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Phule Jayshree: A promising cherry tomato variety

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Abstract

The cherry tomato variety, Phule Jayshree was found superior in respect of yield obtained in various trial was 53.31 t/ha and 19.50 percent higher than local check. The plants are indeterminate type, fruits round with orange red colour, average weight 6.30g, total soluble solid 6.32 percent and moderately resistant to viral diseases like leaf curl and spotted wilt. There is good consumer acceptance for Phule Jayshree.

Keywords: Cherry tomato, Phule Jayshree, evaluation, total soluble solid and ascorbic acid

Introduction

In India, tomato is cultivated in almost all parts occupying an area of about 814 thousand hectares with production about 20515 thousand metric tons (Anon., 2018) ^[1]. In Maharashtra, tomato is cultivated in area of about 45.50 thousand hectare with production of 1086.56 thousand metric tons (Anon., 2018) ^[1]. The most likely ancestor of cultivated tomatoes is the wild cherry tomato (*Solanum lycopersicum* var. *cerasiforme*) (Rick and Holle, 1990) ^[6]. It is generally accepted that cultivated tomato lines were derived from cherry tomato (formerly *Lycopersicon esculentum* var. *cerasiforme*) via domestication (Jenkins, 1948) ^[3]. The main differences between the *cerasiforme* type and standard tomato cultivars is that the fruit of the *cerasiforme* types are less than half the size of the cultivated forms (Rick, 1958) ^[5]. Cherry tomatoes range in size from a thumb tip up to the size of a golf ball and can range from being spherical to slightly oblong in shape. The ripe fruit have a diameter between about 1.9 to about 3.8 cm, typically between about 2.5 to 3.0 cm. Small round tomatoes typically known as cherry tomatoes are widely used in salads and speciality dishes. Cherry tomatoes are usually prolific, tiny and some have been bred for high sugars as a salad and snacking 'fruit'. A cherry tomato is the smaller garden variety of tomato. Cherry tomatoes are characterized by relatively high levels of antioxidants, particularly lycopene. (cherry tomatoes can be picked when green then pickle to make a condiment called a tomatillo due to its similar appearance texture to an olive.

Though cherry tomato is having highly nutraceutical value and better yielding capacity, there is no any improved variety released by any public sector in Maharashtra and the demand for cherry tomato from metropolitan cities increases day by day. Looking towards the above facts the efforts has been made to collect different types of cherry tomatoes. A germplasm of 35 genotypes available with the Tomato Improvement Scheme, screened vigorously from 2010 for yield, quality, disease and pest reaction. From this germplasm the Sel. RHRCT 12-6 (Phule Jayshree) is identified for release.

Materials and Methods

The experimental material consists of cherry varieties. The cherry lines along with local check were evaluated during Kharif 2014 to 2016 and rabi 2014-15, 2015-16, 2016-17 at Tomato Improvement scheme, Mahatma Phule Krishi Vidyapeeth and best two Cherry tomato lines with one local check were selected on the basis of colour, shape, size, total soluble solid, consumer preference in market and yield contributing characters. The two cherry tomato lines viz, RHRCT-12-3, RHRCT-12-6 with one local check were evaluated in randomized block design with six replications during Kharif 2014 to 2016 and Rabi 2014-15, 2015-16 and 2016-17. The multi location trial were conducted during rabi 2015-16 and 2016-17 at Regional Fruit Research Station, NARP, Ganeshkhind, Pune, Agriculture Research Station Kasbe Digras, Dist. Sangali and College of Agriculture, Kolhapur.

The two cherry tomato lines with one local check were raised by 90x30 cm inter and intra row spacing. Five competitive plants(except border plants) were selected randomly and observation on height, average fruit weight, length of fruit cluster, average weight of cluster, polar and

equatorial diameter, yield, number of locules, pericarp thickness, TSS, acidity, growth habit, fruit colour, shape along with ascorbic acid, lycopene and sugar content. The observation regarding infestation of thrips, white fly, fruit borer and leaf curl and spotted wilt viral diseases were also taken. The means were used for statistical analysis as per method suggested by Panse and Sukhatme (1985) [4].

Result and Discussion

The yield differences due to cherry tomato lines in six station trials (Table-1) were significant, where cherry tomato line RHRCT-12-6 recorded the significantly, higher yield in all six trials. Cherry tomato line RHRCT-12-6 recorded the highest yield 57.23 t/ha as compare to local check (43.84 t/ha) in trial conducted during kharif season. While in rabi trials the same cherry tomato line recorded highest yield of 59.60 t/ha as compare to local check (46.52 t/ha). The overall yield recorded by RHRCT-12-6 was 58.00 t/ha as compare to local check 46.52t/ha.

