

Original Research Article

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Standardization of Softwood Grafting in Tamarind (*Tamarindus indica* L.)

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ABSTRACT

Keywords

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Standardization of Softwood Grafting in Tamarind was carried out at the Department of Horticulture, GKVK, UAS, Bangalore. The broad objectives of the investigation are to study the success and survival per cent of softwood grafting in Tamarind using only *Tamarindus indica* as rootstock under Bangalore condition over the months (February to May) in different growing condition. A significant effect was observed with different treatment (Months of grafting), sub treatment (Growing conditions) on the observation recorded on softwood grafts of Tamarind. The softwood grafting success and survival rate were recorded highest in T4 (M2C1: March + low cost polyhouse) with 96.66 % and 96.68 %, respectively. Softwood grafting was performed well under March + low cost polyhouse condition.

Introduction

Tamarind (*Tamarindus indica* L.), a member of subfamily Caesalpiniaceae of family Fabaceae, is an underutilized fruit and widely distributed throughout tropic and sub-tropics as stray plantation or avenue. It is a source of timber, fruits, seeds, fodder, medicinal extracts and has potential of industrial use (Dwivedi *et al.*, 1990, 1992). It is highly heterozygous, cross-pollinated fruit crop and as such seedlings exhibit a wide range of variations, which aids in the selection of the superior desirable genotypes. Due to cross pollination and Predomination practice of seed propagation, there is immense opportunity to locate elite trees having

desirable horticultural traits, which needs to be conserved and exploited (Keskar *et al.*, 1989; Pathak *et al.*, 1992 and Karale *et al.*, 1999). Despite its varied advantages, it could not attract suitable scientific attention towards its propagation. True-to-the-type propagules could be multiplied from elite trees that produce good quality fruits only by asexual methods. Of various propagation methods, grafting and budding are of paramount importance in tropical and subtropical fruit trees as they result in high success and field establishment. The time and method are considered to be the most vital factor that determines the success and establishment of the grafts. Systematic information in this regard is scanty particularly under harsh semi-

arid ecosystem for tamarind. Therefore, the present investigation was undertaken to standardize method and time of propagation and different conditions of grafting in tamarind under Eastern dry zone of Karnataka.

Materials and Methods

The experiment was conducted at Division of Horticulture, University of Agricultural Sciences, Bengaluru during 2017 (February to May) It is situated at an elevation of 830 m above the mean sea level, at 121°58' north latitude and 77° 35' east longitude. The annual mean relative humidity of location is 85.6 per cent. The minimum and maximum temperature in a year ranges between 17.4°C and 37°C respectively. The average rainfall was about 930 mm. The experiments were carried out with the main objectives of studies on softwood grafting techniques using low cost poly house, shade net and open field condition facilities. To raise the nursery, fresh seeds were sown in a seed pan for germination. When seedlings attained four leaf stages they were transplanted to polyethylene bags containing a potting

mixture of red sandy loam soil, sand and farm yard manure in the ratio of 3:1:1, respectively. The seedlings were grown for one year and softwood grafting during four different months softwood grafting over the year was done with scion procured from 10 years old healthy tamarind tree. The vegetative growth such as sprouting and leaf emergence of graft success and survival per cent was recorded at 60 and 90 days after softwood grafting of tamarind.

Results and Discussion

The highest of graft success per cent (85.55, 85.12) was found under the March (M2), low cost polyhouse (C1), respectively (Table 1). Could also be correlated to higher cell activity and active growth of both stock and scion in the prevailing favorable climatic conditions. The same results were recorded in jamun by Ghojage *et al.*, (2011). The environmental conditions for low cost polyhouse grafts can be readily controlled, thereby permitting greater reliability of grafting over long period compared to open field grafting operation (Hartman and Kester, 1979).

Table.1 Influence of the months of grafting, growing condition and their interaction on Graft success and survival (%) of Tamarind after 60 and 90 days of grafts

Treatments	Graft success (%)	Graft Survival (%)
MONTHS (M)		
M₁- February	78.88	71.11
M₂-March	85.55	77.77
M₃-April	76.66	62.22
M₄-May	58.88	41.11
F test (p≤0.05)	*	*
S.Em±	04.05	03.91
C.D at 5%	12.13	13.92
CONDITION(C)		
C₁-Low cost polyhouse	85.12	76.66
C₂- Open field	62.65	44.16

C₃- Shade net	75.35	68.33
F test (p≤0.05)	*	*
S.Em±	01.31	02.17
C.D at 5%	03.90	06.58
INTERACTION (M × C)		
M₁C₁	90.02	80.23
M₁C₂	63.33	60.32
M₁C₃	83.33	73.35
M₂C₁	96.66	96.68
M₂C₂	70.56	50.85
M₂C₃	90.78	86.65
M₃C₁	83.3	76.66
M₃C₂	70.00	40.32
M₃C₃	76.66	70.89
M₄C₁	70.78	53.34
M₄C₂	50.66	26.66
M₄C₃	56.66	43.39
F test (p≤0.05)	*	*
S.Em±	4.54	03.15
C.D at 5%	15.52	12.35

*Significant

T1- M1C1: February + Low cost polyhouse

T2- M1C2: February + open field

T3- M1C3: February + Shadenet

T4- M2C1: March + Low cost polyhouse

T5- M2C2: March + Open field

T6- M2C3: March +Shadenet

T7-M3C1: April + Low cost Polyhouse

T8-M3C2: April + Open field

T9-M3C3: April+Shadenet

T10-M4C1: May + Low cost Polyhouse

T11-M4C2: May + Open field

T12- M4C3: May + Shadenet

Highest graft survival per cent (77.77, 76.66) was found in March month (M2), low cost polyhouse (C1) respectively (Table 1). The highest graft success in March under low cost polyhouse might be due the favorable climatic condition in term of high temperature and high relative humidity values. Similar opinion was also expressed by shinde *et al.*, (2011) in jamun. In Tamarind, days taken for graft success and survival percentage showed superior in low cost polyhouse condition under the March month, has compared to other to conditions.

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