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Evaluation of Tomato (*Solanum lycopersicum* L.) Genotypes for Qualitative and Quantitative Characteristics

K. P. Kharat[1], A. V. Chandanshive[*1], S. D. Gaikwad, B. B. Handal, B. T. Patil and S. A. Ranpise
Department of Horticulture,
Mahatma Phule Krishi Vidyapeeth, Rahuri - 411 722 (India)
[*1]Corresponding author Email : aniketchandan@gmail.com

Abstract

The investigation was carried out at Research Farm of the Tomato Improvement Scheme, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri during the summer season of 2020. The data exhibited significant variations in 36 tomato genotypes for different qualitative and quantitative characters. The maximum plant height (124.59cm) was recorded in the genotype RHRT-15-21.The genotypes RHRT-15-4, RHRT-15-17, RHRT-15-19, RHRT-15-20, RHRT-15-21, RHRT-17-1, RHRT-17-2 and RHRT-17-5 were observed indeterminate plant growth habit. The maximum number of branches plant^{-1} observed in RHRT-15-4. Genotype RHRT-15-7 and RHRT-15-4 were found early flowering which required 30 and 31 days for 50% flowering,respectively.Number of fruits plant^{-1} recorded highest in RHRT-15-4 and RHRT-15-23. The maximum polar diameter of the fruit was recorded by the genotype RHRT-15-3 (6.91cm) followed by RHRT-17-9, RHRT-17-4 and RHRT-15-14. The maximum equatorial diameter shown by RHRT-17-9 (5.96cm) followed by RHRT-15-23 and RHRT-15-4, respectively. The fruit yield plant^{-1} of tomato evaluated varied significantly among the 36 genotypes, ranging from 0.68 to 1.93 kg plant^{-1}. The general mean value of genotypes was 1.15 Kg. The minimum fruit yield plant^{-1} was recorded with genotype RHRT-17-10, while maximum with genotype RHRT-15-4. The genotype RHRT-15-4 gave the highest yield of 51.57 t ha^{-1}. The highest TSS content of fruit was recorded with the genotype RHRT-15-24. The findings of this study may provide valuable information about phenotypic characteristics of tomato genotypes for crop improvement programme, vegetable experts and vegetable growers under summer season.

Keywords :Tomato, genotypes, evaluation, qualitative, quantitative.

Tomato (*Solanum lycopersicum* L.), a fruit that is universally treated as a vegetable, a perennial plant from *Solanaceae* family, which is commonly cultivated as an annual (Rick, 1978). It is one of the significant vegetables cultivated all over the world and believed to be originated from Andean region that includes the parts of Colombia, Ecuador, Peru, Bolivia and Chile. The wild tomato (*Lycopersicon esculentum* var. *cerasiforme*) is supposed to be the ancestor of the cultivated tomato. *Lycopersicon esculentum* is a day neutral self-pollinated crop but some cross-pollination also occurs. It is a warm-season crop that is heat and drought tolerant and thrives well in a wide range of soil and climatic conditions. In India, every vegetable curry is considered incomplete without tomato in it; it is an important part of everyone's daily diet. It is mostly used as a fresh vegetable, salad and also as processed products like paste, juice, sauce, ketchup and powder or as a whole peeled tomato. Once tomato was considered as poisonous is now gaining popularity among the consumers, which is accelerated with added discovery of higher contents of antioxidants like vitamin C, lycopene and β-carotene. Yellow tomatoes have higher vitamin-A content than red tomatoes, but red tomatoes contain lycopene, an antioxidant that may contribute to protection against carcinogenic substances. Lycopene is the major antioxidant responsible for the red colour is the result of chlorophyll degradation in addition to synthesis of and other carotenoids.