The multi location trials (Table-2) conducted at three locations during rabi 2015-16 and 2016-17. The highest yield was recorded at Agriculture Research Station Kasbe Digras during rabi 2015-16 (57.70 t/ha) and 2016-17 (49.65 t/ha) followed by local check 45.92 t/ha at ARS K. Digars and 44 t/ha at College of Agriculture Kolhapur. The cherry tomato line RHRCT-12-6 recorded the highest yield 50.51 t/ha and 46.32 t/ha as compare to local check 43.40 t/ha and 42.00 t/ha

respectively in both the seasons as per the mean of all multi location trial. In overall mean the line RHRCT-12-6 recorded highest yield 48.42 t/ha as compare to local check 42.70 t/ha. As per the overall yield performance (Table-3) incase of station and multi location trial RHRCT-12-6 recorded highest yield (53.31 t/ha) as compare to local check (44.61 t/ha). The Percentage increase in yield over check was 19.50 percent. Thus the new cherry tomato line RHRCT-12-6 gave 19.50 percent higher yield over local check. Comparative performance in different trials also confirmed the superiority of RHRCT-12-6.

The ancillary observation presented in (Table-4) indicated the plants of RHRCT-12-6 were vigorous, indeterminate. Fruits are small (6.30 g), round, orange red with better length of fruit cluster (9.10cm), no. of fruit per cluster (8.00), average weight of cluster (60.44 g), number of locules (2.00) pericarp thickness (0.18cm), total soluble solid (6.32%), acidity (0.67%, ascorbic acid (118mg/100gm), lycopene (2.49 mg/100gm), reducing sugar(2.92%) and total sugar (3.87%). It is also moderately resistant to leaf curl and spotted wilt viral diseases.

Considering all above yield and other characters the cherry tomato line RHRCT-12-6 was released in Joint Agresco Meeting at Dr. BSKKV, Dapoli between 23-25 May 2018 in the name of Phule Jayshree and recommended for cultivation in Western Maharashtra (Anon-2018) [1].

Table 1: Yield (t/ha) performance of promising selections of cherry tomato (Station trial)

Selections	Kharif, 2014	Kharif, 2015	Kharif, 2016	Mean	Rabi 2014-15	Rabi 2015-16	Rabi 2016-17	Mean	Over all Mean
RHRCT-12-3	38.82	42.71	41.73	40.77	43.67	46.86	47.57	46.03	43.72
RHRCT-12-6	56.64	60.22	54.85	58.53	62.15	58.70	56.62	59.16	58.20
Local check	43.15	44.52	42.56	43.84	47.98	47.34	49.62	48.31	46.52
S.E. ±	1.28	1.56	0.78	1.42	1.13	0.88	1.81	1.27	1.29
C.D. at 5%	3.85	4.67	2.41	4.26	3.37	2.70	5.15	3.74	3.69
CV%	8.17	7.25	7.85	--	8.72	7.66	7.78	--	--

Table 2: Yield (t/ha) performance of promising selections of cherry tomato (Multi location trial Rabi 2015-16)

Selections	RFRS, GK, Pune		Agril. College, Kolhapur		ARS, Kasbe Digras		Mean		Over all Mean
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17	
RHRCT-12-3	37.85	36.92	43.09	47.81	40.74	41.48	40.56	42.07	41.32
RHRCT-12-6	42.02	40.19	51.81	49.15	57.70	49.63	50.51	46.32	48.42
Local check	38.83	37.87	45.45	44.44	45.92	43.70	43.40	42.00	42.70
S.E. ±	1.58	0.92	1.63	0.56	1.72	3.19	1.64	1.56	1.60
CD at 5%	4.94	2.89	4.85	1.73	5.16	9.83	4.98	4.81	4.89
CV%	8.35	6.73	9.36	5.69	9.16	13.88	--	---	--

Table 3: Over all yield (t/ha) performance of promising selections of cherry tomato

Selections	Station trial (t/ha)	MLT trial (t/ha)	Mean	% Increase over
				Local check
RHRCT-12-3	43.72	41.32	42.52	
RHRCT-12-6	58.20	48.42	53.31	19.50
Local check	46.52	42.70	44.61	

Table 4: Ancillary characters of promising selections of cherry tomato (Rabi 2016-17)

Selections	Plant height (cm)	Fruit weight (g)	Length of fruit cluster (cm)	No. of fruits/cluster	Av. weight of cluster (g)	Yield / plant (kg)	Diameter (cm)		No. of locules	Pericarp thickness (cm)	TSS (%)	Growth habit	Colour of fruit	Fruit shape
							Polar	Equatorial						
RHRCT-12-3	157.72	5.20	9.65	8.95	51.92	1.41	1.99	2.03	2.00	0.19	5.16	Indt.	Red	Round
RHRCT-12-6	154.72	6.30	9.10	8.00	60.44	1.68	2.11	2.14	2.00	0.18	6.32	Indt.	Orange red	Round
Local check	154.08	6.85	8.72	9.05	54.48	1.47	2.19	2.29	2.00	0.23	5.96	Indt.	Orange red	Round
S.E. ±	3.42	0.46	0.52	0.57	5.20	0.06	0.74	0.69	0.00	0.19	0.32	--	--	--
C.D. at 5%	10.56	1.49	1.60	1.78	16.04	0.17	2.28	2.14	0.00	0.69	0.99	--	--	--
CV%	4.92	13.19	12.28	14.37	18.36	7.78	7.63	6.93	0.00	19.82	8.94			

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