



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; 11(8): 1582-1587  
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[www.thepharmajournal.com](http://www.thepharmajournal.com)

Received: 02-06-2022

Accepted: 08-07-2022

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## Compatibility of the tomato scions with different solanaceous rootstock

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### Abstract

To study the compatibility of tomato scions with different solanaceous rootstocks, an experiment was conducted in the field of Centre of Excellence and PCPF, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during the year 2020-21 and 2021-2022. Two scions of tomato Yuvraj and Suraj and five rootstocks viz., Pant T3, *Solanum lycopersicum* var. *cerasiforme*, *Solanum torvum*, Solmel Brinjal and Garcia chilli were used. Among the rootstocks Pant T3 took less time to germinate and shows maximum germination percentage after sowing whereas, in between scions Yuvraj took less days to germinate and shows highest germination percentage. Less number of days for graft union as well as for graft hardening was observed in Yuvraj grafted onto *Solanum lycopersicum* var. *cerasiforme*. Maximum graft success percentage as well as minimum mortality rate shows in graft combination Yuvraj grafted on *Solanum torvum*. After transplanting the grafted plants, the maximum survival percentage was shown by Yuvraj grafted on *Solanum torvum*. Performance of the combination of Yuvraj grafted with *Solanum torvum* rootstock performed well under field condition after transplanting.

**Keywords:** Compatibility, germination, graft, hardening, *Solanum torvum*, tomato, Yuvraj

### Introduction

Tomato (*Solanum lycopersicum* L.) is the major vegetable crop, grown in many parts of the world and has high economic importance in many countries. It belongs to family solanaceae with a chromosome number of  $2n=24$ . Brinjal (*Solanum melongena* L.), also known as eggplant is an important Solanaceous vegetable crop of tropical and sub-tropical regions belongs to family solanaceae. It was originated from Indo-burma. It is a versatile crop adapted to different agro-climatic regions and can be grown throughout the year. It is often-cross pollinated and day neutral crop. Chilli (*Capsicum annum*) belongs to the family solanaceae having diploid species with  $2n=2x=24$  chromosomes. It is also a richest source of vitamin C. It was originated from Mexico. It has bi-directional root system. It is an often-cross pollinated crop. Capsaicin is a pungent principle and Capsanthin is a colouring agent present in chilli. It is used as an analgesic in tropical ointments and dermal patches to relieve pain (Palanikumar, 2020) [16].

The growth, yield and fruit quality of tomato can be influenced by their genetic potential and environmental factors, such as temperature, radiation and grafting. High temperatures during the growing season have been reported to be declining in growth, reproductive development and yield of tomato. Grafted commercial cultivars (scions) onto selected tolerant rootstocks could be a promising method for producing tomato at suboptimal conditions. Grafting is becoming a common practice in several European countries, such as Spain, Italy, Turkey, Greece and Israel. Interest in vegetable grafting has increased in recent years due to the advantages for improving production, especially in intensive high-input cropping systems. Grafting of vegetable crops is used to provide resistance to soil pests and pathogens, to increase the tolerance to abiotic stresses, to improve water or nutrient uptake, or to enhance the vigour of the scion. Grafting tomatoes on resistant varieties from the solanaceous crops controls the problem with soil-borne diseases and gives good yield as well as quality fruit was therefore adopted as a strategy to cure the nuisance without harming the ecosystem. In this study we investigated the compatibility of the tomato scions with different solanaceous rootstock.

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## Material and Methods

The proposed experiment will be carried out in the field of Centre of Excellence and PCPF, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during the year 2020-21 and 2021-2022. Raipur district is located in the central part of the Chhattisgarh Plains, at an altitude of 289.56 meters above mean sea level (MSL) between 21° 16' N latitude and 81° 26' E longitude.

The experimental materials for the present investigation comprised of five solanaceous rootstocks and two tomato hybrids were used as scion. Out of all the five rootstocks included in the study, two were wild *Solanum* species i.e., *Solanum torvum* and *Solanum lycopersicon* var. *cerasiforme* and other three were the cultivated *Solanum* species. The rootstocks and scion combination are mentioned in the Table 1. Twelve treatments in total comprising of five rootstocks and two scions including two controls (non-grafted treatments) were planted in Factorial Randomized Block Design having 3 replications.