Tomato is also known as protective food because of its special nutritive values. Its vitamin-C content ranges from 15 to 35 mg 100^{-1} g fruit, while vitamin A and has a high amount of nutritional content (Gould, 1971). It has commercial value in the extraction of tomatine, a steroidal hormone, used as substitute of diosgenin. According to American Cancer Research Association, tomato is beneficial to control prostate cancer (American Cancer Society, 2008). The increasing consumption of tomato makes it a high value crop for generating income of the farmers. Tomato is cultivated in every state of India and occupying an area of about 0.81 M ha with production about 20.51 m MT (Anon. 2018-2019) and production share of India to different countries are 11.2% and having productivity 16.1 MT ha^{-1}. The major tomato producing states in the country are Maharashtra, Andhra Pradesh, Uttar Pradesh, Orissa, Karnataka, West Bengal, Tamil Nadu, Bihar, Madhya Pradesh, Assam, Telangana, Haryana and Gujrat. These states account for about 90% of the total production of country.

Tomatoes are grown in area of about 50.7 thousand hectares with production of 1124.89 MT (Anonymous, 2018) in Maharashtra. The Share of tomato in Maharashtra is 5.51% (Anonymous, 2018). It is grown in Nashik, Pune, Solapur, Sangli, Satara, Ahmednagar and Nagpur districts of Maharashtra.Being an important commodity and dollar earning crop it is mostly exported to Pakistan, UAE, Bangladesh, Nepal and Maldives from India. In the world India is second major tomato producing country after China. Major tomato producing countries are China, India and USA, respectively. The cultivation tomato fetches higher prices in market to growers but there are some natural menaces, which devastate the crop *viz*., ToLCV disease. Different viruses were observed in tomato but the ToLCV is the extremely significant and most serious constraints for the production of tomato, which reduces the yield drastically all over India (Srivastava *et al.*, 1995).Hence, in keeping the above facts in mind, the present investigation was undertaken to identify suitable genotypes capable of giving higher fruit yield and good quality traits.

Materials and Methods

The experimental material for the present studies comprised oftomato 34 lines along with two standard checks H-24 (resistance check) and Punjab Chhuhara (susceptible check) was collected from Tomato Improvement Scheme, Department of Horticulture, MPKV, Rahuri and these were tested for one year during summer season of 2020 at farm of Tomato Improvement Scheme, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri. Geographically, central campus of MPKV, Rahuri which is situated at 73°15'0" to 76°22'12" North latitude and 15°46'48" to 22°3'0" East longitude and has elevation of 556 m above mean sea level. The place experiences hot dry summer, hot summer and humid rainy season and cold winter months, the maximum temperature goes upto 38°-41°C during summer (April to May) and minimum temperature falls to 13°C during winters. The individual experiment was carried out in Randomized block design with three replications. The uniform, healthy seedlings were transplanted on ridges at the distance of 90 x 30 cm. The observations were recorded on five randomly selected plants of each genotype and replication, Average was calculated for quantitative characters such as Plant height (cm), Average number of branches $plant^{-1}$, Days to 50% flowering, Number of fruits $plant^{-1}$, Average weight of fruit (g), Equatorial diameter of fruit (cm), Polar diameter of fruit (cm), Number of locules $fruit^{-1}$, Pericarp thickness (mm), Yield $plant^{-1}$ (kg), Yield $plot^{-1}$ (kg), Yield $hectare^{-1}$ (t ha^{-1}). Observations also recorded forqualitative characters like Fruit colour, Fruit

shape, a drop of tomato juice from each individual genotype was put on the prism of hand refractometer and reading was noted for total soluble solids (°Brix). Also, morphological observations were recorded for plant growth habit i.e., determinate or indeterminate and leaf type which is tomato or potato type of leaf.

