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Short communication

Performance evaluation of cherry tomato genotypes under rain shelter

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Abstract

Ten cherry tomato genotypes were evaluated inside rain shelter at the Department of Olericulture, College of Horticulture, Vellanikkara during October 2016- March 2017. Among the genotypes SLc-10 recorded highest plant height (295.45 cm), number of flower clusters per plant (19.70), highest number of fruits per cluster (22.00) and highest average fruit weight (6.24g). Highest yield per plant was recorded in SLc-9 (425.96 g), maximum number of fruits per plant was recorded in SLc-2 (155.60), lowest incidence of bacterial wilt was recorded in SLc-9 (29.10%) and SLc-1 showed the highest TSS content of 7.2° Brix. Based on the performance genotypes SLc-10 and SLc-9 can be recommended for cultivation inside rain shelter.

Keyword: Cherry tomato, Growth and yield attributes, Rain shelter

Cherry tomato (*Solanum lycopersicum* L. var. *cerasiforme* (Dunal) A. Gray) also known as salad tomato, is one of the emerging tropical vegetable crops under protected cultivation and is considered as an exotic vegetable bringing new taste and appearance to dishes. It has gained much popularity all over the world being a good source of vitamin A and C and having health beneficial compounds like antioxidants, phytochemicals, lycopene and beta- carotene.

Kerala enjoys warm humid tropical climate which is ideal for its cultivation. Naturally ventilated structures like rain shelter enhance the production of high value vegetables. Hence an attempt was done to evaluate cherry tomato genotypes inside rain shelter and to identify suitable genotypes for rain shelter cultivation.

The study was conducted during the period between October 2016 to March 2017. A rain

Table 1. Cherry tomato genotypes and their sources

Genotype	Name of the genotype	Source
SLc-1	BSBS 94	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-2	BSBS 47	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-3	PSR 10693	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-4	PSR 11668	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-5	BSBS 122	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-6	BSBS 137	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-7	BSBS 141	NBPGR, Regional station Rajendra Nagar, Telangana
SLc-8	BSBS 157	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-9	BSBS 180	NBPGR, Regional station Rajendra Nagar,Telangana
SLc-10	Pusa Cherry tomato-1	IARI, New Delhi

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shelter with floor area of 200 m^2 was used for the study. The experiment was laid out in randomized block design (RBD) with three replications and POP recommendations of KAU (2016) were followed for cultivation. The details of genotypes and their sources are given in Table 1.

Observation on quantitative characters are presented in Table 2. The mean plant height ranged from 295.5 cm (SLc-10) to 215.70 cm (SLc-5). Such variation in plant height was reported by Omprasad et al. (2016 a) under shade net condition.

SLc-9 achieved 50% flowering within 17.7 days after transplanting and was early with respect to other genotypes. The genotype SLc-4 was late to attain 50% flowering (45.13 days). Similar variation was reported by Omprasad et al. (2016 a) and Prema et al. (2011).

The mean number of days to first fruit set ranged from 25.20 to 63.40 days. Minimum days for first fruit set was observed in SLc-9 (25.20) which was followed by SLc-2 (28.93). The earliness in fruit set is attributed due to favourable climate especially inside rain shelter. The result is in confirmity with study of Kumar et al. (2014). SLc-9 was early to first fruit set (54.33 days), while SLc-4 took maximum days for first fruit harvest which is in confirmation with study conducted by Parvej et al. (2010). Maximum number of flower clusters per plant was observed in SLc-10 (19.70) followed by SLc-1 (15.60) and minimum number of flower clusters per plant was recorded in SLc-4 (11.90), similar findings were reported by Ramya et al. (2016).

Superior number of fruits per cluster was observed in SLc-10 (22.10) followed by SLc-7 (9.53). Such genotypic variation was observed by Cheema et al. (2013), Renuka et al. (2014 b) and Omprasad et al. (2016 b).

Highest number of fruits per plant was observed in SLc-2 (155.60) followed by SLc-9 (134.53) and lowest number of fruits per plant was observed in SLc-4 (60.13). Highest yield was observed in SLc-9 (425.96 g) which was on par with SLc-2 (414.34 g), lowest fruit yield was observed in SLc-4 (214.66 g). Similar variation was suggested by Cheema et al. (2003) and Kumar et al. (2014). SLc-10 recorded maximum average fruit weight (6.24 g) and minimum was recorded in SLc-2 (4.5 g). None of the genotypes were free from bacterial wilt incidence. However, lowest incidence was observed in SLc-9 (29.10%).

Mean value of TSS ranged from 4.4 to 7.2° Brix. Superior TSS was recorded in SLc-1 (7.20° Brix) and lowest TSS was noted in SLc-5 (4.4° Brix).TSS content is determined based on the reducing sugar content present in the fruit (Ho and Hewitt, 1986).