**Table 1:** Rootstocks and Scion Combinations

Factor A	Level
Yuvraj (Y)	<i>Solanum torvum</i> (T <sub>1</sub> )
	Solmel Brinjal (T <sub>2</sub> )
	<i>Solanum lycopersicon</i> var. <i>cerasiforme</i> (T <sub>3</sub> )
	Pant T3 (T <sub>4</sub> )
	Garcia chilli (T <sub>5</sub> )
Control	Without grafting (T <sub>6</sub> )
Factor B	
Suraj (S)	<i>Solanum torvum</i> (T <sub>1</sub> )
	Solmel Brinjal (T <sub>2</sub> )
	<i>Solanum lycopersicon</i> var. <i>cerasiforme</i> (T <sub>3</sub> )
	Pant T3 (T <sub>4</sub> )
	Garcia chilli (T <sub>5</sub> )
Control	Without grafting (T <sub>6</sub> )

The experimental material comprising of commercial cultivars, varieties and wild relatives displayed the presence of variability in terms of morphological characteristics. The two scion cultivars viz., Yuvraj (Y) and Suraj (S) produce round, flat round and square oblong fruits, respectively contributing to the substantial amount of variability in terms of fruit characteristics. Furthermore, inclusion of non-edible wild Brinjal species '*Solanum torvum*' and also hybrid cultivars of tomato 'Pant T3', '*Solanum lycopersicon* var. *cerasiforme*', 'Solmel' hybrid Brinjal and 'Garcia' hybrid chilli were added to the variability regarding the plant growth and quality characteristics. Both the scion cultivars represent consumer accepted characteristics of tomato fruits along with high yield and therefore are preferred for cultivation by farmers. Morphological diversity among the five rootstocks and two scions used in this study and the result were shown below:

## Result

### 1. Days taken for germination

The mean data on days taken for germination was not differ significantly due to grafting during the year 2020-21 and 2021-22 was presented in the Table 2. Among all the five rootstocks, Pant T3 (T<sub>4</sub>) took least days (7.00 and 8.90) for

germination followed by *Solanum lycopersicon* var. *cerasiforme* (T<sub>3</sub>) whereas, *Solanum torvum* (T<sub>1</sub>) took maximum days (25.00 and 22.00) for germination followed by T<sub>2</sub> i.e., Solmel Brinjal (21.67 and 9.50) during the year 2020-21 and 2021-22, respectively. Among both the scion Yuvraj (Y) took minimum days (6.67 and 6.90) for germination as compared to Suraj (S) which took maximum days (8.67 and 8.10) during the year 2020-21 and 2021-22, respectively.

Similar findings was reported by Black (2003) [5], Gisbert (2011) [7], Dhivya (2013) [6], Kumar (2015) [11], Rathod (2017) [17] and Bharathi (2021) [4]. This result was in agreement with Gisbert (2011) [7] who discussed in his study that *Solanum torvum* took maximum days for germination. *Solanum torvum* is a wild species which is having hard seed coat and prolonged seed dormancy that result in poor, erratic and slow germination. Further Kumar *et al.* (2015) [11] specified that *Solanum torvum* is a highly vigorous relative of eggplant but its low, irregular and inconsistent germination due to long dormancy in seeds limits practicability as rootstock.

### 2. Germination percentage (%)

Among all the treatments between the rootstocks maximum germination percentage (89.95% and 90.20%) was observed under Pant T3 (T<sub>4</sub>) followed by T<sub>3</sub> i.e., *Solanum lycopersicon* var. *cerasiforme* (88.89% and 87.60%). Among both the scion Yuvraj (Y) shows maximum percentage (96.56% and 95.00%) for germination as compared to S i.e., Suraj (96.30% and 94.80%) during the year 2020-21 and 2021-22, respectively. However, minimum percentage (80.42% and 81.00%) for germination was recorded under Solmel Brinjal (T<sub>2</sub>) followed by T<sub>1</sub> i.e., *Solanum torvum* (80.69% and 81.50%) during the year 2020-21 and 2021-22, respectively (Table 2).

These results were in agreement with Shipepe and Msogoya (2018) [22], Hossain *et al.* (2019) [9] and Bharathi *et al.* (2021) [4] respectively. Bharathi *et al.* (2021) [4] discussed that *Solanum sisymbriifolium* has highest germination percentage on 25 days after sowing followed by *Solanum torvum*.

