

Poly House Farming: A New Addiction of Agriculture

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²Guide

Abstract

This study explores the existing scope and future potential of polyhouse cultivation in Haryana, a state renowned for its strong agricultural base. Polyhouse structures provide a controlled environment for plant growth by adjusting temperature, humidity, and light, enabling year-round crop production regardless of climatic variations. Data was collected through structured interviews with district horticulture departments, focusing on cultivated area under polyhouses, types of structures, and financial assistance available. Findings reveal that 1,771,121 m² of land across Haryana is utilized for polyhouse farming, involving 1,956 growers. The construction cost for a 100 m² polyhouse is around ₹62,740, with a government subsidy of ₹43,416. An investment of ₹8,926 for plantation yields a return of ₹45,000 within three months. These insights emphasize substantial government incentives promoting polyhouse farming and its potential as a sustainable and lucrative agricultural practice in the region.

Keywords: Horticulture, Substantial, Temperature, Financial

Introduction:

A house or structure made of transparent material such as glass or polyethylene where plants grow and develop under controlled climatic conditions is a polyhouse or a greenhouse. As per the need, the structure size will vary from small shacks to large-sized buildings. Overall, as the house prevents the greenhouse gas from escaping, a greenhouse is a glasshouse whose interiors are warm when exposed to sunbeams. So the temperature inside is survival-friendly and comfortable for the plants when it's cold outside.

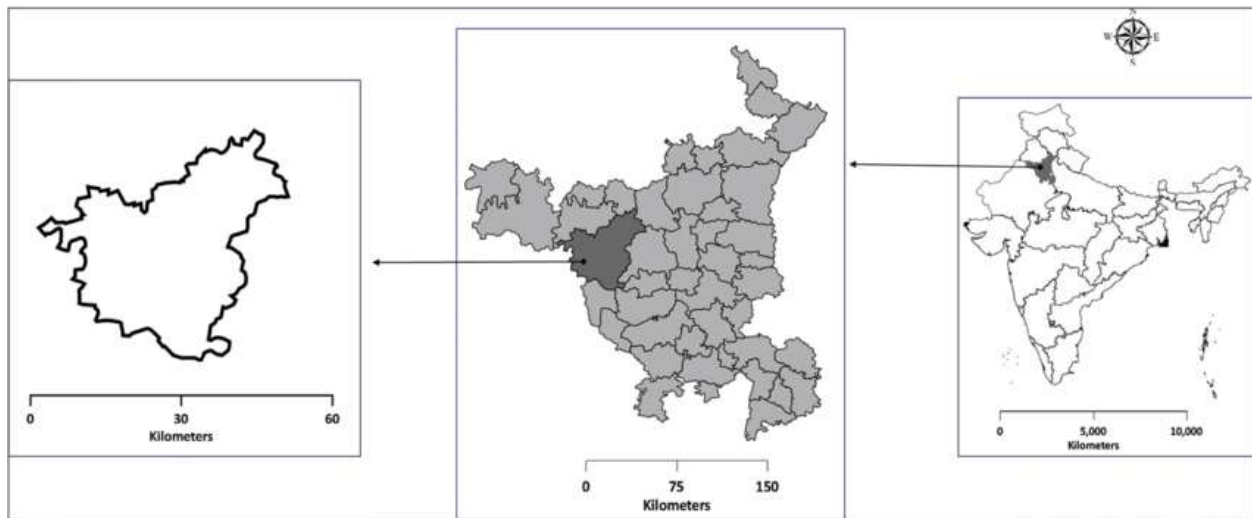
In a country where agriculture is not just a profession but a way of life for a significant portion of the population, innovation is crucial for survival and progress. As one of the most populous nations on earth with ever-growing food requirements, India needs to continually evolve its agricultural practices. The use of sophisticated cultivation techniques, such as polyhouses, has emerged as one of the most promising approaches to coping with these demands, offering an opportunity to rewrite the Indian agriculture story. In this post, we will delve into how polyhouse technology is revolutionizing Indian agriculture and how Agriplast Protected Cultivation, as the country's largest greenhouse factory, is making this innovation accessible to all farmers across the country.

