoring, proper investment and reliable marketing. It should be treated as a commercial enterprise rather than simply constructing a structure and expecting high returns.

With suitable government support, scientific crop management, efficient irrigation, quality planting material and strong market linkages, polyhouse cultivation can become a profitable enterprise for farmers, rural youth, FPOs and entrepreneurs.