### 3. Number of days taken to attain graftable size

Among all the rootstocks, Pant T3 (T<sub>4</sub>) took less number of days (20.00 and 21.70) from germination to reach grafting stage whereas, in *Solanum torvum* (T<sub>1</sub>) more (44.00 and 45.50) number of days from germination to reach grafting was recorded. In between both the scion, Yuvraj (Y) took less number of days (15.33 and 16.40) to reach grafting stage whereas Suraj (S) took more number of days (17.00 and 18.10) to attain graftable size. The data regarding the number of days taken to attain graftable size after sowing was shown in the Table 2.

Fastest germination exhibited by Pant T3 obviously resulted in minimum number of days to reach the grafting stage. *Solanum torvum* having slow germination process resulted in maximum number of days to reach the grafting stage. This results are agreement with Bahadur *et al.* (2015) [11], Rathod (2017) [17], Pilli *et al.* (2018) [17], Shipepe and Msogoya (2018) [22], Hossain *et al.* (2019) [9] and Sharma *et al.* (2019) [21] respectively.

**Table 2:** Days taken for germination, germination percentage and number of days taken to attain graftable size of rootstocks and scions

Days taken for germination				Germination percentage			No. of days taken to attain graftable size		
Treatments	2020-21	2021-22	Pooled	2020-21	2021-22	Pooled	2020-21	2021-22	Pooled
<b>Rootstock</b>									
T1	25.00	22.00	23.50	80.69	81.50	81.09	44.00	45.50	44.75
T2	21.67	19.50	20.58	80.42	81.00	80.71	33.00	36.87	34.94
T3	10.00	11.60	10.80	88.89	87.60	88.24	21.00	23.50	22.25
T4	7.00	8.90	7.95	89.95	90.20	90.07	20.00	21.70	20.85
T5	11.00	13.30	12.15	82.28	84.50	83.39	24.00	28.32	26.16
p-value	0.00	0.00	0.00	0.67	0.70	0.69	0.00	0.01	0.00
<b>Scion</b>									
Y	6.67	6.90	6.78	96.56	95.00	95.78	15.33	16.40	15.87
S	8.67	8.10	8.38	96.30	94.80	95.55	17.00	18.10	17.55
p-value	0.01	0.39	0.11	0.98	0.99	0.99	0.42	0.68	0.43

#### 4. Number of days taken for graft union

Among all the rootstocks, the minimum number of days (6.00 and 6.17) taken for graft union was observed under Pant T3 (T<sub>4</sub>) followed by *Solanum lycopersicum* var. *cerasiforme* (T<sub>3</sub>) whereas, the maximum days was found under *Solanum torvum* (T<sub>1</sub>). In between both the scion, Yuvraj (Y) took less days for graft union (6.53 and 6.67) as compared to Suraj (S) which took more number of days (6.93 and 7.20) for graft union during the year 2020-21 and 2021-22, respectively. Among all the treatments, minimum number of days (5.67 and 6.00) for graft union was found in the combination YT3 (Yuvraj grafted onto *Solanum lycopersicum* var. *cerasiforme*), whereas maximum number of days (7.67 and 8.00) for graft union was shown by the combination YT1 (Yuvraj grafted on *Solanum torvum*). The data regarding the number of days taken for graft union was presented in Table 3.

Days required for graft union depends on stage of rootstock and scion as well as prevailing atmospheric conditions. According to findings, changes occur during the formation of graft union include the death of cell layers at graft interface, cohesion of scion and rootstock, proliferation of callus cells at the graft interface, and vascular differentiation across the graft interface to establish vascular connectivity. These results are consistent with the findings of Ibrahim (2017) <sup>[10]</sup>, Shipepe and Msogoya (2018) <sup>[22]</sup>, Maurya (2019) <sup>[12]</sup>, Kumar (2019) <sup>[13]</sup>, Hossain *et al.* (2019) <sup>[9]</sup>, Singh *et al.* (2019) <sup>[23]</sup> and Surve (2019) <sup>[26]</sup>. Petran and Hoover (2014) <sup>[8]</sup> reported that 'Celebrity' scion grafted on *Solanum torvum* rootstock required maximum number of days for graft union. Tomato hybrids grafted onto Arka Vikas rootstock took lesser number of days for graft healing than *S. pimpinellifolium* rootstock. This may be due to the better union of vascular tissues at the graft union and better compatibility between the rootstocks and scions of the same species. Surve (2019) <sup>[26]</sup> reported that

average 7.6 to 8.2 days were required for graft union.

