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Pusa Golden Cherry Tomato-2: New promising yellow cherry tomato for protected cultivation

Cherry tomatoes are a different group of tomato. This tomato is mostly used raw in salad. The fruit bearing habit is in bunches i.e. called truss and fruit shape varies from round, oblong and pear shape. Fruit size varies from 2–15 g. Fruits are of different colours varying from dark red, red, pink, yellow, golden yellow to orange. Golden yellow cherry tomatoes look very fascinating. Pusa Golden Cherry Tomato-2 is the first indigenous golden yellow cherry tomato variety suitable and proposed for naturally ventilated polyhouse/low cost protected cultivation from ICAR-Indian Agricultural Research Institute, New Delhi. It will cater to the needs of the people who are looking for protective food.

THIS unique nutrient rich variety has been developed by Center for Protected Cultivation Technology and Division of Vegetable Science, ICAR-IARI, Pusa, New Delhi for cultivation under protected conditions/structure. It is indeterminate in growth habit and first harvesting starts at 75-80 days after transplanting and continues up to 270-300 days depending upon the climatic condition of the

area. Fruits are round, born in truss (9-10 average flower truss per plant), golden yellow in colour, thin pericarp having smooth surface and uniform ripening. It is rich in vitamin A and vitamin C and acts as protective food. The fruits contain 13.02 mg/100 g fresh weight carotene, 18.3 mg/100 g fresh weight ascorbic acid, 0.33% acidity and TSS 9° brix and carotene content (13.02 mg/100 g).



Pusa Golden Cherry Tomato-2

The average fruit weight is about 7-8 g with approximate average fruit yield of 3-4.5 kg/plant with yield potential of 9-11 t/1000 m².

Seed should be sown in insect proof nursery/in multi-celled plug tray by using soil-less medium in July-August and 25-30 days old seedlings should be transplanted. In greenhouse, crop should be vertically trained and regularly pruned for better growth and yield. Variety is responsive to normal soil fertility status. Added pollination is required in greenhouse during winter season and done by using electric vibrator or by air blower in morning hours on alternative days. Seed (10 g) is sufficient for growing a commercial crop in 1000 m² green house.

Cultivation

Climate

It requires relatively warm season for its growth and development. The ideal night and day temperature for fruit set and colour development is 20-25°C.

Soil

Well drained sandy loam soil is ideal for growing good crop. It prefers a pH of 6-7.

Sowing time

Under fully controlled environment polyhouse, it can be grown round the year, while under naturally ventilated polyhouse / low cost polyhouse structures, transplanting is done in September and crop may last up to May.



Bumper crop of Pusa Golden Cherry Tomato-2 in polyhouse



Training of tomato

Seed rate

The seed rate for the variety is 125 g/ha.

Nursery raising

For nursery raising, seed should be sown in insect proof nursery/in multi-celled plug tray using soil less medium (cocopeat, perlite and vermiculite mixture) in July-August to produce disease free and healthy seedlings. The portrays should be kept inside the polyhouse/insect proof nethouse. One seed should be sown in each holes of portray during second week of July to August after treating them with thiram @ 3 g/kg seed. Immediately after sowing the seed, light irrigation should be given by watering can containing Captaf @ 2 g/litre of water. After that, portrays are piled on each other and the upper one is covered with an empty portray. In four-five days after sowing, seed starts germinating and then portrays are spread over benches or floor. In soilless medium, nutrients are applied in the form of water soluble fertilizers N:P:K (1:1:1) 16:16:16 grade @ 2 g/litre once a week through the fine sprinkler to maintain the uniformity in application of nutrients. After 22-25 days of sowing, when the seedlings become 10-12 cm long and four true leaves had emerged, it should be kept for 2-3 days for hardening by holding irrigation for two days. Hardening of seedlings before transplanting is very effective in reducing transplanting shock and result in better crop stand.

Transplanting

Transplanting should be done on both sides of 10 cm raisedbed of 0.75 m width. There should be 30 cm distance between two beds. The seedlings should be transplanted at 0.60 m distance within row on both sides of the raised bed. It should be planted under drip irrigation system for efficient use of water and fertilizers.

Manure and fertilizers

Soil testing must be done to determine the soil fertility of protected environment and the deficiency of nutrients must be supplemented as and when required. In general, about 25-30 metric tonnes per hectare of well rotten farmyard manure should be added at the time of preparation of land. In addition, 80 kg phosphorus and 90 kg potash is added at the time of land preparation before

transplanting. Nitrogen (150 kg) is applied in split doses, one-third at the time of transplanting and other two-thirds in the form of four top dressings, first at 25-30 days after transplanting, second after 50-60 days after transplanting or flowering, third after first picking and after every picking later on. Mixture of micronutrients (especially calcium and boron) should also be applied at the time of flowering @ 0.5% water solution.

Irrigation

It is necessary to maintain even moisture supply, as overwatering is harmful. Water is essential at the time of flowering and fruiting. Adequate moisture also helps in better colour development. Irrigation is applied at 8-10 days interval in winter season whereas during summer months, irrigation is applied at 3-4 days interval depending upon weather conditions. If possible, drip facility should be installed for efficient irrigation and fertigation. Mulching with black polythene mulch helps in conservation of soil moisture and weed management.

Interculture

Weeds are often a limiting factor in tomato production as they share light, water, nutrients and space, harbor insect pest and diseases. Frequent hoeing should be done



as often as necessary to control weeds. Tomato bed before mulching and transplanting should be drenched with Stomp @ 2 ml/litre solution for controlling pre-emergence weeds.

