

Production Technology for Successful Cultivation of Cherry Tomato and Capsicum in Eastern Region

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Vegetable is an edible plant parts usually roots, stems, leaves, fruits, or seeds that can be eaten raw or in cooked form. It is a rich source of essential vitamins, minerals, and antioxidants that provide many important health benefits to our body and is termed as protective food. Cherry tomato and capsicum are vegetable crops having high commercial value. It is more nutritious has much more demand in a national and international market and grown well in marginal land also. As farmers are not much aware of these crops, it needs to popularise its cultivation practices among farmers of an eastern region to get maximum benefit from them. It is a boon for the rural economy.

Cherry Tomato

Cherry tomato is a rich source of vitamins, minerals, and antioxidants (like carotenoids, ascorbic acid, vitamin E, and phenols). There are three different types of carotenoids present in fruits lycopene, β -carotene and lutein. Lycopene imparts a red color in fruit and all these carotenoids reduce the risk of heart disease and cancer. Among this lutein has the best anti-inflammatory properties that protect the eye and improve brain health of human beings.

The Cherry tomato (*Solanum lycopersicum* var. *cerasiforme*) is a highly valued culinary as well as ornamental vegetable crop. It is a small, round, or oval-shaped fruit, not a vegetable crop. It makes kitchen gardens not only more attractive but, also have high commercial demand and rich in nutritional and pharmaceutical properties. The popular var. of cherry tomatoes is Sweet Million, which bears fruits in clusters. Fruits are sweet and tomato red in colour. The variety Sun Sugar produces golden fruit having high flavour and is sweeter than the earlier one and the heirloom is called blackberry, which has a complex, rich, and sweet flavor. For backyard gardens, the most popular variety is Sungold as it is resistant to heat, drought, and many diseases. The fruits are orange colour having a sweet

and crispy taste. All these varieties are indeterminate means grow continuously up to the death of plants.

Climate and Soil

The Cherry tomato is a warm season crop. It requires an optimum temperature of 20-30 °C with low humidity and plenty of sunshine for its proper growth and colour development in fruit.

Soil should be rich in organic matter, sandy loam to loam with a pH value of 6.5 - 7.5. The soil should be well aerated and having drainage facility. Under protected conditions, nursery production can be advanced by 15-20 days. Under greenhouse, fruits can be picked till November-December compared to normal cultivation where it lasts till July-August.

Nursery Raising

Seeds of cherry tomatoes are minute and delicate, so their nursery should be raised very carefully. It gave the better response in portraying production using coco peat as a growing medium. Portray ensure proper care and least damage to root zone due to retention of soil ball during transplanting. There should be drainage facility and protected from over watering. Seeds could be treated with Captan or Thiram @ 1-2 g/kg before sowing to protect the seedlings from wilting and damping off disease. Small polythene tunnels or poly houses can be used to protect plants from cold/frost.

Seed rate is 300-400 g/ha for normal variety and 100-150 g/ha for hybrid variety. Weed and insect-disease management of the nursery should be done on regular basis to get good harvest.

Fertilizer Requirements

Basal fertilizer doses of 10 tons FYM, 60 kg DAP, 45 kg MOP, 50 kg secondary nutrient mixture, and 10 kg micronutrient per acre may be required. Half doses of the DAP and MOP may be applied as basal dose and the remaining half at 15-20 days intervals throughout the life cycle. Biofertilizers (*Azospirillum* and *Phosphobacteria*) can also be applied

along with FYM to enhance and prolong the nutrient use efficiency for a longer duration.

Harvesting

The fruit should be harvested early in the morning, singly or in bunches along with calyx. It can be harvested at different developmental stage depending on the market distance. The fruit harvested pink or light red stage for local market and colour break or turning stage for distant market. Fully ripe or ripe fruits has been harvested for processing and local market. The average fruit yield under protected condition ranged from 20-50 tons/ha depending on varieties.

Disease and Insect Pest Management

The disease that affects the plant are bacterial (Canker, Wilt), fungal (Early & Late Blight), and viral (Mosaic and Leaf curl).

Symptoms of fungal infection are yellowing of leaves, moldy blotches and dark spots. The infected plants can be controlled with the use of suitable fungicides like brand name of daconil and garden safe etc.

Cherry tomato can be affected by many pests like thrips, aphid and white fly. The common pest is stink bug and potato beetles. White flies affect leaf and fruit of the plant and is a vector for tomato yellow leaf curl virus. They lay eggs on the underneath of leaf. It causes irregular ripening of fruits. It can be controlled by orchard sanitation, crop rotation with non-host along with use of insecticides like azadirachtin and horticultural oil etc.

Capsicum

Capsicum (*Capsicum annum*) is also known as bell pepper or sweet pepper or Shimla Mirch, belongs to the family Solanaceae. It is a high value spice crop grown under green house and shade net. It is native of America and cultivated all over the world. Plants are bushy, semi-perennial, 60-80 cm in height and grown as annual at commercial level and fruit does not contains capsaicin. Capsicum is an admirable source of micronutrient and antioxidant that helps in preventing chronic and age-related diseases.