#### 5. Days taken for graft hardening

Among all the rootstocks, the minimum number of days taken (21.00 and 20.50) for graft hardening was observed under *Solanum lycopersicum* var. *cerasiforme* (T<sub>3</sub>) followed by Pant T<sub>3</sub> (T<sub>4</sub>) whereas, the maximum was found under *Solanum torvum* (T<sub>1</sub>). In between both the scion, Yuvraj (Y) took less days for graft hardening (21.60 and 21.47) as compared to Suraj (S) which took (21.93 and 21.67) more number of days for graft hardening during the year 2020-21 and 2021-22, respectively. Among all the treatments, minimum number of days (20.67 and 20.33) for graft hardening was found in the combination YT3 (Yuvraj grafted onto *Solanum lycopersicum* var. *cerasiforme*), whereas maximum number of days (22.67 and 23.00) for graft hardening was shown by the combination YT1 (Yuvraj grafted on *Solanum torvum*). The data regarding the number of days taken for graft hardening was presented in Table 3. After graft healing, for acclimatization grafted seedlings were taken outside the healing chamber and kept under sunlight so as provide hardening prior to transplanting and to reduce transplanting shock. Grafted seedlings took three to four days for complete acclimatization and later they were transplanted. The findings of the experiment are in agreement with that reported by Mohamed *et al.* (2012) <sup>[13]</sup>, Nkansanh *et al.* (2013) <sup>[15]</sup>, Maurya *et al.* (2019) <sup>[12]</sup>, Sharma (2019) <sup>[21]</sup>, Kumar *et al.* (2019) <sup>[13]</sup>, Hossain *et al.* (2019) <sup>[9]</sup> and Palanikumar *et al.* (2020) <sup>[16]</sup>. Nkansanh *et al.* (2013) <sup>[15]</sup> stated that grafted plants were transplanted to the field after 16 days from grafting. Hossain *et al.* (2019) <sup>[9]</sup> reported that the plants were ready to transplant in the field after 3 weeks of grafting. Palanikumar *et al.* (2020) <sup>[16]</sup> observed in his studies that the days taken for sprouting of grafted plants ranged from 10.40 to 12.40 days after grafting.

**Table 3:** Days taken for graft union and for graft hardening.

Treatments	Days for graft union			Days for graft hardening		
	2020-21	2021-22	Pooled	2020-21	2021-22	Pooled
<b>Rootstock</b>						
T1	7.50	7.83	7.67	22.50	22.67	22.58
T2	7.17	7.50	7.33	22.17	22.33	22.25
T3	6.17	6.33	6.25	21.00	20.50	20.75
T4	6.00	6.17	6.08	21.33	21.00	21.17
T5	6.83	6.83	6.83	21.83	21.33	21.58
S.Em ±	0.13	0.73	0.11	0.12	0.44	0.08
CD (0.05)	0.93	1.53	1.13	0.87	0.93	0.81
<b>Scion</b>						
Y	6.53	6.67	6.60	21.60	21.47	21.53
S	6.93	7.20	7.07	21.93	21.67	21.80

S.Em ±	0.05	0.46	0.04	0.05	0.28	0.03
CD (0.05)	0.59	0.97	1.01	0.55	0.59	0.72
<b>Interaction</b>						
YT1	7.67	8.00	7.83	22.67	23.00	22.83
YT2	7.33	8.00	7.67	22.33	22.33	22.33
YT3	5.67	6.00	5.83	20.67	20.33	20.50
YT4	6.33	6.33	6.33	21.33	21.00	21.17
YT5	6.33	6.67	6.50	22.00	21.33	21.67
ST1	6.67	6.67	6.67	22.33	22.33	22.33
ST2	7.00	7.00	7.00	21.67	21.33	21.50
ST3	7.00	7.00	7.00	21.33	20.67	21.00
ST4	6.00	6.00	6.00	21.33	21.00	21.17
ST5	7.33	7.67	7.50	22.00	22.33	22.17
S.Em ±	0.26	1.03	0.22	0.24	0.63	0.16
CD (0.05)	1.32	2.16	1.60	1.24	1.32	1.14

