

Quality Fruit Production Under Protected Cultivation

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Introduction

Horticulture under protected environments such as greenhouses and polytunnels has become increasingly popular in recent years due to the advantages it offers over traditional open-field farming. The use of protected environments provides growers with greater control over the growing environment, allowing them to produce

high-quality fruits with consistent yields. Protected horticulture can also help to reduce the impact of pests and diseases, as well as extend the growing season, enabling growers to produce a wider range of fruits year-round. In this article, we will discuss the benefits of protected horticulture and the key considerations for success.

Importance of Quality horticulture under a protected Environment

1. Improved quality: Protected environments allow for precise control of growing conditions, such as temperature, humidity, and light, which can result in better fruit quality compared to outdoor production.

2. Increased yield: By controlling the environment, farmers can extend the growing season and increase overall yield, as well as reduce crop loss due to weather-related factors like frost and wind damage.

3. Pest and disease management: Protected environments can help reduce the

impact of pests and diseases, allowing farmers to use fewer chemicals and minimize damage to crops.

4. Reduced water usage: Protected environments can conserve water by reducing evaporation and runoff, leading to more efficient use of water resources.

5. More efficient use of land: Protected environments can increase the amount of land that can be used for horticulture, as well as improve the efficiency of land usage by reducing the need for fallow land and rotation crops.

Objective of Quality horticulture under a protected Environment

1. To produce fruit crops with consistent quality and high yield, regardless of external factors such as weather conditions.

2. To maintain optimal temperature, humidity, and light conditions inside the protected environment to ensure optimal growth and fruit development.

3. To reduce the use of pesticides and chemical fertilizers by controlling the environment and implementing integrated pest management techniques.
4. To improve the efficiency of water usage and reduce waste by implementing precision irrigation systems.
5. To increase the shelf life of the fruit and improve its post-harvest quality by controlling the environment and implementing proper storage methods.

Modern practices used in the protected cultivation of fruit crops

1. Climate control: Climate control is a crucial aspect of protected cultivation, and modern greenhouses are equipped with heating, cooling, ventilation, and shading systems to maintain optimal growing conditions for crops. These systems help to regulate temperature, humidity, light, and other environmental factors to ensure optimal growth and yields.

2. Irrigation systems: Irrigation is an essential component of protected cultivation, and modern greenhouses are equipped with automated irrigation systems that provide crops with the precise amount of water they need. These systems can be programmed to water crops at specific intervals, ensuring consistent and optimal watering for crops.

3. Soilless culture: Soilless culture, also known as hydroponic cultivation, is a modern practice used in the protected cultivation of fruit crops. This method involves growing crops without soil, instead using a nutrient-rich water solution

to provide crops with the necessary nutrients. Soilless culture allows for greater control over the growing environment and can lead to improved yields and quality of crops.

4. LED lighting: LED lighting is becoming an increasingly popular method of providing crops with the necessary light for growth in protected cultivation. LED lights are energy-efficient and provide a full spectrum of light that is ideal for plant growth, leading to improved yields and quality of crops.

5. Integrated pest management: Pests and diseases can be a major problem in protected cultivation, and modern greenhouses are equipped with integrated pest management (IPM) systems to minimize their impact. IPM involves a combination of cultural, physical, biological, and chemical control methods to manage pests and diseases and reduce the need for synthetic pesticides.

Type of greenhouse used in cultivation of Fruit Production

1. Glass Greenhouses: These greenhouses provide high light transmission and are ideal for growing a wide range of fruits, including tomatoes, peppers, cucumbers, strawberries, and more.

2. Plastic Greenhouses: Similar to glass greenhouses, plastic greenhouses are less expensive and easier to maintain. They can be used to grow crops such as blueberries,

raspberries, blackberries, and other small fruit crops.

3. Controlled Environment Greenhouses: These are highly specialized greenhouses designed for growing fruits in a controlled environment. They are equipped with automated systems for temperature, humidity, and light control, and are ideal for growing high-value fruits such as cherries, grapes, and kiwis.

Some current trends and developments in protected fruit cultivation

1. Automation and Technology: The use of automated systems for climate control, irrigation, and pest management has increased in protected fruit cultivation. This technology helps to improve the efficiency and profitability of production by reducing labor costs, reducing the use of inputs such as water and pesticides, and increasing crop yields.

2. Organic and Sustainable Production: There is growing interest in organic and sustainable production methods in protected fruit cultivation. This includes the use of natural pest control methods, reduced tillage and soil disturbance, and the use of cover crops and compost to maintain soil health.

Conclusion

In India, protected fruit cultivation is a rapidly growing industry with significant potential for expansion. With a large and growing population, increasing urbanization, and a growing middle class with disposable income, the demand for high-quality, fresh fruit is expected to continue to grow. However, to fully realize the potential of protected fruit cultivation in India, significant investments in research and development, infrastructure, and

3. Expansion into New Markets: Protected fruit cultivation is expanding into new markets and regions, with a focus on the cultivation of high-value crops such as cherries, grapes, kiwis, and blueberries. This growth is driven by the increasing demand for these crops, both domestically and internationally.

4. Research and Development: There is ongoing research and development in the field of protected fruit cultivation, with a focus on developing new technologies, improving production systems, and increasing the sustainability of production. This research is helping to drive innovation and improve the competitiveness of protected horticulture.

education are needed. The Indian government has recognized the importance of the horticulture sector, including protected fruit cultivation, and has launched several initiatives to support the growth of this industry. These include the Pradhan Mantri Fasal Bima Yojana, which provides insurance coverage for horticulture crops, and the Paramparagat Krishi Vikas Yojana, which promotes organic farming practices.

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