On the basis of color, there are different types of capsicum viz., Red, Yellow, Green, Orange, and

purple/black. The phytonutrient contents are more in red capsicum than all the other types of capsicum. Red varieties have more antioxidant i.e., 11 times more β -carotene and 1.5 times more vitamin C content than the green varieties. Whereas, green varieties have less sugar content than red, yellow, and orange type. It has very low fat and having very high amount of fibre along with water content which is beneficial for proper body functioning. It is very rich source of vitamin C content that full-fill 213% of daily recommended allowance. It also helps in improving the immune system, wound healing, and synthesize the collagen. Capsicum also contain high amount of Vitamin B6 which helps in metabolism of protein, fats and carbohydrates. The folate content of capsicum helps in white and red blood cells production in the bone marrow.

Climate and Soil

Capsicum can be cultivated in soil which is well drained and rich in organic matter. The sandy loam soil with pH value of 5.5 to 6.8 is most ideal and does not prefer salty or saline soils. The site for protected cultivation should be easy to reach, sunny with proper drainage facility.

It is mainly temperate vegetable and prefers comparatively low temperature (20-25 °C) for fruit set and its development. Red or yellow colour develops under low temperature. It grows well in summer season in hills and cooler places in plains. Seed germination shows good response at temperature range of 20-25° C.

Nursery Raising

Seeds are sown in raised bed under protected condition in prepared nursery bed at a depth of 2.5 cm. Seeds are sown in line at spacing of 2.5 cm and covered with top soil and rice straw. Water should be applied daily with watering cane. The prepared nursery bed should be drenched with *Trichoderma* + *pseudomonas* @ 2% before sowing to protect plant from damping off and the seedling should be dipped in these solution before planting to prevent wilt problem. Seed rate of capsicum is 250-300 g/ha and are sown during September – February month.

Planting should be during evening to avoid desiccation and gap filling after 7 days of planting for

good harvest and returns. Hoeing and weeding has to be done once after 30 days.

Fertilizer Requirement

Capsicum requires FYM @ 5.0 kg/m² along with neem cake @ 200g/m². Seedling should be treated with *Azospirillum* + PSB culture (20%) for 15 minutes before planting in addition 1kg/m² vermicompost after one month of planting should be applied. Nutrient deficiency causes poor fruit growth and size.

The light earthing up should be done after 30 and 45 days of planting. Irrigation water should be applied at weekly interval. To prevent plant from lodging, staking must be there.

Harvesting

The fully mature green fruits of capsicum should be harvested before its ripening. It can be harvested at an interval of 3-4 days. The average number of fruits is 20-30/plant and fruit weight is 40-50g. Under open condition the optimum yield varies from 20-30 ton/ha and under protected condition it may vary from 90-110 ton/ha. After harvest, fruit should be kept in cool place and without direct exposure of sunlight. Harvested fruit should be handled carefully with less friction.

Disease and Pest

Major pests of capsicum are thrips, mites and aphids. Thrips infestation may be recognized as upward curling of leaves due to continuous sucking of leaf sap and reduces its growth and yield. On the other hand, mites feed on leaves, buds, fruits and causes downward curling of leaves. It can be controlled by removing infected plant parts and keeping field free from debris along with insecticidal spray like

imidacloprid 17.8% SL @ 0.5ml/L, neem seed kernel extract (4%), pongamia oil (5-8 ml/L) etc.

Different diseases affect the plants are damping off, anthracnose, powdery mildew and bacterial blight.

Damping off- It is a fungal disease that affect young seedling causes patches and shriveling and lastly death of plant. Whole plants are affected within 4-5 days. It can be managed by the spray of Bordeaux mixture @ 0.5-1.0% or copper oxychloride-based fungicide (Blitox or Phytolon).

Anthracnose: - It is also a fungal disease that affect stem, leaf and fruit of the plant. Affected fruit shows dark and round spot and black minute spot on seeds. Affected fruit drop prematurely and it occurs mostly in high humid condition. To prevent this, seed treatment with thiram 75% @ 20g/kg.

Powdery mildew: - Mostly occurs in summer season that causes powder like appearance on leaf, stunted growth and leaf shedding. It can be controlled by the application of Sulphur based fungicide @ 0.2% at 15 days intervals.

Bacterial wilt: - It causes wilting of leaf and fruit. It can be controlled by the application of bleaching powder and growing of resistant varieties like Arka Gaurav.

Conclusion

The Cherry tomato and capsicum is a vegetable crops having high commercial as well as nutritional value. It can be grown successfully in backyard and at large scale that give high economic return. Cherry tomato used as a fresh table purpose as well as in processed form. Capsicum is used for weight loss and as a healthy light snack.

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