



Tuberose (*Polianthes tuberosa*) Cultivation in Polyhouse: A Comprehensive Guide

(*Kan Singh¹ and Gaurav Mehta²)

¹Research Scholar, Department of Horticulture (Floriculture, Landscape and Architecture), College of Agriculture Horticulture, Mandsaur-458001, Madhya Pradesh

²Research Scholar, Department of Soil Science and Agricultural Chemistry, RCA (MPUAT), Udaipur (313001) Rajasthan

*Corresponding Author's email: kansinghdedusar@gmail.com

Tuberose, known for their fragrant and beautiful white flowers, are a popular ornamental plant used in bouquets and floral arrangements. Cultivating tuberose in a polyhouse offers several advantages, including controlled environmental conditions, extended growing seasons, and improved flower quality. Here's a detailed guide on tuberose cultivation in a polyhouse:

1. Advantages of Cultivating Tuberose in a Polyhouse

- **Controlled Environment:** A polyhouse provides a controlled environment, protecting plants from adverse weather conditions, pests, and diseases.
- **Extended Growing Season:** The polyhouse allows for year-round cultivation, regardless of external climate conditions.
- **Improved Quality:** Controlled temperature, humidity, and light conditions lead to better flower quality and yield.

2. Preparation and Setup

Polyhouse Design

- **Structure:** Ensure the polyhouse has proper ventilation, shading, and irrigation systems. The structure should be designed to allow sufficient airflow and prevent excessive heat build-up.
- **Temperature Control:** Tuberose thrive in temperatures between 18-24°C (65-75°F). Use cooling systems or ventilation to maintain optimal temperatures.

Soil and Growing Medium

- **Soil Requirements:** Tuberose prefer well-drained, loamy soil with a pH range of 6.0-7.0. Avoid heavy, clayey soils that retain too much moisture.
- **Growing Medium:** In polyhouses, you can use a mixture of peat moss, compost, and perlite or vermiculite to ensure good drainage and aeration.

3. Planting and Care

Planting Tubers

- **Tuber Preparation:** Use healthy, disease-free tubers for planting. Soak tubers in a fungicide solution for 30 minutes before planting to prevent fungal infections.
- **Planting Depth:** Plant tubers 10-15 cm deep and 15-20 cm apart. Ensure the soil covers the tubers completely.

Watering

- **Irrigation:** Maintain consistent moisture levels without waterlogging. Drip irrigation or soaker hoses are ideal for polyhouse cultivation, providing regular and controlled watering.
- **Water Quality:** Use clean, non-saline water to avoid root damage and nutrient imbalances.

Fertilization

- **Nutrients:** Tuberoses require a balanced fertilizer with equal amounts of nitrogen, phosphorus, and potassium. Apply a complete fertilizer during planting and top-dress with additional phosphorus and potassium during growth.
- **Organic Matter:** Incorporate compost or well-rotted manure into the soil before planting to improve fertility and structure.

Temperature and Humidity

- **Temperature Control:** Maintain a temperature range of 18-24°C (65-75°F) during the day and slightly cooler at night. Use fans or ventilation systems to regulate temperature.
- **Humidity:** Keep humidity levels between 50-60% to prevent fungal diseases and promote healthy growth.

4. Pest and Disease Management

- **Pests:** Monitor for common pests like aphids, spider mites, and whiteflies. Use integrated pest management (IPM) practices, including biological controls and organic insecticides.
- **Diseases:** Prevent fungal diseases like botrytis and root rot by maintaining good air circulation and avoiding excessive moisture. Use fungicides as needed and remove infected plants promptly.

5. Harvesting and Post-Harvest Care

Harvesting

- **Timing:** Harvest tuberose spikes when the lower florets are open, and the upper florets are still in bud. This ensures the flowers have a longer vase life.
- **Method:** Cut the spikes early in the morning or late in the evening to reduce stress on the plants. Use sharp, clean tools to make clean cuts.

Post-Harvest Handling

- **Storage:** Store cut flowers in a cool, clean environment. Use flower preservatives to extend vase life.
- **Conditioning:** Place cut stems in water with floral preservatives immediately after harvesting to ensure they stay fresh and hydrated.

6. Challenges and Solutions

- **Overheating:** Ensure proper ventilation and shading to prevent excessive heat buildup in the polyhouse.
- **Water Management:** Avoid waterlogging by using well-draining growing mediums and monitoring irrigation closely.
- **Disease Control:** Implement regular sanitation practices and avoid overcrowding to reduce disease incidence.

7. Economic Considerations

- **Initial Investment:** Consider the costs of polyhouse construction, equipment, and tuberose tubers. While the initial investment can be high, the controlled environment can lead to increased yields and quality.
- **Operational Costs:** Account for expenses related to irrigation, fertilization, pest control, and energy for climate control.
- **Revenue:** Tuberoses are highly valued in the floral market, and proper management can result in a profitable venture.

Conclusion

Cultivating tuberose in a polyhouse offers significant advantages, including environmental control and improved flower quality. By managing factors like soil preparation, irrigation, temperature, and pest control, growers can achieve successful and profitable tuberose cultivation. With careful planning and attention to detail, polyhouse cultivation can yield high-quality flowers and enhance the overall efficiency of the growing process.