



Effect of Pruning Methods on Growth, Yield and Quality of Cherry Tomato (*Solanum lycopersicum* var. *cerasiforme*) c.v- Pusa Cherry, Roja Red & Nagamoti under Polyhouse Condition of Prayagraj

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The experiment was conducted in the horticulture Research Farm, Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj (UP) During July 2021- October 2021. The experiment was laid out in RBD with 8 Treatments with 3 replications. The results revealed that T2 – (Pusa cherry + Two stem) flowering (30.3 days), days to first fruit picking (68.3 days) and maximum number of flowers per cluster (17.4), number of fruit set per cluster (14.4), fruit yield per plant (3.7 kg), fruit yield per 100m² (16.3 q), Vitamin-C (22.6), TSS (7.2) and also maximum Benefit cost ratio (1:4).

Keywords: *Cherry tomato; growth; yield; quality.*

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1. INTRODUCTION

Cherry Tomatoes (*Solanum lycopersicum* var. *cerasiforme*) are one of the most popular and widely grown Solanaceous fruit vegetables in the world. It is a very versatile vegetable for culinary purposes. Ripe tomato fruit is consumed fresh as salads, consumed after cooking and utilized in the preparation of a range of processed products such as puree, paste, powder, ketchup, sauce, soup and canned whole fruits. The unripe green fruits are used for pickles and are consumed after cooking. Tomatoes are important source of lycopene and vitamin 'C and valued for their colour and flavor. Cherry tomatoes are Cherry Tomatoes (*Solanum lycopersicum* var. *cerasiforme*) are one of the most popular and widely grown Solanaceous fruit vegetables in the world [1-4]. It is a very versatile vegetable for culinary purposes. Ripe tomato fruit is consumed fresh as salads, consumed after cooking and utilized in the preparation of a range of processed products such as puree, paste, powder, ketchup, sauce, soup and canned whole fruits. The unripe green fruits are used for pickles and are consumed after cooking [5-8]. Tomatoes are important source of lycopene and vitamin 'C and valued for their colour and flavor. Cherry tomatoes are determinate or indeterminate; Cherry tomato has several medicinal values as it promotes gastric secretion, blood purification, intestinal antiseptic, cure cancer of the mouth and sour throat, apart from improving quality of the prepared foods [9-12].

It is a small garden variety of tomato which bears tasty, numerous small sized fruits in clusters along the stems and branches of the plant having chromosome number 24 (2n). Cherry tomato often called as salad tomato or grape tomato is the probable ancestor of the cultivated tomato [13-15]. Cherry tomatoes range in size from a thumb tip up to the size of golf ball and can range from being spherical to slightly oblong in shape with different colours and it is used mainly for

fresh consumption. It is widely cultivated in Central America when the conquistadores arrived and is distributed in California, Korea, Germany, Mexico and Florida [16,17].

Cherry tomatoes have powerful anti-cancer properties, useful against mouth cancer and sour mouth. Acidosis is quite common in our society leading to many ailments such as headache, fatigue, sleeplessness, absorption problems, arteriosclerosis, muscular aches and loss of calcium from the bones. Thus these problems can be prevented by adding tomatoes to diet as they have an alkali power [18-21].

Pruning is the process of cutting away dead or overgrown branches or stems to promote healthy plant growth. Most plants, including trees, shrubs and garden plants like roses benefit from different methods of pruning and maintenance. Pruning at the wrong time of the year does not necessarily kill your plants, but regular improper pruning may cause damaged or weakened plants [22,23].

The growth, yield and quality attributes of tomato are profoundly influenced by the cultural practices like pruning and training. With the above perspectives, investigation was carried out with the following objectives.

- ✓ To find out the suitable pruning methods for maximized yield and quality of different Varieties of cherry tomato under polyhouse Condition.
- ✓ To estimate the cost of cultivation of different varieties of cherry tomato under polyhouse condition.

2. MATERIALS AND METHODS

The material and methods used in the present investigation include a brief description of the site of experiment, soil properties, and climate condition prevalent in the locality during the period of experiment, statistical, particulars of treatments and planting material used, are given.

Table 1. Treatment details

SI.NO	Treatments Symbols	Name of Hybrid
1	T0	Pusa cherry + Full growth
2	T1	Pusa cherry + single stem
3	T2	Pusa cherry + Two stem
4	T3	Roja red + Full growth
5	T4	Roja red + single stem
6	T5	Roja red + two stem
7	T6	Nagamoti + Full growth
8	T7	Nagamoti + Single stem
9	T8	Nagamoti + Double stem

The experiment was conducted at the Horticulture Research Field.

Experiment Details: The experiment entitled Effect of Pruning Methods on Growth, Yield and Quality of Cherry Tomato (*Solanum lycopersicum* var. *cerasiforme*) c.v- Pusa Cherry, Roja Red & Nagamoti under polyhouse condition of Prayagraj was conducted in spring to summer season on randomized block design consisting of 9 Treatments and three replications with different varieties and number of plants in replication.

