



## Research Paper

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# Study of softwood grafting on different mango varieties

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**ABSTRACT :** The present investigation revealed that minimum days taken for grafting observed in T<sub>4</sub> (Dashehari) and maximum days in T<sub>9</sub> (Local-3) at 90 DAS, similarly for days taken for scion sprouting was observed minimum in T<sub>4</sub> (Dashehari) and maximum days in T<sub>6</sub> (Rajapuri) and for per cent success of soft wood grafting was maximum in T<sub>1</sub> (Kesar) and minimum in T<sub>10</sub> (Local-4). Maximum height of scion at 30, 60 and 90 days grafting was observed significant under treatment T<sub>1</sub> (Kesar), T<sub>6</sub> (Rajapuri) and T<sub>4</sub> (Dashehari) and minimum in treatment T<sub>10</sub> (Local-4) and T<sub>2</sub> (Badam), respectively. The maximum per cent survival of grafts was recorded maximum for T<sub>1</sub> (Kesar) while the minimum was found in T<sub>7</sub> (Local-1) for 30 days grafting and for 60 days grafting T<sub>9</sub> (Local-3). The maximum number of leaves of scion bud after 30, 60 and 90 days grafting was observed in T<sub>1</sub> (Kesar), T<sub>8</sub> (Local-2) and T<sub>4</sub> (Dashehari), while the minimum number of leaves of scion bud after 30, 60 and 90 days grafting was observed under the treatment T<sub>10</sub> (Local-4) and T<sub>7</sub> (Local-1).

**KEY WORDS :** Soft wood grafting, Mango (*Mangifera indica* L.)

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Mango is highly cross pollinated and heterozygous plant. It needs to be propagated vegetatively to maintain its genetic uniformity. Though there are various methods of grafting and budding, only some of them give a high success rate under different situations. The grafts which are prepared in the nursery often fail to establish in the field because of poor maintenance of grafts in pots and also due to transplanting stock.

## RESEARCH METHODS

The present investigation was carried out at the Horticultural Nursery of the Department of Horticulture, Chimanbhai Patel College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, from June 2009 to January 2010. Total 10 treatments were used in Completely Randomized Design (CRD) with three replications. Sardarkrushinagar represent the North Gujarat Agro-climatic Zone. The place lies at 24° 19' North Latitude and 72° 19' East longitude at an elevation of 154.52 meters above the mean sea level. It possesses a typical sub-tropical climate characterized

by semi-arid and arid condition.

## RESEARCH FINDINGS AND DISCUSSION

The present investigation revealed (Table 1) the days taken for grafting after stone sowing was significant. It is observed (Table 1) that the minimum days taken for grafting after stone sowing in treatment T<sub>4</sub> (Dashehari, 77.00 days) which was statistically at par with treatment T<sub>1</sub> (Kesar, 83.67 days), T<sub>3</sub> (Totapuri, 78.00 days) and T<sub>6</sub> (Rajapuri, 83.33 days). While the maximum days taken for grafting after stone sowing was observed under the treatment T<sub>9</sub> (Local-3, 96.00 days). This result is in agreement with the findings of Chovatia (1994) and Joshi *et al.* (2000) in custard apple

The days taken for sprouting of scion after grafting was non-significant in soft wood grafts due to different varieties of mango root stock. However, the minimum days taken for sprouting of scion after grafting was recorded under the treatment T<sub>4</sub> (Dashehari, 12.33 days). While the maximum days taken for sprouting was recorded under the treatment T<sub>6</sub> (Rajapuri, 14.67 days). This result is supported by Amin (1978)

Table 1 : Performance of different mango varieties stone on soft wood grafting traits

Treatments	Varieties	Days taken for grafting after stone sowing	Day taken for first sprouting of scion after grafting	Per cent success of grafting (%)	Per cent survival of grafts after one and two months of grafting (%)			Growth of scion bud height after one, two and three months of grafting (cm)			Growth of scion bud leaves after one, two and three months of grafting		
					1 <sup>st</sup> month	2 <sup>nd</sup> months	1 <sup>st</sup> month	2 <sup>nd</sup> months	3 <sup>rd</sup> months	1 <sup>st</sup> month	2 <sup>nd</sup> months	3 <sup>rd</sup> month	
T <sub>1</sub>	Kesar	83.67	14.00	76.29	81.28	76.29	12.41	13.83	15.22	8.20	10.47	11.73	
T <sub>2</sub>	Badam	92.67	14.33	65.43	75.10	65.43	11.23	12.77	13.83	6.67	9.47	11.00	
T <sub>3</sub>	Totapuri	78.00	13.00	60.85	68.91	63.24	11.25	12.91	14.43	7.67	10.27	11.40	
T <sub>4</sub>	Desbehari	77.00	12.33	64.09	73.13	69.97	12.93	14.63	16.10	7.47	10.13	13.00	
T <sub>5</sub>	Langra	92.33	13.33	63.56	69.61	63.56	10.91	13.01	14.77	7.60	9.93	11.07	
T <sub>6</sub>	Rajapuri	83.33	14.67	66.60	70.05	68.07	11.63	14.77	15.62	7.33	10.47	12.07	
T <sub>7</sub>	Loca-1	88.33	13.00	62.98	64.97	62.97	10.81	13.73	15.20	6.47	9.33	10.27	
T <sub>8</sub>	Loca-2	87.33	12.67	70.15	71.61	70.15	10.78	14.17	15.05	6.93	11.00	12.07	
T <sub>9</sub>	Loca-3	96.00	14.33	61.18	65.67	61.18	10.36	12.71	14.23	6.53	9.67	10.73	
T <sub>10</sub>	Loca-4	89.33	14.33	60.09	71.31	66.00	10.31	12.17	14.49	6.13	10.20	10.87	
S.E. <sub>±</sub>		2.506	0.641	5.53	0.883	1.117	0.308	0.375	0.301	0.280	0.284	0.377	
C.D. (P=0.05)		7.391	NS	NS	2.606	3.294	0.908	1.106	0.887	0.825	0.839	1.111	
C.V.%		5.02	8.17	14.72	5.83	5.86	4.76	4.82	3.50	6.82	4.88	5.71	

