

TOMATO

(*Lycopersicon esculentum* Mill.)

Tomato is one of the most important vegetable crops supporting the livelihood and improving the economic life of many vegetable growers in the region. It is used as a vegetable, soup, salad, pickle, ketchup, puree, sauce and many other ways. It is a good source of vitamin A, B and C.



Suitable Varieties/Hybrids

Rice based cropping system: Manikhamnu, Manileima, Manithiobi, Pusa Ruby, Punjab Chuhara

High yielding hybrids: Avinash-2, Rocky, Suraksha, Vaishali.

Bacterial wilt tolerant varieties: BT -117-5-3, BT -12, Arka Alok, Arka Abha, Megha Tomato-I, Megha Tomato-3, Suraksha(Hybrid).

Soil and Climate

Sandy loam soil rich in organic matter is ideal for tomato cultivation. The optimum temperature required for its cultivation is 15-27 °C. Excessive and continuous rains during flowering and fruiting stages adversely affect fruit setting and yield.

Field Preparation

Soil is ploughed 2-3 times with power tiller or through digging with spade.

Seed Rate

Open pollinated varieties: 500g/ha

Hybrids: 400g/ha

Time of Seed Sowing

It is grown in high hills from February to June (spring - summer), while in mid and low hills two crops can be raised, one from February to June and another from September to December. The summer crop fetches good price.

Nursery Raising

Seedlings are grown on raised nursery bed. The width of the nursery bed should not be kept more than one meter and length as per the need/availability of space. The beds are dug and mixed with FYM @ 4 kg/m² and leveled. Before sowing, the nursery beds are drenched with Dithane M-45 (Sg/rrr') or Bavistin(2 g/rn") to reduce the incidence of damping off. Rows are made at 5 cm distance along the width of bed with the help of bamboo stick. Sieved FYM is applied on prepared beds and seeds are sown in line followed by covering with sieved FYM or sand. Sevin dust is mixed with seeds to control the ants. Nursery bed is covered with dry grass/ paddy straw or polythene for 3-5 days to induce early germination of seeds. Soon after the sowing, the beds are irrigated with water and light irrigation should be given every day morning and evening till germination. The covering is removed immediately as soon as sprouts come out.

Transplanting and Spacing

The nursery is ready for planting after 25-30 days of sowing. The seedlings are planted at the spacing of 60 x 45cm for open pollinated varieties and 75 x 45 cm for hybrids.

Sevin dust at the rate of 2.5-5.0 g per hill is applied at the time of transplanting to protect the seedlings from caterpillar or cutworm. Planting is done preferably in the afternoon/ evening or rainy day or during cloudy weather. Irrigation is done immediately after transplanting if there is no rainfall on the day of transplanting.

Manures and Fertilizers

FYM or compost @ 25t/ha is incorporated in the soil during land preparation. N P K @ 120: 80: 60 kg/ha is applied for open pollinated variety and 180: 100: 100 kg/ha for the hybrids. Half dose of nitrogen and full dose of phosphorus and potash is applied at the time of transplanting. Rest amount of nitrogen is applied in two equal splits, first at 30 days after transplanting and next dose at 50-60 days after transplanting, 10-15 cm away from the plant in ring. After application of fertilizers, it is mixed in the soil by light hoeing and the field is irrigated.

Weeding and Hoeing

Four weeding and hoeing are sufficient for optimum growth and yield. Pre planting incorporation of Pendimethalin @ 1kg a.i./ha and one hand weeding 45 days after transplanting is used to control weeds.

Staking

Staking is very essential operation for indeterminate group of open pollinated varieties or hybrids for getting high yield and good quality fruits. Staking is done either by using bamboo stick or training on wire.

Plant Protection Measures

Late blight and early blight: Any one of the fungicides like Difolatan (2g/ l) or Dithane M-45 (2g/ l) or Ridomil (2g/ l) or Bavistin (1g/ l) can be sprayed for controlling early and late blight diseases.

Bacterial wilt: Application of bleaching powder @ 15 kg/ha before planting is found effective for controlling bacterial wilt disease.

Fruit borer: Malathion (3ml/l) or Endosulphan (2.5ml/l) or Rogor (1.0 ml) can be sprayed at 10--15 days interval for controlling fruit borer. Tomato fruits should be avoided for consumption up to 7-10 days after spraying of these chemicals.

Harvesting and Pickings:

Fruits are picked up at proper stage of maturity depending upon the purpose for which they are used and distance over which they are to be transported. There are following five stages of maturity for harvesting of tomato:

- (a) **Mature green:** The fully grown fruit shows a brownish ring at stem scar, on removal of calyx light green colour at blossom end turns into yellowish green and seeds are surrounded by jelly like substances filling the seed cavity.
- (b) **Turning:** 1/4th of the surface at blossom end shows pink (breaker stage).
- (c) **Pink:** 3/4th of the surface shows pink.
- (d) **Hard ripe:** Nearly all red or pink but flesh is firm.
- (e) **Ripe:** Fully colored and soft.

Yield

A normal crop of tomato yields 250q/ha in open pollinated varieties and 500q/ha in hybrids.