About Study Area



Hisar district spans an area of approximately 4,268 square kilometers, encompassing diverse geographical features ranging from fertile plains to semi-arid landscapes. The district is situated in the arid zone of Haryana, experiencing a semi-arid climate characterized by scorching summers, mild winters, and scanty rainfall.

Agriculture forms the backbone of Hisar's economy, with the district renowned for its fertile soil and extensive cultivation. The region boasts a rich agricultural heritage, primarily focusing on the cultivation of crops such as wheat, rice, cotton, pearl millet (bajra), and pulses. The fertile plains of Hisar, irrigated by the perennial rivers Yamuna, Ghaggar, and seasonal streams, support intensive farming practices, contributing significantly to the state's food grain production. 84 polyhouses are in Hisar district.



Many people get confused between polyhouse and greenhouse. Polyhouse is a greenhouse of sorts, or we may say it's a small greenhouse version where polyethylene is used as a cover. Polyhouse farming is a common greenhouse technology in developing countries like India due to its low construction and easy maintenance costs. Another greenhouse technology where wood is used as the cover is Lath Building. Compared to the greenhouse, the poly house is cheaper but the latter is longer-lasting than the polyhouse. Now let us talk about some benefits of polyhouse and why farmers, who are especially interested in organic farming should try it out!

Polyhouse is divided and has 2 different types, namely:

- Naturally ventilated polyhouse – With the exception of an adequate ventilation and fogger system, this sort of polyhouse or greenhouse does not have any environmental protection system to save crops from bad weather and natural pests and diseases.
- Environmentally controlled poly houses are mainly designed to prolong the growing duration of crops or to increase the yield of the off-season by regulating light, temperature, humidity, etc.

In addition, these polyhouse structures are divided into 3 subcategories.

- Low cost or low tech polyhouse.
 - Medium cost or medium-tech polyhouse.
 - Expensive or Hi-tech polyhouse.
1. **Low-tech polyhouse system:** It is possible to build this polyhouse system with low-cost material and it is very simple to maintain this system. Polyhouse construction typically takes place with local materials, such as wood and bamboo. Generally, as a cladding material, Ultra Violet (UV) film is used. For cold climatic conditions, this sort is fitting. Using shade networks, temperature and humidity can be controlled. In this type of poly house, there will be no other regulated devices used
 2. **Medium tech Polyhouse System:** In this system, G is involved in the construction of poly houses. I have pipes (galvanized iron). The entire polyhouse frame is fixed to the ground to avoid any damage from the wind flow, and screws are mounted to the housing structure of the canopy cover. Humidity and temperature are controlled by arranging cooling pads, mist sensors, thermostats, and exhaust fans in this system. These kinds of poly houses can be adopted in dry and composite weather conditions. This is very useful where, during their life cycle, the plants need good care.

3. **Hi-tech polyhouse system:** Hi-tech polyhouse provides an automatic temperature, humidity, fertilizer, irrigation, and other full environmental parameters control system at all times for growing crops.



POLYHOUSE COSTING

The cost of Polyhouse depends on the type of device and the construction area you select. Here are some specifics of the polyhouse construction cost. Such figures can vary from time to time and from area to region.

- Rs.400 to Rs.500/square meter for low-cost/low-tech polyhouse without exhaust fan systems and cooling pads.
- Medium cost/medium tech polyhouse (without automation) with refrigeration pads and exhaust fan systems costs Rs.900 to Rs.1200/square meter.
- A fully automatic control system hi-tech polyhouse costs Rs.2500 to Rs.4000/square met

Polyhouse can be used to grow various types of plants, crops, vegetables, and fruits. But the ones that are best suited for this method of farming are:

- Papaya, strawberry, etc. are fruits that can be grown in a polyhouse with ease.
- Cabbage, bitter gourd, capsicum, radish, cauliflower, chili, coriander, onion, spinach, tomato, etc. are vegetables that can be cultivated.
- It is also possible to grow flowers such as Carnation, Gerbera, Marigold, Orchid and Rose easily.
- Mushrooms can also be grown in a polyhouse. You can read more about mushroom farming [here](#).

Now that we have covered the basics, let us talk about what are the merits as well the demerits of this method.