NS=Non-significant

in mango.

The per cent success of grafts after three month of grafting were non-significant. However, the maximum per cent success of grafts was recorded under the treatment T<sub>1</sub> (Kesar, 76.29 %). While the minimum per cent success of grafts was recorded under the treatment T<sub>10</sub> (Local-4, 60.09 %). This result is supported by Amin (1978) in mango, Joshi *et al.* (2000) in custard apple, Sundari *et al.* (2002) in cashewnut and Sabeky (2005) in mango.

The per cent survival at one month after grafting was non-significant. However, the maximum per cent survival of grafts was recorded under treatment T<sub>1</sub> (Kesar, 81.28 %). while the minimum per cent survival of grafts was recorded under the treatment T<sub>7</sub> (Local-1, 64.97%). While, in second month after grafting was non-significant. However, the maximum per cent survival of grafts was recorded under treatment T<sub>1</sub> (Kesar, 76.29 %). while the minimum per cent survival of grafts was recorded under the treatment T<sub>9</sub> (Local-3, 61.18 %).

The maximum height of scion bud after one month of grafting was observed in treatment T<sub>4</sub> (Dashehari, 12.93 cm) which was statistically at par with treatment T<sub>1</sub> (Kesar, 12.41 cm) and T<sub>6</sub> (Rajapuri, 11.63 cm). While the minimum height of scion bud recorded under the treatment T<sub>10</sub> (Local-4, 10.31 cm), for second months of grafting was observed in treatment T<sub>6</sub> (Rajapuri, 14.77 cm) which was statistically at par with treatment T<sub>1</sub> (Kesar, 13.83 cm), T<sub>4</sub> (Dashehari, 14.63 cm), T<sub>7</sub> (Local-1, 13.73 cm) and T<sub>8</sub> (local-2, 14.17 cm). While the minimum height of scion bud was recorded under the treatment T<sub>10</sub> (Local-4, 12.17 cm) and for third month of grafting treatment T<sub>4</sub> (Dashehari, 16.10 cm) which was statistically at par with treatment T<sub>1</sub> (Kesar, 15.22 cm) and T<sub>6</sub> (Rajapuri, 15.62 cm). While the minimum height of scion bud was recorded under the treatment T<sub>2</sub> (Badam, 14.23 cm).

The maximum number of leaves of scion bud after one month of grafting was observed in treatment T<sub>1</sub> (Kesar, 8.20) which was statistically at par with treatment T<sub>3</sub> (Totapuri, 7.67), T<sub>5</sub> (Langra, 7.60) and T<sub>4</sub> (Dashehari, 7.47) While the minimum number of leaves of scion bud after one month of grafting was observed under the treatment T<sub>10</sub> (Local-4, 6.13) for second month, treatment T<sub>8</sub> (Local-2, 11.00) which was statistically at par with treatment T<sub>1</sub> (Kesar, 10.47), T<sub>6</sub> (Rajapuri, 10.47), T<sub>3</sub> (Totapuri, 10.27) and T<sub>10</sub> (Local-4, 10.20) While the minimum number of leaves of scion bud after one month of grafting was observed in treatment T<sub>7</sub> (Local-1, 9.33) and for

third month the maximum number leaves of scion bud after one month of grafting was observed in treatment T<sub>4</sub> (Dashehari, 13.00) which was statistically at par with treatment T<sub>6</sub> (Rajapuri, 12.07) and T<sub>8</sub> (Local-2, 12.07) While the minimum number leaves of scion bud after one month of grafting was observed in treatment T<sub>7</sub> (Local-1, 10.27). This result is supported by Zimmermann (1958). Panickar and Desai (1989) and Brahmachari *et al.* (1999) in mango.

### Conclusion:

This study concluded that the growth of scion, maximum success of graft was observed under Kesar root stock.

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