Results and Discussion

The results obtained from the present investigation on growth and development parameters exhibited significant difference by the genotypes. The mean performance of different genotypes for different characters and grand mean for different characters are presented in Table 3. The plant height is an important growth contributing character of tomato. The maximum plant height (124.59 cm) was recorded in the genotype RHRT-15-21, followed by RHRT-15-19 and RHRT-15-17 recorded their height 115.40 cm and 100.54 cm, respectively. Whereas the lowest plant height 48.10 cm in the genotype RHRT-15-6. The results obtained are in close agreement with the observations recorded by Ahmed *et al*., (2010), Olakojo and Adetula (2014), Jamdhade (2016), Jatav *et al*., (2017), Samad *et al*., (2017) and Nalla and Rana (2021) for average plant height. The genotypes RHRT-15-4, RHRT-15-17, RHRT-15-19, RHRT-15-20, RHRT-15-21, RHRT-17-1, RHRT-17-2 and RHRT-17-5 were observed indeterminate type of plant growth habit andrest of all thegenotypes along with two standard checks were recorded determinate in growth habit. The results are in accordance with the findings of Hossain *et al*., (2017) and Nadia *et al*., (2018) for plant growth habit. The maximum number of primary branches plant^{-1} five recorded in the genotype RHRT-15-4 and the remaining genotypes ranged between 3 and 4 primary branches plant^{-1}. Similar trends of results were reported by Jatav *et al*., (2017) and Kumara *et al*., (2017). All the genotypes were observed large tomato type of leaf that is having serrated leaf margins. The results are in accordance with the findings of Nadia *et al*., (2018) for leaf type which is tomato type of leaf.

The performance of different genotypes forflower and fruit development characters are presented in Table 3. Significant differences were observed among the entries with respect to days to 50% flowering. The value ranged from 30 to 39 days. It is lowest in RHRT-15-7 (30 Days), followed by RHRT-15-4 (31 Days) and highest in RHRT-15-17 (39 Days). The results are in conformity with the findings of Raju *et al*., (2014), Kumar *et al*., (2012), Dar*et al*., (2012), Jamdhade (2016), Spaldon and Hussain, (2017) and Samad *et al*., (2017) for 50% flowering. So, RHRT-15-7 genotype as an early maturing in crop improvement programmes to dissect the gene responsible for early flowering and transfer to other genotypes in order to get superior varieties. The wide

Table 1. List of the 34 tomato lines and two standard checks included in the study

Sr. No.	Lines	Sr. No.	Lines
1.	RHRT-15-2	19.	RHRT-15-20
2.	RHRT-15-3	20.	RHRT-15-21
3.	RHRT-15-4	21.	RHRT-15-22
4.	RHRT-15-5	22.	RHRT-15-23
5.	RHRT-15-6	23.	RHRT-15-24
6.	RHRT-15-7	24.	RHRT-15-26
7.	RHRT-15-8	25.	RHRT-15-28
8.	RHRT-15-9	26.	RHRT-17-1
9.	RHRT-15-10	27.	RHRT-17-2
10.	RHRT-15-11	28.	RHRT-17-3
11.	RHRT-15-12	29.	RHRT-17-4
12.	RHRT-15-13	30.	RHRT-17-5
13.	RHRT-15-14	31.	RHRT-17-6
14.	RHRT-15-15	32.	RHRT-17-7
15.	RHRT-15-16	33.	RHRT-17-8
16.	RHRT-15-17	34.	RHRT-17-9
17.	RHRT-15-18	35.	H-24 (RC)
18.	RHRT-15-19	36.	PunjabChhuhara (SC)

Note- (RC-Resistance Check) and (PC-Susceptible Check)

variation in growth parameters of all the genotypes might be due to their genetic makeup, which indirectly governs the morphology of the plant that has a direct impact on the formation of floral buds since all the genotype were grown under the same climatic condition. A wide variation was found among the genotypes fornumber of fruits plant^{-1}, which significantly varied from 11 to 24 fruits plant^{-1} among the genotypes. The findings are closely similar to the results of Salwa *et al*., (2015), Kumara*et al*., (2017), Nadia *et al*., (2018), Kumar and Singh (2018). The lowest number of fruits plant^{-1} were produced by the check Punjab

Table 2. Evaluation of tomato genotypes for growth, development and qualitative characters