Understanding the Polyhouse: A Unique Farming Solution

1. The Fundamentals of Polyhouse Structures

Polyhouse farming can significantly increase crop yields, as the controlled environment promotes optimal conditions for growth. The ability to grow crops continuously throughout the year further boosts overall yields, as farmers can produce multiple harvests regardless of the season.

2. Enhanced Crop Quality

Protected cultivation methods result in healthier plants and higher-quality produce, free from the damage caused by external factors such as pests, diseases, and extreme weather. Consumers increasingly value the quality and taste of produce, so delivering exceptional products can directly impact a farmer's marketability and revenues.

● Sustainable Farming Practices for a Greener Future

1. Reduced Pesticide and Fertilizer Use

Polyhouses create an environment that is less hospitable to pests and diseases, reducing the need for harmful pesticides and fertilizers. This not only lowers a farmer's production costs but also contributes to more environmentally-friendly agricultural practices, benefiting both the farmer's bottom line and the planet at large.

2. Efficient Water Management

Traditional open-field farming can lead to significant water waste. With a polyhouse, farmers can employ precision irrigation methods, such as drip irrigation, reducing the amount of water used while optimizing crop hydration. This enhanced water management translates to increased resource efficiency for India's typically water-scarce agricultural regions.

Merits:

By now, you already must have an idea about what polyhouse farming basically is. Now let's discuss some benefits of the same, as to why it is something that you should start and take up.

- Your plants are grown at a regulated temperature, so the chances of crop failure or harm are less likely.
- Throughout the year, you can grow crops and you will not have to wait for any particular season, which is very beneficial for production and income.
- The number of insects and rodents found in a polyhouse is much less as compared to normal farming techniques.
- The external climate will not have any effect on crop development.
- The product quality is clearly higher in polyhouse as compared to normal farming techniques.
- A polyhouse provides your crops with a healthy aeration and drainage system.
- Poly House provides your plants in every season with the right environmental facilities.
- It also improves production by about 5 to 10 times.
- The period for cropping is much less in a polyhouse.
- The application of fertilizer is simpler and is automatically managed with the aid of drip irrigation.

One can get high returns with a polyhouse without a doubt. The returns a farmer receives from Open Air Farming are very meager. Produce from Polyhouse Farming is 8 times more than normal farming. The returns often come from a high-profit margin. Poly House Farming Returns are more than 90 percent during the off-seasons, as per the data. While Poly House's initial cost is higher, you can recover it in no time.

Identified problem (Demerits)

Even though, as we have discussed, polyhouse is an excellent form of farming that is even good for off-season farming, it is not perfect! Although it has many benefits, there are some demerits as well to this method, which we have discussed below.

- Unlike artificial ones, farmers have slight control over airflow and temperature in the naturally ventilated poly houses; this could restrict their product range to those that suit the environment.
- Naturally ventilated polyhouses must be excessively larger than those with a fan and pad, resulting in wastage during the construction process in metal costs and labor charges.
- Low-quality films in polyhouses cause simple wear and tear in heavy rains, rendering crops vulnerable.

- Irrigation may also be difficult as only one method of polyhouse irrigation cannot be ideal for all the crop types and therefore irrigation needs to be handled effectively. If mishandled and due care is not taken, the cultivation and maintenance expense of the polyhouse is very high.
- Growing temperatures can often damage the polyhouse farming cladding during the summer. Due to a drop in the amount of oxygen and fresh air, no one can reach the polyhouse farm for a few hours after spraying the fertilizers.
- The maintenance cost of polyhouse farms is also slightly higher and one will require skilled labor to take care of it.
- Thus many factors are also such as High Initial Investment , Technical Expertise ,Energy Consumption , Water Management ,Dependency on External Inputs ,Market Dynamics & Climate Change Vulnerability etc.

Despite these disadvantages, polyhouse is definitely something that is being taken up by a number of farmers for reasons such as increasing their crop yields, growing the production, increasing the annual income, and being able to provide crops all year round, no matter the season.