Table 2. Growth and yield attributes of cherry tomato genotypes

Genotypes	Plant height (cm)	Days to 50% flowering	Days to fruit set	Days to first fruit harvest	Number of flower clusters per plant	Number of fruits per cluster	Number of fruits per plant	Yield per plant (g)	Average fruit weight (g)	TSS (°Brix)	Bacterial wilt incidence (%)
SLc-1	246.4 ^{e}	24.67 ^{c}	33.60^{e}	60.33^{f}	15.60^{bcd}	8.00^{ef}	125.73 ^{c}	286.45 ^{d}	2.93^{ef}	7.2^{a}	50.00
SLc-2	262.80^{bcd}	20.93 ^{b}	28.93^{b}	55.80^{b}	15.10^{bcd}	5.33^{d}	155.6 ^{a}	414.34 ^{a}	4.48 ^{c}	7.2 ^{a}	33.33
SLc-3	227.5 ^{e}	43.13 ^{h}	56.27^{f}	77.00^{f}	13.20 ^{de}	4.53^{fg}	120.53 ^{c}	309.48 ^{c}	5.33 ^{b}	5.4^{ef}	70.83
SLc-4	249.60 ^{e}	45.20 ^{a}	67.40^{f}	93.00^{g}	11.90 ^{e}	4.2 ^{g}	60.13 ^{g}	214.66 ^{f}	3.10 ^{e}	5.6 ^{de}	33.33
SLc-5	215.7 ^{cd}	32.13 ^{f}	43.07^{d}	71.73^{f}	16.30^{bc}	6.87 ^{d}	67.8 ^{f}	215.45 ^{f}	3.9 ^{d}	4.4 ^{g}	54.16
SLc-6	220.05 ^{cd}	39.33 ^{g}	50.27^{e}	68.40^{d}	14.70^{bcd}	4.33 ^{e}	101.73 ^{d}	242.78 ^{e}	2.63 ^{f}	6.0^{bc}	33.33
SLc-7	253.33 ^{e}	30.67 ^{de}	42.33^{d}	70.27^{e}	17.30^{ab}	9.53 ^{g}	82.80 ^{e}	229^{ef}	3.22 ^{e}	5.2 ^{f}	37.50
SLc-8	265.3 ^{b}	27.33 ^{d}	34^{c}	59.20^{c}	16.40^{bc}	5.067 ^{b}	69.33 ^{f}	321.20 ^{c}	5.43^{b}	7.0 ^{a}	58.30
SLc-9	251.7^{bc}	17.67 ^{a}	25.20^{a}	54.33^{a}	14.30^{cde}	6.47 ^{c}	134.53 ^{b}	425..96 ^{a}	4.45 ^{c}	6.3 ^{b}	29.10
SLc-10	295.5^{a}	30.07^{e}	42.06^{d}	68.27^{e}	19.70 ^{a}	2.80 ^{a}	78.47 ^{e}	369.45 ^{b}	6.24^{a}	5.9 ^{cd}	33.00
	13.67	1.96	2.012	1.173	2.913	0.695	7.43	17.85	0.377	0.366	
	3.20	3.68	2.77	1.008	8.334	5.25	4.35	3.43	4.27	3.54	

Table 3. Qualitative characters of cherry tomato genotypes

Genotypes	Fruit size	Fruit shape	Immature fruit colour	Presence of green shoulder	Mature fruit colour	Fruit surface	Blossom end fruit surface	Fruit cracking	Locule number per fruit
SLc-1	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-2	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-3	Medium	Round	Light green	Absent	Red	Smooth	Flat	Slight	Two
SLc-4	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-5	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-6	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-7	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-8	Medium	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-9	Small	Round	Light green	Absent	Red	Smooth	Flat	None	Two
SLc-10	Medium	Round	Greenish white	Absent	Red	Smooth	Flat	Slight	Two

Observation on qualitative characters are presented in Table 2. Fruit size of seven genotypes (SLc-1, SLc-2, SLc-4, SLc-7, SLc-6, SLc-9 and SLc-5) were small and three genotypes SLc-3, SLc-8 and SLc-10 produced medium sized fruits. Similar fruit size variation was reported by Macua et al. (2007) and Islam et al. (2012). There was not much variation among the genotypes for qualitative characters like blossom end fruit shape, fruit surface, fruit shape, immature fruit colour, mature fruit colour, locule number per fruit and presence of green shoulder.

From the present study, it was found that among ten cherry tomato genotypes, the genotypes namely SLc-9 and SLc-10 were superior for yield and other quality traits. Hence these genotypes have the potential for cultivation inside rain shelter in the central plains of Kerala.

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