Genotypes	Plant growth habit	Leaf type	Fruit color	Fruit shape
RHRT-15-2	Determinate	Tomato type	Orange Red	Oval
RHRT-15-3	Determinate	Tomato type	Orange Red	Oval
RHRT-15-4	Indeterminate	Tomato type	Orange Red	Round
RHRT-15-5	Determinate	Tomato type	Orange Red	Oval
RHRT-15-6	Determinate	Tomato type	Orange Red	Oval
RHRT-15-7	Determinate	Tomato type	Orange Red	Oval
RHRT-15-8	Determinate	Tomato type	Orange Red	Oval
RHRT-15-9	Determinate	Tomato type	Orange Red	Oval Round
RHRT-15-10	Determinate	Tomato type	Orange Red	Oval
RHRT-15-11	Determinate	Tomato type	Orange Red	Oval
RHRT-15-12	Determinate	Tomato type	Orange Red	Oval
RHRT-15-13	Determinate	Tomato type	Orange Red	Oval
RHRT-15-14	Determinate	Tomato type	Orange Red	Oval
RHRT-15-15	Determinate	Tomato type	Orange Red	Oval
RHRT-15-16	Determinate	Tomato type	Orange Red	Oval
RHRT-15-17	Indeterminate	Tomato type	Orange Red	Oval
RHRT-15-18	Determinate	Tomato type	Orange Red	Oval
RHRT-15-19	Indeterminate	Tomato type	Orange Red	Round
RHRT-15-20	Indeterminate	Tomato type	Orange Red	Round
RHRT-15-21	Indeterminate	Tomato type	Orange Red	Oval Round
RHRT-15-22	Determinate	Tomato type	Orange Red	Round
RHRT-15-23	Determinate	Tomato type	Orange Red	Round
RHRT-15-24	Determinate	Tomato type	Orange Red	Round
RHRT-15-26	Determinate	Tomato type	Orange Red	Round
RHRT-15-28	Determinate	Tomato type	Orange Red	Round
RHRT-17-1	Indeterminate	Tomato type	Orange Red	Oval
RHRT-17-2	Indeterminate	Tomato type	Orange Red	Round
RHRT-17-3	Determinate	Tomato type	Orange Red	Round
RHRT-17-4	Determinate	Tomato type	Orange Red	Oval
RHRT-17-5	Indeterminate	Tomato type	Orange Red	Oval
RHRT-17-6	Determinate	Tomato type	Orange Red	Oval
RHRT-17-7	Determinate	Tomato type	Orange Red	Round
RHRT-17-8	Determinate	Tomato type	Orange Red	Oval
RHRT-17-9	Determinate	Tomato type	Orange Red	Oval
(H-24)	Determinate	Tomato type	Orange Red	Oval Round
(Punjab Chhuhara)	Determinate	Tomato type	Orange Red	Oval

Chhuhara 10 fruits plant^{-1} followed by genotypes RHRT-15-10 and RHRT-17-9 *viz*., 11 fruits plant^{-1}, RHRT-15-4 and RHRT-15-23 (24 Fruits plant-1) the highest number of fruits plant^{-1}. It was at par with those recorded by the genotype RHRT-15-7, RHRT-15-18, RHRT-

