TUBEROSE

Botanical Name: *Polianthes tuberosa*

Family: *Asparagaceae*

Origin: Mexico
Importance of Tuberose

- In India it has gained considerable importance and is being commercially grown in West Bengal, Tamil Nadu, Maharashtra, Karnataka and hilly areas.
- It is grown for long stem cut flowers, loose flowers, beds, borders and pot plant.
- It is also grown for perfumery as its flowers contain about 0.1 per cent oil.
Cultivars

- Single flower type (Rajat Rekha, Shringar, Prajwal, Mexican, Calcuttia and local types)

- Double flower type (Swarna Rekha, Suvasini, Vaibhav, Arka Nirantara, Mexican, Calcuttia and local).
Shringar
Prajwal
Vaihnav
Soil and Climate

- **Soil:**
  - Tuberose can be grown in any soil but loam and sandy-loam soil having pH around neutral, good aeration and drainage.

- **Climate:**
  - Tuberose grows well in sunny situation having warm humid conditions. The temperature should be 20-35°C as low and high temperatures adversely affect the growth and floral quality.
Planting Time

- High hills: April-May
- Staggered planting at fortnightly interval
  insure regular supply of cut flowers for
  longer duration.
Propagation

- **Propagation:**
  - Tuberose is propagated by bulbs (2-3 cm diameter).
- **Treatment of Bulbs:**
  - Dip bulbs for about 20 minutes in a solution of Emisan (0.2%), Thiram (0.3%), Captan (0.2%), Bavistin (0.2%) or Benlate (0.2%).
  - Dry in shade before planting or storing.
  - Before planting treat corms in systemic fungicide and before storing in contact fungicide.
Planting density and spacing

- Important factors are the purpose of cultivation whether for cut flowers, planting material or both, nutrient status of the soil, bulb size, cultivation in greenhouse or open fields.
- Low planting density results in wastage of inputs and very high planting density leads more plant competition, thus reducing individual bulb enlargement.
- For economic returns the optimum planting spacing is 20 x 20 cm row to row and plant to plant, respectively or 30 x 20 cm.
- About 15-20q bulbs are required for tuberose cultivation in one hectare area.
Planting depth and Methods of planting

- **Planting depth:**
  - It should be 2.5 times than the diameter of bulbs. Planting depth of 8-10 cm is ideal for production of quality cut flowers and bulbs.

- **Methods of planting:**
  - Planting is done in flat beds in low hill areas and on ridges in mid and high hill areas.
Nutrition

- If soil contains sufficient nutrients then there is no need for applying chemical fertilizers and FYM @ 5 kg N: 30g, P: 20g, K: 10g/m² is sufficient.
- Apply half of N and full dose of P and K at the time of planting and rest N at the time of spike emergence.
Irrigation

- Soil should have 60-90 per cent moisture and no watering is required until bulbs sprout.
- Depending upon weather 8-12 irrigations of 2.5-5 cm depth are required.
- Stage immediately after sprouting and 4-6 leaf stage are very sensitive to water deficit. Irrigation once a week is ideal.
Staking or Plant Support

- Earthing up to 10-15 cm height is done when plants are 15-20 cm high.
- Staking with bamboo or wooden sticks is done in beds and string or rope may be tied in three rows along the plant-rows to avoid lodging of plants.
Weeding

- High manure and irrigation requirement creates congenial conditions for the growth of various weeds.
- Three-four hand weedings are sufficient.
- Atrazine (1.5 kg/ha), oxyfluorfen (0.5 kg/ha) are sprayed as pre-emergence or Stomp @ 3.3 l/ha (pendimethalin @ 1.0 kg/ha) control very effectively weeds when applied as pre-emergence and after 45 days of planting in about 3000 litre water.
Diseases

- Stem rot (Sclerotium rolfsii)
- Alternaria leaf spot (Alternaria polyanthi)
- Blue mould (Botrytis elliptica), and
- Flower bud rot (Erwinia species)
Insect-pests

- Grasshopper
- Aphids
- Thrips
- Caterpillars
- Red Spider Mites, and
- Nematodes
Harvesting of Flowers

- Tuberose flowers are ready for harvesting after 100-120 days of planting.
- Harvesting is done in cool hours either in the morning or evening.
- **Local market:** Cut flowers are harvested when lower one pair of flowers is fully open.
- **Distant market:** Lower pair of flower buds has just burst.
- **Loose flowers:** Fully/ half open flowers.
Grading and Packaging

- **Grading:**
  - Tuberose cut flowers are graded according to spike length, rachis length and number of flowers per spike.
  - Loose flowers are graded according to flower size.

- **Packaging:**
  - Cut flowers are marketed in bunches of 25, 50 or 100 and these bunches/bundles are packed in bamboo baskets, card board cartons/containers and are transported vertically.
  - Loose flowers are packed in bamboo baskets or gunny bags or polythene bags lined with newspaper.
Bulb Harvesting

- Harvest bulbs after 40-50 days of flowering or foliage start turning yellow.
- Treat bulbs before storing.
- The bulbs are graded into two sizes as small less than 1.5 cm in diameter and large more than 1.5 cm in diameter.
- Tuberose bulbs are harvested/lifted after 2-3 years.
<table>
<thead>
<tr>
<th>Year</th>
<th>Cut Flowers (Lakhs/ha)</th>
<th>Loose Flowers (Ton/ha)</th>
<th>Bulbs (Lakhs/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>3.5-5.0</td>
<td>6.0-10.0</td>
<td>-----</td>
</tr>
<tr>
<td>Second</td>
<td>5.0-6.0</td>
<td>10.0-12.0</td>
<td>18.0-20.0</td>
</tr>
</tbody>
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