Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 05, Issue: 05 (SEP-OCT, 2025)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Tomato Farming for High Yield and Disease-Free Production

Dr. Vivek Thapliyal[1], Miss Jingyasha Meher[2], Dr. Shikha Jain[3] and *Abhishek Ranjan[4]
[1]Horticulture Development Officer, Horticulture Department, Haryana
[2]SMS (Horticulture), Krishi Vigyan Kendra, Deogarh, Odisha
[3]Assistant Professor, Gyanveer University, Sagar, Madhya Pradesh
[4]Ph.D. Research Scholar, Department of Agronomy, P.G.C.A,
Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar, India
*Corresponding Author's email: ranjanabhishek522@gmail.com

Tomato (*Solanum lycopersicum*) is one of the most important vegetable crops grown worldwide. In India, it is cultivated on a large scale in states like Madhya Pradesh, Maharashtra, Karnataka, Andhra Pradesh, and Uttar Pradesh. Tomatoes are rich in Vitamin C, Vitamin A, lycopene, and antioxidants, making them nutritionally valuable. For farmers, it is considered a cash crop because of its steady demand in local, national, and international markets. To ensure bumper yields and disease-free harvests, farmers need to adopt scientific cultivation methods.

Step 1: Variety Selection

High-yield and disease-resistant varieties are the backbone of successful tomato farming.

- **Open-pollinated varieties:** Pusa Early Dwarf, Pusa Rohini, Pusa Sadabahar.
- **Hybrids:** Arka Vikas, Arka Rakshak (resistant to bacterial wilt & TLCV), Arka Samrat, Abhinav, Indam hybrids, Nunhems NS-516.
- **Cherry tomatoes:** Popular for polyhouse cultivation, fetch higher market prices.

Always choose **region-specific varieties** recommended by agricultural universities.

Step 2: Soil and Field Preparation

- **Soil Type:** Well-drained sandy loam with good organic matter.
- **pH Range:** 6.0–7.5 is ideal. Avoid saline and highly acidic soils.
- **Land Preparation:** 2–3 deep ploughings followed by FYM (20–25 tons/acre). Raised beds are best for drainage.
- **Soil Sterilization:** In nursery beds, use solarization (cover with polythene sheet for 3–4 weeks) to kill soil-borne pathogens.

Step 3: Nursery Raising

- **Seed Rate:** 100–150 g/acre.
- **Bed Size:** 3 × 1 m raised nursery beds with 15–20 cm height.
- **Seed Treatment:**

✓ Chemical → Treat with Thiram or Captan (2–3 g/kg seed).
✓ Biological → Treat with *Trichoderma viride* (5 g/kg seed).

- **Protection:** Cover nursery with shade net to avoid insect-transmitted viruses (like TLCV).
- **Seedling Age:** 25–30 days old seedlings are best for transplanting.

Step 4: Transplanting

- **Spacing:**

✓ Normal varieties → 60 × 45 cm.

✓ Hybrid varieties → 75 × 60 cm.
- **Time of Planting:**
✓ North India → July–Sept and Nov–Feb.
✓ South India → Almost throughout the year.
- **Basal Fertilization:** Mix 40 kg urea, 125 kg SSP, and 50 kg MOP per acre before transplanting.

Step 5: Irrigation and Mulching

- First irrigation → immediately after transplanting.
- Critical stages → flowering, fruit set, and fruit development.
- **Drip irrigation** is highly recommended → saves 30–40% water, reduces disease incidence, and allows fertigation.
- **Mulching with black polythene** → reduces weed growth, conserves soil moisture, and keeps fruits disease-free.

Step 6: Nutrient Management

- **Farmyard Manure (FYM):** 20–25 tons/acre.
- **NPK Dose (per acre):** 100:50:50 (Nitrogen:Phosphorus:Potassium).
- Apply nitrogen in 3–4 split doses.
- **Micronutrients:**
✓ Boron → Prevents fruit cracking.
✓ Calcium → Improves fruit firmness.
✓ Magnesium → Enhances chlorophyll formation.
- **Fertigation:** Apply water-soluble fertilizers through drip for higher efficiency.

Step 7: Plant Training and Pruning

- **Staking:** Use bamboo sticks or trellis system to keep plants upright. This reduces disease risk and increases fruit quality.
- **Pruning:** Remove side shoots (suckers) regularly to improve aeration and fruit size.

Step 8: Major Diseases and Their Management

1. Early Blight (*Alternaria solani*)
- Symptoms → Brown concentric rings on lower leaves.
- Management → Spray Mancozeb (0.25%) or Copper oxychloride; remove infected leaves.

2. Late Blight (*Phytophthora infestans*)
- Symptoms → Water-soaked dark lesions, fruit rot.
- Management → Spray Metalaxyl + Mancozeb; avoid excess humidity.

3. Bacterial Wilt (*Ralstonia solanacearum*)
- Symptoms → Sudden wilting without yellowing.
- Management → Resistant varieties (Arka Rakshak), soil solarization, bleaching powder in irrigation water.

4. Tomato Leaf Curl Virus (TLCV)
- Symptoms → Leaf curling, stunted plants.
- Spread → By whiteflies.
- Management → Yellow sticky traps, neem oil sprays, systemic insecticides (Imidacloprid).

5. Powdery Mildew (*Oidium spp.*)
- Symptoms → White powdery growth on leaves.
- Management → Spray Wettable Sulphur (0.25%).

Step 9: Major Pests and Their Control

1. **Fruit Borer (Helicoverpa armigera):**
- Bores holes in fruits.

- Management → Pheromone traps, release *Trichogramma* wasps, spray Spinosad/Emamectin benzoate.

2. **Whiteflies:**
- Transmit TLCV.
- Management → Yellow sticky traps, neem oil sprays, Imidacloprid.

3. **Aphids & Thrips:**
- Cause leaf curling & spread viruses.
- Management → Spray neem-based products or systemic insecticides.

Step 10: Harvesting and Yield

- First harvest → 70–90 days after transplanting.
- Harvest at **breaker stage** (slight color change) for distant markets.
- **Yield:**

✓ Open-pollinated → 100–150 quintals/acre.
✓ Hybrids → 200–300 quintals/acre (with good management).

Bonus Profit Tips

- **Protected Cultivation (Polyhouse/Net House):** Ensures off-season production, premium prices.
- **Organic Tomato Farming:** Increasing demand in urban markets. Use vermicompost, biofertilizers, neem cake, and organic sprays.
- **Value Addition:** Processing into ketchup, puree, and dried tomatoes increases profitability.