Table 3. Mean performance of tomato genotypes

Genotypes	Av. plant height (cm)	Av. no. of branches plant^{-1}	Days to 50% flowering	No. of fruits plant^{-1}	No. of locules fruit-1	Pericarp thickness (mm)
RHRT-15-2	68.60	4.00	32	14	2.33	5.34
RHRT-15-3	69.90	3.67	33	14	2.33	4.24
RHRT-15-4	87.50	5.00	31	24	2.33	6.01
RHRT-15-5	69.11	4.33	34	13	2.33	5.88
RHRT-15-6	48.10	4.33	34	18	3.00	4.65
RHRT-15-7	57.40	4.33	32	23	3.00	4.38
RHRT-15-8	75.40	3.67	33	19	3.00	5.54
RHRT-15-9	71.54	3.67	35	13	3.00	5.69
RHRT-15-10	73.67	4.00	36	11	2.67	6.54
RHRT-15-11	60.12	4.00	34	13	3.00	6.48
RHRT-15-12	70.45	3.67	36	16	2.67	5.98
RHRT-15-13	75.00	3.67	32	16	3.00	5.47
RHRT-15-14	73.46	3.67	33	17	3.00	7.47
RHRT-15-15	62.35	4.00	35	19	3.00	5.36
RHRT-15-16	68.84	3.67	37	17	3.00	6.51
RHRT-15-17	100.54	4.33	39	16	3.00	6.67
RHRT-15-18	76.98	3.67	32	24	3.00	5.38
RHRT-15-19	115.40	4.33	33	21	4.00	5.44
RHRT-15-20	81.26	3.67	32	21	4.00	6.27
RHRT-15-21	124.59	4.00	36	15	3.00	4.99
RHRT-15-22	61.40	3.67	35	14	2.67	4.67
RHRT-15-23	78.50	3.67	37	23	2.67	4.78
RHRT-15-24	80.45	3.67	36	17	3.00	3.71
RHRT-15-26	64.97	3.67	38	19	3.00	3.78
RHRT-15-28	55.48	4.00	34	17	3.00	4.55
RHRT-17-1	83.22	3.67	32	19	2.00	5.57
RHRT-17-2	85.69	3.67	33	17	3.00	4.87
RHRT-17-3	72.64	3.67	35	18	3.00	6.01
RHRT-17-4	74.80	4.00	36	18	2.67	6.24
RHRT-17-5	83.00	3.67	33	18	3.00	6.17
RHRT-17-6	74.89	3.67	37	14	3.00	5.00
RHRT-17-7	58.60	4.00	35	20	2.67	5.17
RHRT-17-8	57.69	4.00	36	12	3.67	5.26
RHRT-17-9	78.98	3.67	38	11	3.00	5.14
(H-24)	74.00	4.00	33	19	2.67	4.98
(Punjab Chhuhara)	64.28	3.67	35	10	3.67	5.38
Mean	74.41	3.89	34.44	16.94	2.92	5.43
S.Em (±)	2.48	0.19	3.08	1.18	0.22	0.24
C.D. at 5%	7.01	0.56	9.27	3.35	0.63	0.69

15-19 and RHRT-15-20. The number of locules per fruitvaried from 2 to 4. The minimum numbers of locules (2) were found in RHRT-17-1 and the maximum number of