Proposed Idea:

Polyhouse farming is a cost-effective and resource-efficient way of cultivating crops that yields superior results compared to traditional farming methods. It allows the creation of a controlled environment that provides year-round favorable conditions for a variety of crops. The polyhouse, a specially designed fabric-covered house-like structure, helps to control temperature, humidity, and light, thereby optimizing conditions for crop growth.

Besides offering perfect growing conditions, polyhouse farming also increases yield, enhances crop quality, and reduces the risk of pests and diseases. This has a direct impact on the income and profitability of farmers, making it a highly appealing option for those in the agricultural sector.

As India's leading polyhouse manufacturer, Agriplast Protected Cultivation is spearheading the movement of modernizing Indian agriculture through its state-of-the-art products and services. Their team of experienced professionals is dedicated to providing effective solutions to farmers' concerns, along with the necessary support to make the transition to polyhouse farming a smooth one.

In a country where food security is a prominent issue, polyhouse farming has the potential to be a game-changer, ensuring higher and more stable crop yields. Consequently, it will bring a paradigm shift in Indian agriculture, securing the livelihoods of farmers and paving the way for a sustainable agricultural economy. With supporting players like Agriplast Protected Cultivation leading the charge, the future of Indian agriculture looks promising. Join us as we delve deeper into the world of polyhouse farming and its transformative impact on Indian agriculture.

- Promoting Accessibility and Affordability
- Enhancing Resource Efficiency
- Promoting Sustainable Practices
- Market Linkages and Value Addition
- Research and Innovation

The Role of Innovation in Modernizing Indian Agriculture with Polyhouses(Social Impact)

- Improved Livelihoods for Farmers
- Enhanced Food Security
- Empowerment of Women and Marginalized Groups

- Community Development
- Environmental Awareness and Practices
- Education and Innovation
- Health and Well-being
- Social Cohesion and Cooperation
- Rural Development

As India faces mounting pressure to sustainably feed its rapidly growing population, innovation is more important than ever to ensure long-term food security and agricultural prosperity. Polyhouses represent one such innovative solution that holds the potential to transform the way Indian farmers cultivate their crops. In this guide, we'll explore how polyhouses are revolutionizing Indian agriculture and discuss how Agriplast Protected Cultivation, India's leading polyhouse manufacturer, is easing the transition for farmers seeking to adopt this cutting-edge farming method.

Agriplast Protected Cultivation's Role in the Polyhouse Revolution

1. Customized Solutions Tailored to Indian Farmers

As India's largest greenhouse factory, Agriplast Protected Cultivation offers customized polyhouse solutions designed specifically for the Indian agricultural landscape. The company's experienced professionals work closely with farmers to assess their individual needs and recommend the most suitable polyhouse designs based on their unique circumstances.

2. Comprehensive Support and Training Services

Transitioning to polyhouse farming can be a daunting experience for farmers accustomed to conventional methods. To facilitate this change, Agriplast Protected Cultivation provides comprehensive support services, from installation and maintenance to ongoing training and guidance. This holistic approach ensures that Indian farmers are fully equipped to embrace the potential of polyhouse farming and maximize the benefits it offers.

3. Driving the Polyhouse Movement Across India

Agriplast Protected Cultivation is committed to making polyhouse technology accessible to Indian farmers of all sizes, from small-scale family operations to large commercial agricultural enterprises. By providing affordable options and financing assistance, the company is advancing the polyhouse movement and helping Indian farmers adopt innovative and productive farming practices.

Conclusion:

As India grapples with the need to modernize its agricultural sector in the face of increasing food demand and limited resources, polyhouse technology offers an attractive and sustainable solution that can revolutionize the country's farming practices. Achieving higher crop yields, enhanced quality, and more eco-friendly cultivation methods are within reach with the help of providers like Agriplast Protected Cultivation, who are championing the benefits of polyhouses and arming Indian farmers with the knowledge and capabilities to embrace this transformative approach.

By adopting polyhouses, Indian farmers can successfully navigate the challenges presented by a rapidly changing agricultural landscape and build a prosperous, sustainable future for themselves and their communities. Agriplast Protected Cultivation's unwavering commitment to facilitating this transition is instrumental in advancing the revolution, working to ensure that Indian agriculture not only survives but thrives in the face of evolving demands and constraints.

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