The Asian Journal of Horticulture, **Vol. 3 No. 2 : 389-390 (December-2008)**

Effect of different mango rootstocks on success of softwood grafting

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Accepted : *October, 2008*

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An experiment was conducted to assess the effect of different rootstocks on success of softwood grafting. Different rootstocks, i.e., seedling progeny, Amrapali, Sindhu, Sindhura, Beneshan and Nekkare were used. Alphonso variety grafted on Sindhura showed significantly highest graft success (77.80%) and Nekkare recorded maximum graft survival (64.77%) which was on par with Sindhura. Growth parameters like sprout height, graft diameter and number of leaves were maximum on Sindhura and Beneshan.

Key words : Root stocks, Nekkare, Graft success, Sprout height graft survival.

The mango (*Mangifera indica* L.) is one of the most important fruit crops of India and is considered as national fruit. Generally the mango grafts are raised on seedling rootstocks of unknown source resulting in variation among the grafts. It is essential to standardize the rootstocks for different mango cultivars in different agro-climatic regions to have uniform growth, high yield, good quality fruits and dwarf stature of plants for high density planting. This is possible when the rootstocks are raised asexually or by the use of polyembryonic rootstocks which are true type because of their origin from the nucellar tissues. It is also known fact that the rootstocks showed marked effects on the growth and subsequent bearing habit and quality of fruits in most of the fruit crops. Hence, there is need to select the suitable rootstocks of locally available variety. Since these are used as rootstock for grafting and budding, raising of rootstocks and proper use of rootstocks is equally important. Different workers tried different rootstocks in mango to find out suitability of rootstocks and scion combination. Now-a-days, mango is commercially propagated by softwood grafting with varied degree of success. Keeping this view under consideration, the present study has been taken out to assess the effect of different mango rootstocks on success of softwood grafting.

MATERIALS AND METHODS

The present investigation was carried out at the department of Pomology, Kittur Rani Channamma College of Horticulture Arabhavi, during 2005–2006. A completely randomized design with four replications and six rootstocks were employed. The different rootstocks tried are local progeny, Amrapali, Sindhu, Sindhura, Beneshan and polyembryonic Nekkare. The vigorous grown two months old rootstocks in container were selected and softwood grafting was done as per the procedure followed by Amin, (1974). Scion of one season old shoot of pencil thickness free from pest and disease were selected from 20 years old grafted Alphanso. The observations were recorded three months after grafting (MAG) for graft success and six months after for graft survival percentage and monthly interval for graft growth parameters

Survival percentage of the grafts was calculated after six month of grafting by the following formula and expressed in percentage.

$$\text{Survival percentage} = \frac{\text{Number of grafts remained alive at the end of experiment}}{\text{Number of successful grafts}} \times 100$$

RESULTS AND DISCUSSION

The Alphonso variety grafted on Sindhura rootstocks recorded maximum graft success (77.80%) and Nekkare rootstocks showed maximum graft survival (64.77%), which was at par with Sindhura (64.26). Alphonso grafted on Beneshan rootstock showed maximum sprout height (6.03 cm) and grafted on Beneshan and Sindhu rootstocks showed maximum graft diameter (8.57 mm) while minimum graft diameter was observed on Nekkare rootstock (6.73 mm). Maximum number of leaves were observed on sindhura (10.15) while minimum number of leaves (7.70) and sprout height (4.41 cm) was observed in local progeny (Table 1). at the end of 90 days after grafting (DAG).The vigorous rootstocks led to more

Table 1 : Effect of different rootstocks on graft success, survival, sprout height, graft diameter and number of leaves at different stages of growth of mango

Root stocks	Graft success (%)	Graft survivability (%)	Sprout height (cm)			Graft diameter (mm)			Number of leaves		
	Months after grafting		Days after grafting								
	Three MAG	Six MAG	30 DAG	60 DAG	90 DAG	30 DAG	60 DAG	90 DAG	30 DAG	60 DAG	90 DAG
T_1 – Local	64.77	41.72	2.52	3.53	4.41	5.58	6.49	7.40	4.42	6.88	7.70
T_2 – Sindhura	77.80	64.26	3.48	5.00	5.66	7.21	7.69	8.23	7.15	8.65	10.15
T_3 – Amarapali	44.80	53.79	3.09	3.98	5.89	5.38	6.60	7.38	6.85	8.40	9.65
T_4 – Sindhu	61.50	49.99	3.45	5.02	5.76	6.66	7.79	8.57	7.30	8.70	9.65
T_5 – Beneshan	33.30	55.59	3.99	5.29	6.03	6.89	8.07	8.57	6.15	8.20	9.15
T_6 – Nekkare	40.50	64.77	2.82	4.07	5.45	5.63	6.25	6.73	6.27	6.90	9.05
S.E. ±	0.57	1.06	0.13	0.06	0.28	0.20	0.11	0.11	0.41	0.50	0.50
C.D. (P=0.05)	1.70	2.98	0.39	0.18	0.85	0.59	0.33	0.32	1.24	1.50	1.49

vegetative flushing, diameter of stock and graft union varied significantly with different rootstock (Reju *et al*., 1996). Singh and Singh (1976) suggested the use of Mylepalium and Vellaikolamban as best rootstocks for Dashehari. Gowder and Irulappan (1971) suggested the use of Bappakai as best rootstock for Neelum.

In the present investigation, Sindhura recorded maximum sprout height, number of leaves and graft diameter when grafted with Alphonso scion Srivastava *et al.* (1980) found Vellaikulumban rootstock as vigorous rootstock based on stomatal index. However, in case of Neelum variety, maximum growth was recorded on Bappakai rootstock. Similar observation was recorded by Teaotia and Maurya (1970) in Dashehari. They observed the least growth in Dashehari scion when grafted on Vellaikulumban rootstock. The results obtained in present investigation confirm the compatibility of Alphonso variety with Sindhura rootstock

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