Table 3. (Contd…) Mean performance of tomato genotypes

Genotypes	Av. fruit weight (g)	Polar diameter of fruit (cm)	Equatorial diameter of fruit (cm)	Yield plant-1 (Kg)	Yield plot-1 (Kg)	Yield hectare (ton)	Total soluble solids (°Brix)
RHRT-15-2	52.00	5.89	4.24	0.82	26.19	22.05	4.6
RHRT-15-3	50.80	6.91	4.11	0.80	25.59	21.54	4.5
RHRT-15-4	70.80	5.81	5.47	1.93	61.26	51.57	4.8
RHRT-15-5	66.10	5.52	4.51	1.06	31.49	26.51	4.7
RHRT-15-6	51.00	5.02	4.61	1.72	32.71	27.54	4.9
RHRT-15-7	60.08	4.81	4.21	1.33	49.59	41.75	5.4
RHRT-15-8	55.00	4.91	4.04	1.06	37.53	31.59	5.0
RHRT-15-9	53.20	4.58	4.45	0.74	24.83	20.90	5.0
RHRT-15-10	65.00	5.28	4.04	0.68	25.59	21.54	4.2
RHRT-15-11	67.20	5.5	4.8	0.97	31.34	26.39	4.4
RHRT-15-12	56.20	4.91	4.51	1.18	32.68	27.51	5.4
RHRT-15-13	70.60	5.8	4.7	1.22	40.78	34.33	5.0
RHRT-15-14	67.80	6	4.91	1.31	41.41	34.86	4.4
RHRT-15-15	60.40	4.9	4.12	1.27	41.14	34.63	4.5
RHRT-15-16	61.00	5.3	4	1.13	37.34	31.43	4.1
RHRT-15-17	58.20	5.31	4.31	0.95	33.49	28.19	4.8
RHRT-15-18	69.00	5.8	4.8	1.69	57.11	48.07	5.1
RHRT-15-19	68.80	4.1	4.27	1.25	53.59	45.11	5.0
RHRT-15-20	68.00	4.21	4.29	1.52	51.43	43.29	4.9
RHRT-15-21	65.80	4.25	4.12	1.26	35.48	29.87	4.8
RHRT-15-22	68.60	4.57	5.34	1.05	34.47	29.02	5.3
RHRT-15-23	31.80	5.41	5.91	1.04	27.04	22.77	4.8
RHRT-15-24	66.80	3.5	3.61	0.86	40.93	34.46	5.7
RHRT-15-26	58.90	4.52	4.88	1.01	40.50	34.10	5.2
RHRT-15-28	64.60	4.41	4.7	0.93	39.48	33.23	4.6
RHRT-17-1	67.80	5.64	4.99	1.48	46.34	39.01	4.4
RHRT-17-2	74.20	5.21	5.31	1.40	45.35	38.17	4.9
RHRT-17-3	71.80	5.41	5.26	1.24	46.45	39.10	4.9
RHRT-17-4	64.20	6.14	4.85	1.23	41.51	34.94	5.3
RHRT-17-5	73.20	5.6	5.18	1.35	47.27	39.79	4.9
RHRT-17-6	54.60	5.01	4.21	1.07	27.53	23.18	5.5
RHRT-17-7	50.20	4.36	4.54	1.11	35.60	29.97	5.3
RHRT-17-8	62.00	5.67	4.58	0.92	26.49	22.30	5.4
RHRT-17-9	61.00	6.15	5.96	0.85	24.10	20.29	5.1
(H-24)	69.40	5.94	5.81	1.33	48.47	40.80	5.4
(Punjab Chhuhara)	78.20	6.21	4.26	0.70	28.14	23.69	4.6
Mean	62.62	5.24	4.66	1.15	38.06	32.04	4.90
S.Em (±)	2.61	0.18	0.22	0.07	3.45	2.91	0.21
C.D.at 5%	7.40	0.52	0.63	0.18	9.77	8.23	0.59

locules (4) was found in genotype RHRT-15-19 and RHRT-15-20. Dar *et al*., (2012), Kumara *et al*., (2017), Jatav *et al*., (2017), Spaldon and Hussain (2017), Kumar and Singh (2018) found similar results for the number of locules fruit^{-1}. The pericarp thickness varied from 3.71 to 7.47 mm. The genotype RHRT-15-14 was found to have maximum pericarp thickness 7.47 mm, followed by the genotypes RHRT-15-17, RHRT-15-10, RHRT-15-16, RHRT-15-11 and RHRT-15-20. The minimum pericarp thickness 3.71 mm was found in the genotype RHRT-15-24. The results are in close agreement with Dar *et al*., (2012), Spaldon and Hussain (2017) and Kumara *et al*., (2017).

In the consideration ofqualitativeattributesall the genotypes under study had showed orange red fruit colour. The genotype RHRT-15-9, RHRT-15-21 and H-24 recorded Oval round fruit shape. The genotype RHRT-15-4, RHRT-15-19, RHRT-15-20, RHRT-15-22, RHRT-15-23, RHRT-15-24, RHRT-15-26, RHRT-15-28, RHRT-17-2, RHRT-17-3 and RHRT-17-7 observed round type of fruit shape, remaining all other genotypes including Punjab chhuhara showed oval shape of fruits.The genotypes for the character total soluble solids (°Brix) differed significantly showing average TSS of the tomato genotypes ranged from 4.1 to 5.5 °Brix. The genotype RHRT-15-24 recorded the highest TSS among all of the other genotypes. The lowest TSS was recorded by the genotype RHRT-15-16 (4.1°Brix). These results are in confirmity with the findings of Aoun *et al*., (2013), Islam *et al*., (2014), Ghasemi *et al*., (2015) Kumara *et al*., (2017), Vijeth *et al*., (2018) and Mandali and Vijayalakshmi (2020).