Training, pruning and trellising

Staking is an important operation for tomato under protected condition. Staking should be done 20 to 25 days after transplanting. The plant should be loosely tied on vertical stakes. The timely staked plants produce more and better quality fruits. All the side branches should be removed/pinched at early stage to maintain single stem. Plants are supported by plastic wire or blinder twine loosely

anchored with plastic clip at base of plant to overhead support wires running to the length of row of bed. Overhead wires running over the row of the bed are fitted 8 to 10 feet above and firmly supported with structure. Stem / vine of plant is either fitted in round plastic clip of 1 inch diameter with hanging twine or twine is wrapped around a stem below the leaves clockwise leaving top 15 cm shoot of the growing plant. Regular pruning of side shoot should be done for entire crop duration. After first harvest, the leaves touching the ground (up to one feet from ground) should be removed which improves air circulation and reduce disease incidence.

Improved varieties of tomato

VL Cherry Tomato 1 (VT 95): It has been identified and recommended for cultivation in Zone I, III and VII. It has fruit yield of 250–300 q/ha in open and 400–450 q/ha in polyhouse. Fruits are smooth, oval, attractive red, firm (15 to 25 g), rich in Vitamin C (86 mg/100 g).



Hybrid CTH 1: Fruits are flat, round, thick pericarp (5.84 mm) with extended shelf life (10 days at room temperature). Fruits are borne in clusters of 5–6, with an average fruit weight of 75.3 g. The hybrid has long harvesting period (20–22 harvests) in 150 days with a yield of 2.94 kg/plant (92.3 t/ha) and moderately resistant to leaf curl virus.



Source: ICAR Annual Report (2020)

Pusa Cherry Tomato-1

Pusa Cherry Tomato-1 is the first red coloured cherry tomato variety developed by IARI, New Delhi. It is suitable for growing in North Indian plains under protected and open field conditions. Its average vine length is about 9-12 m under protected conditions. Fruit berries are round shaped with uniform ripening pattern and deep red colour. It has 18.5 average flower truss per plant. A truss bears about 35-45 fruits. The average fruit weight is ~ 5-7 g.

The fruits get ready for first harvest in 70-75 days and crop lasts for 9-10 months. It is also tolerant to root-knot nematode. Average fruit yield is 4-5 kg/plant. No cracking of berries up to picking stage. Its fruits contain 5.4 mg/100 g FW lycopene, 20.7 mg/100 g FW ascorbic acid, 0.43 acidity and 10.40°B TSS.

This red coloured cherry tomato variety is highly acceptable by the consumers and farmers because of its fruit shape, colour and nutritive value.



Source: IARI, New Delhi

Pollination

Since tomato is a self-pollinated crop having bisexual flower, therefore normal flowering and fruiting takes place in sunny weather, however for better fruit setting in foggy or cloudy weather, electric vibrators or air blowers or manual shaking can be used for effective pollination during 10 to 11 AM and 2 to 3 PM in the day.

Harvesting

Harvesting starts 80-85 days after transplanting and depends upon purpose for which they are harvested and distance over which they are to be transported. Tomato is harvested at mature green stage for long distance transportation. For short distance transportation, fruits are harvested at pink stage and for processing, fully ripe red colour tomato should be harvested.

Average yield

Yield depends on climatic factor and cultural practices. On an average, it gives fruit yield around 90-100 q/1000 m² area of polyhouse.

Plant protection

The warm humid condition and availability of abundant food under protected condition provide an excellent stable environment for pest development. Sanitation, soil solarization, mulching and fumigation are done to manage pest in protected condition. Major pest of tomato under polyhouse are whiteflies, mites and nematodes, which come inside with the workers due to frequent entry in the polyhouse. The polythene used as cladding material should have 200 micron thickness and UV stabilized. Similarly, insect proof net should be of 40 mesh. Building a screen foyer to create a double door entry partially solve the problem of wind career insects. Our major emphasis should be on prevention of entry of pest inside the protected structure. The seedling should be raised in protected environment for transplanting. The

lower or damaged leaves should be removed to make ground clear for proper ventilation and also to avoid spread of pest. For whiteflies, aphids and leaf miner adults, yellow sticky cards (8 "× 12") should be placed @ 5 card / 100 sq. m. area for control of pests in protected environment. Hang the yellow sticky cards /traps in the crop with the help of string about 4" to 6 " above the plant canopy. As the crop grows, card can be moved up. The card is changed when more than 60 to 70% of the area is covered by trapped insect. For effective management of pest and disease, integrated pest management (IPM) strategies should be followed. If required, Dicofol @ 2 ml per litre of water should be applied to control mites and trizophos @1 ml /3 litres of water to control whiteflies. For fungal diseases, mixture of 1 g carbendazim and 1 g mancozeb per litre water solution can be applied.

Market value

Pusa Golden Cherry Tomato-2 is the first indigenously developed golden yellow cherry tomato variety which is suitable for low cost protected cultivation. It looks very fascinating and appealing. Its unique selling point is that this cherry tomato variety is sweet and rich in nutrients, antioxidants, vitamin A and C. It is of a premium market segment, so farmers can get returns from the crop. It will cater to the needs of the people who are health cautious and looking for nutritious food. This variety can be dried as tomato resins which could be another market segment for post-harvest researchers and industry people. Golden yellow cherry tomatoes can be marketed @ ₹ 500-600 per kg in premium markets.

For further interaction, please write to:

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