## 6. Grafting success (%)

Among all the treatment combinations, the highest percentage of graft success (86.07% and 85.91%) was recorded in the graft combination YT<sub>1</sub> i.e., Yuvraj grafted on *Solanum torvum* followed by ST<sub>1</sub> i.e., Suraj grafted on *Solanum torvum* (85.85% and 84.73%) whereas, the lowest percentage (68.89% and 71.49%) was observed in Suraj grafted on Garcia chilli (ST<sub>5</sub>) during the year 2020-21 and 2021-22, respectively. Among all the rootstocks, maximum success rate (85.96% and 85.32%) was observed under *Solanum torvum* (T<sub>1</sub>) and minimum success rate (74.44% and 72.15%) was observed in Garcia chilli (T<sub>5</sub>) whereas, in between both the scions Yuvraj (Y) is superior (82.68% and 79.00%) over Suraj (S) as the graft success rate was found lower (79.84% and 78.01%) in Suraj. (Table 4)

Over all highest graft success per cent after grafting was recorded in treatment T<sub>1</sub>. This might be due to better graft union and favourable conditions provided in the healing chamber. The above findings of the experiment are in agreement with that and similar results were reported by Kumar (2015) [11], Shipepe and Msogoya (2018), Soe *et al.* (2017), Singh *et al.* (2019) [23], Priyanka *et al.* (2019) [18], Sharma *et al.* (2019) [21], Surve (2019) [26], Bharathi *et al.* (2021) [4], Pallanikumar *et al.* (2020) [16], Rinku *et al.* (2020) [20] and Bhandari *et al.* (2021) [3]. Kumar (2015) [11] reported that the graft compatibility of Pusa Hybrid-6 on *Solanum torvum* had maximum survival rate while *Solanum xanthocarpum* grafted with Pusa Shyamala recorded lowest survival rate. Priyanka *et al.* (2019) [18] reported that *Solanum torvum* with PKM-1 recorded significantly highest graft success other than six rootstocks are used, whereas, LE102 with PKM-1 had least graft success. Bharathi *et al.* (2021) [4] also found in his study that the highest percentage of grafting success was shown by the combination of tomato hybrid CO3 grafted with *Solanum torvum* rootstock followed by Shivam grafted onto *Solanum torvum*.

## 7. Mortality rate (%)

Among all the treatment combinations, the lowest percentage (11.10% and 11.35%) of graft failure was recorded in the graft combination YT<sub>1</sub> i.e., Yuvraj grafted on *Solanum torvum* followed by ST<sub>1</sub> i.e., Suraj grafted on *Solanum torvum* (11.11% and 15.08%) whereas, highest percentage (31.11% and 30.22%) was observed in Yuvraj grafted on Garcia chilli (YT<sub>5</sub>) during the year 2020-21 and 2021-22, respectively. Among all the rootstocks, lowest mortality rate (11.11% and 13.21%) was observed under *Solanum torvum* (T<sub>1</sub>) and

highest mortality rate (25.56% and 29.28%) was observed in Garcia chilli (T<sub>5</sub>) whereas, in between both the scions Yuvraj (Y) is superior (15.55% and 20.88%) over Suraj (S) as mortality rate for Suraj was observed is higher (18.44% and 22.93%). (Table 4).

Similar findings regarding the mortality rate of grafted plants has been reported by Bausher *et al.* (2013) [2], Soltan *et al.* (2017) [25], Shipepe and Msogoya (2018) [22], Maurya *et al.* (2019) [12] and Bhandari *et al.* (2021) [3]. Shipepe and Msogoya (2018) [22] reported that the incidence of plant death (2.4%) observed in EG-190 grafted onto tomato cv. Monica followed by EG-190 grafted onto tomato cv. Assila (2.3%). Bhandari *et al.* (2021) [3] reported that all the sprouted scions may not survive, thus do not produce successful grafts. Death of sprouted graft observed during the study was recorded as mortality percentage. The highest mortality was observed in the grafts (13.68±0.58%) while the lowest mortality was observed in the grafts (4.76±4.76%).

## 8. Survival percentage (%)

Among all the rootstocks, maximum survival percentage was recorded (87.78% and 84.89%) in *Solanum torvum* followed by Solmel Hybrid Brinjal (74.44% and 82.24%) during 2020-21 and 2021-22, respectively. However, the minimum survival percentage was recorded under Garcia Hybrid Chilli (67.22% and 75.38%) during 2020-21 and 2021-22, respectively.