3. RESULTS AND DISCUSSION

During the present investigation, observations on various plant characteristics were recorded to evaluate the “Effect of Pruning Methods on Growth, Yield and Quality of Cherry Tomato (*Solanum lycopersicum* var. *cerasiforme*) c.v- Pusa Cherry, Roja Red & Nagamoti under polyhouse condition of Prayagraj”. The results of the investigation, regarding growth, yield and quality of cherry tomato have been presented in tables and diagrams wherever required. The findings of the experiment have been presented under the following heading. Growth, Yield and Quality Parameters

A) Growth Parameters

The maximum plant height (cm) at last harvest was recorded in the treatment T1 (194.7 cm), followed by T7 (194 cm) and minimum plant height (cm) at last harvest in the treatment T6 (149 cm). Similar results were found by Meena et al., [24].

The maximum plant spread (cm) at last harvest was recorded in the treatment T0 (72.3 cm), followed by T3 (72.1cm) and minimum plant spread (cm) at last harvest in the treatment T8 (57 cm). Similar results were observed by Boora et al., [25].

The maximum leaf area index (cm²) at last harvest was recorded in the treatment T1 (19.9 cm²), followed by T4 (19.2 cm²) and minimum leaf area index (cm²) at last harvest in the treatment T6 (13 cm²). Similar results were observed by Boora et al., [25].

The minimum days to first flowering was recorded in the treatment T2 (26.9 days), followed by T4 (28.0 days) and maximum days to first flowering in the treatment T6 (36.7days). Similar results were observed by Sah et al., [26].

The minimum days to 50% flowering was recorded in the treatment T2 (30.63 days), followed by T4 (32.2 days) and maximum flowering in the treatment T6 (36.5 days). Similar results were observed by Sah et al., [26].

The minimum days to first fruit picking was recorded in the treatment T2 (68.3 days), followed by T4 (70.2 days) and maximum days to first fruit picking in the treatment T6 (74.5 days). Similar results were observed by Jose et al., (2015).

B) Yield Parameters

The maximum number of flowers per cluster was recorded in the treatment T2 (17.4), followed by T4 (17.1) and minimum number of flowers per cluster in the treatment T6 (14.7). Similar results were observed by Jose et al., (2015).

The maximum number of flowers clusters per plant was recorded in the treatment T0 (25), followed by T6 (24.3) and minimum number of flowers clusters per plant in the treatment T7 (11.3). Similar results were observed by Sah et al., (2016).

The maximum number of fruit set per cluster was recorded in the treatment T2 (14.4), followed by T4 (14.1) and minimum number of fruit set per cluster in the treatment T6 (12.3).

The maximum number of fruits per plant was recorded in the treatment T0 (314), followed by T6 (300) and minimum number of fruits per plant in the treatment T7 (158.7).

The maximum fruit girth (cm) was recorded in the treatment T1 (9.1 cm), followed by T4 (8.6 cm) and minimum fruit girth (cm) in the treatment T6 (5 cm).

The maximum fruit weight (g) was recorded in the treatment T4 (16.7 g), followed by T7 (16.3 g) and minimum fruit weight (g) in the treatment T6 (7.7 g).

The maximum fruit yield per plant (kg) was recorded in the treatment T2 (3.7 kg), followed by T4 (3.0 kg) and minimum fruit yield per plant (kg) in the treatment T3 (2.2 g). Similar results were found by Meena et al. [24].

The maximum fruit yield per 100m² (q) was recorded in the treatment T2 (16.3 q), followed

by T4 (13.5 q) and minimum fruit yield per 100m² (q) in the treatment T3 (10.0 q).C) Quality Parameters.

The maximum TSS (°Brix) was recorded in the treatment T2 (7.2 °Brix), followed by T4 (6.8°Brix) and minimum TSS (°Brix) in the treatment T6 (5.6 °Brix).

The maximum vitamin c was recorded in the treatment T2 (22.6), followed by T4 (22.2) and minimum vitamin c in the treatment T6 (18.9).

The maximum benefit cost ratio was recorded in the treatment T2 (1:4), followed by T4 (1:3.2) and minimum TSS (°Brix) in the treatment T3 (1:2.1)

4. CONCLUSION

Based on this experiment it is concluded that the treatment T2 (Pusa cherry + Two stem) was found superior in terms of minimum days to first flowering (26.9 days), Days to 50% flowering (30.3 days), days to first fruit picking (68.3 days) and maximum number of flowers per cluster (17.4), number of fruit set per cluster (14.4), fruit yield per plant (3.7 kg), fruit yield per 100m² (16.3 q), Vitamin-C (22.6), TSS (7.2) and also maximum Benefit cost ratio (1:4).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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