The fruit weight is an important yield contributing character of tomato. Fruit weight plant^{-1} showed significant result in different tomato genotypes. The data revealed that the genotypes differed significantly. The average fruit weight of the genotypes ranged between 31.80 to 78.20 g. The genotype Punjab chhuhara recorded the highest average fruit weight (78.20 g) followed by RHRT-17-2 recorded the 74.20 g . The genotype RHRT-15-23 recorded the lowest fruit weight 31.80 g. The fruit weights recorded by rest of the genotypes were in between 31.80 to 78.20 g. The results are in close agreement with Bharadwaj and Thakur (1994), Alam *et al*., (2005), Olakojo and Adetula (2014), Islam *et al*., (2014), Ghasemi *et al*., (2015), Meena *et al*., (2015), Kumara *et al*., (2017), Nadia *et al*., (2017) and Vijeth *et al*., (2018). The lowest polar diameter was found in the genotype RHRT-15-24 (3.5 cm) and highest polar diameter was recorded in the genotype RHRT-15-3 (6.91cm) followed by RHRT-17-9, RHRT-17-4 and RHRT-15-14, which was recorded 6.15 cm, 6.14 cm and 6.0 cm, respectively. The average equatorial diameter varied from 4.04 to 5.96 cm. The maximum equatorial diameter was found in the genotype RHRT-17-9, which was 5.96 cm. It was followed by the genotypes RHRT-15-23 and RHRT-15-4. In all genotypes the lowest equatorial diameter of fruit was recorded by the genotype RHRT-15-10, which is 4.04 cm. In case of polar and equatorial diameter, similar results were obtained by Mehraj *et al*., (2014), Ghasemi *et al*., (2015), Meena *et al*., (2015), Kumar and Singh (2018), Nalla and Rana (2021).

The genotypes under study differed significantly amongst themselves for yield plant^{-1} (Kg). The fruit yield plant^{-1} of tomato evaluated varied significantly among the 36 genotypes, ranging from 0.68 to 1.93 kg plant^{-1}. The genotype RHRT-15-4 gave the highest yield of 1.93 kg plant^{-1}. The lowest yield plant^{-1} of 0.68 kg was recorded in genotype RHRT-17-10. The results are in line with the results were observed by Alam *et al*., (2005), Lapidot *et al*., (2006), Islam *et al*., (2014), Meena *et al*., (2015), Kumara *et al*., (2017) and Nadia *et al*., (2018).The genotypes differed

significantly for yield plot^{-1} of fruits varied very widely between 24.10 and 61.26 kg plot^{-1}. The genotype RHRT-15-4 gave the highest yield of 61.26 kg plot^{-1}. The lowest yield plot^{-1} 24.10 kg plot^{-1} was recorded in the genotype RHRT-17-9. The results are in line with the results were observed by Islam *et al*., (2014), Meena *et al*., (2015), Kumara *et al*., (2017) and Nadia *et al*., (2018).The genotypes differed significantly among themselves, according to present findings yield by weight of fruits varied very widely between 20.29 and 51.57 t ha^{-1}. The genotype RHRT-15-4 gave the highest yield of 51.57 t ha^{-1}. The lowest yield 20.29 t ha^{-1} was given by the genotype RHRT-17-9. Similar trends of results for yield hectare^{-1} were reported by Kalloo and Banerjee (2000), Vijaya *et al*., (2003), Alam *et al*. (2005), Dar *et al*., (2012), Olakojo and Adetula (2014), Kumara *et al*., (2017), Vijeth *et al*., (2018) and Mandali and Vijayalakshmi (2020). Hence there is a great possibility of improvement in attributes of this vegetable crop.

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