In between both the scions, the maximum survival percentage after the grafting was recorded in Yuvraj (75.33% and 81.09%) which was significantly differed with Suraj (72.89% and 79.82%) during 2020-21 and 2021-22, respectively (Table 4).

Among the different graft combinations, the maximum survival (91.11% and 85.85%) was recorded in the combination of YT<sub>1</sub> i.e. Yuvraj grafted onto *Solanum torvum* followed by ST<sub>1</sub> i.e. Suraj grafted onto Solmel Hybrid Brinjal (75.56% and 82.82%) during the year 2020-21 and 2021-22, respectively. Under these combinations the minimum survival percentage (66.67% and 75.19%) was observed under the combination ST<sub>5</sub> (Suraj grafted onto Garcia chilli).

The above findings are consistent with results reported by Surve *et al.* (2019) [26], Soe *et al.* (2017) [25] and Hossain *et al.* (2019) [9]. Soe *et al.* (2017) [25] reported that among the rootstocks, plants on eggplant rootstock showed maximum field survival rate, and plant on hot pepper rootstock showed the lowest field survival rate.



**Table 4:** Graft success per cent, Mortality rate and Survival percentage of grafted plant during the year 2020-21 and 2021-22

Treatments	Graft success %			Mortality %			Survival %		
	2020-21	2021-22	Pooled	2020-21	2021-22	Pooled	2020-21	2021-22	Pooled
<b>Rootstock</b>									
T1	85.96	85.32	85.64	11.11	13.21	12.16	87.78	84.89	86.34
T2	83.89	82.92	83.41	13.89	17.96	15.92	74.44	82.24	78.34
T3	81.67	78.10	79.88	18.33	26.43	22.38	69.44	78.84	74.14
T4	80.33	74.01	77.17	16.11	22.67	19.39	71.67	80.91	76.29
T5	74.44	72.15	73.30	25.56	29.28	27.42	67.22	75.38	71.30
S.Em ±	2.05	5.55	1.18	0.57	3.37	0.51	2.00	5.89	1.31
CD (0.05)	14.94	11.66	11.97	4.16	7.09	5.19	14.33	12.21	13.31
<b>Scion</b>									
Y	82.68	79.00	80.84	15.55	20.88	18.22	75.33	81.09	78.21
S	79.84	78.01	78.92	18.44	22.93	20.69	72.89	79.82	76.35
S.Em ±	0.82	3.51	0.47	0.23	2.13	0.20	0.80	3.72	0.52
CD (0.05)	9.45	7.37	10.70	2.63	4.48	4.64	9.07	7.72	11.91
<b>Interaction</b>									
YT1	86.07	85.91	85.99	11.10	11.35	11.23	91.11	85.85	88.48
YT2	84.44	83.41	83.93	14.44	18.48	16.46	75.56	82.82	79.19
YT3	82.22	78.66	80.44	18.89	26.59	22.74	70.00	79.76	74.88
YT4	80.67	74.19	77.43	16.67	24.29	20.48	72.22	81.43	76.83
YT5	80.00	72.82	76.41	31.11	30.22	30.66	67.78	75.57	71.68
ST1	85.85	84.73	85.29	11.11	15.08	13.09	84.44	83.93	84.19
ST2	83.33	82.44	82.89	13.33	17.44	15.39	73.33	81.66	77.50
ST3	81.11	77.53	79.32	17.78	26.26	22.02	68.89	77.93	73.41
ST4	80.00	73.84	76.92	15.56	21.04	18.30	71.11	80.39	75.75
ST5	68.89	71.49	70.19	20.00	28.33	24.17	66.67	75.19	70.93
S.Em ±	4.11	7.85	2.36	1.14	4.77	1.02	3.99	8.32	2.62
CD (0.05)	21.13	16.49	16.92	5.88	10.03	7.34	20.27	17.26	18.83

### Conclusion

Among the five different wild and hybrid rootstocks used, germination and germination percentage was more in Pant T<sub>3</sub> and it performed well in most of the characters followed by *Solanum lycopersicum var. cerasiforme*. Whereas, in different graft combinations Yuvraj grafted onto *Solanum torvum* performed well as compared to Suraj in following parameters - graft success %, mortality rate and also in the survival percentage. However, further studies to be carried to analyse the growth, yield, quality and biochemical characters of tomato fruits of grafted and non-grafted plants.

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