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Survival percentage of custard apple grafting under shade net cv. *Balanagar*, India

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ABSTRACT

The present investigation was carried out at Nursery, Horticulture Section, College of Agriculture., Dhule during the period of January, 2011 to December, 2011. It was found that the soft wood grafting performed on 16th February, 2011 (T_4) took minimum number of days for sprouting of grafts (15.33) followed by soft wood grafting performed on 1st February, 2011 (T_3). However maximum days (34.87) were taken for sprouting of grafts, when grafting practiced on 16th June, 2011 (T_{12}) followed by grafting practiced on 1st June, 2011 (T_{11}). The maximum survival percentage over success of grafts also have been shown in (T_4) followed by (T_3), where as maximum diameter of graft union are shown in (T_4) at 60, 120 and 180 days after grafting respectively 1.5, 1.7 and1.8cm.

Key words : *Custard apple, Soft wood grafting.*

Introduction

Custard apple is botanically known as *Annona squamosa* L. It belongs to family Annonaceae. The primary centre of origin of custard apple is tropical America. The genus Annona includes more than 50 species of which only five species are produced edible fruits. Out of these are *Annona squamosa* L. (custard apple), *Annona reticulata* (bullock's heart) and *Annona cherimoya*s are commercially important. Custard apple is tropical fruit hence it is very popular fruit in Dry land area of Maharashtra. It can be grown under diverse climatic conditions.

The use of softwood grafting has advantages over other methods of vegetative propagation. The propagation by seed in custard apple, germination is low and it takes longer period of time. In order to make the available the good quality and genuine grafted plants to farmer with lesser period, at proper time with good genotype soft wood grafting method of propagation is to be used. It is also helpful to fulfill the requirements of planting material of improved variety of custard apple. Therefore, considering the need of time and future thrust, it is necessary to standardize the suitable time for softwood grafting in custard apple under prevailing climatic conditions of North Maharashtra.

Material and Methods

The investigation on *"Survival percentage of custard apple grafting under shade net cv. Balanagar"* was conducted at Research Farm, Horticulture Section College of Agriculture Dhule 424 004 during the year 2010-2011. The soft wood grafting method of propagation was executed on the rootstock of local culti-

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var of custard apple with scion of *Balanagar* variety, the soft wood grafting was performed at time of fortnight with the interval from January, 2011 to June, 2011.

The investigation was laid out in the randomized block design with twelve treatments replicated three times during the investigation on softwood grafting of custard apple, twenty seedlings of local cultivar having one year old age were used as rootstock having uniform growth (about pencil size thickness) was selected for performing soft wood grafting. The scion wood (bud wood) of custard apple cv. *Balanagar* of last season growth was used for grafting. Twenty plants forming a unit for each treatment in each replication. The trial was conducted during 1st January, 2011 to 16th June, 2011 in 75 per cent shade net.

The observations were recorded on the parameters such as days required for sprouting, survival percentage over success of grafts and diameter of graft union at different intervals after grafting.

Results and Discussion

Days required for sprouting and survival percentage over success of grafts (%)

Soft wood grafting performed on 16th February, 2011 (T_4) using local rootstock and scion wood of custard apple cv. *Balanagar*, required minimum number of days for sprouting of grafts (15.33) followed by soft wood grafting performed on 1st February, 2011 (T_3). However maximum days (34.87) were required for sprouting of grafts, when grafting practiced on 16th June, 2011 (T_{12}) followed by grafting practiced on 1st June, 2011 (T_{11}) are shown in Table 1. These results are in agreement with Kudmulwar *et al* . (2008). Pawar (2003) and Chauvatia and Singh (1999) this might be due to custard apple is deciduous plant, in which there is natural leaf fall during summer season, this helps to activate bud on scion more effectively during summer season.

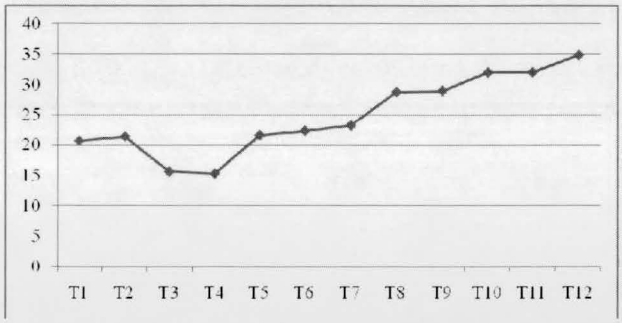

Fig. 1. Days required for sprouting of custard apple grafting

With the view of various treatments the highest percent success of grafts were noticed during 16th February, 2011(T_4) at 120, 250 and 180 days after grafting respectively *viz* 85.83, 85.40 and 85.10 %. However minimum percent success of grafts were observed in treatment T_{12} at 120, 150 and 180 days after grafting respectively *viz* 42.47, 42.13 and 41.93

Table 1. Days required for sprouting & survival percentage over success of grafts at 120, 150 and 180 days after grafting (%)

Sr. No.	Treatments	Days require for sprouting	Survival % over success of graft		
			120	150	180 Days
1	Soft wood grafting performed on 1st January, 2011	20.70	56.33	55.50	54.67
2	Soft wood grafting performed on 16th January, 2011	21.40	67.00	66.17	66.00
3	Soft wood grafting performed on 1st February, 2011	15.66	84.30	83.87	82.00
4	Soft wood grafting performed on 16th February, 2011	15.33	85.83	85.40	85.10
5	Soft wood grafting performed on 1st March, 2011	21.63	78.27	78.07	77.77
6	Soft wood grafting performed on 16th March, 2011	22.37	77.83	77.77	77.50
7	Soft wood grafting performed on 1st April, 2011	23.27	64.77	64.67	64.37
8	Soft wood grafting performed on 16th April, 2011	28.83	63.60	63.30	62.90
9	Soft wood grafting performed on 1st May, 2011	29.00	60.23	59.80	59.43
10	Soft wood grafting performed on 16th May, 2011	32.00	43.93	43.77	43.63
11	Soft wood grafting performed on 1st June, 2011	32.03	42.73	42.33	42.00
12	Soft wood grafting performed on 16th June, 2011	34.87	42.47	42.13	41.93
	S.E.± (Mean)	0.36	1.23	1.37	1.06
	C.D. at 5%	1.03	3.48	3.86	3.00

Table 2. Diameter of graft union at 60, 120 and 180 days after grafting (cm):

Sr. No.	Treatments	Diameter of graft union at different growth stages (cm)		
		At 60 Days	At 120 Days	At 180 Days
1	Soft wood grafting performed on 1st January, 2011	1.10	1.20	1.30
2	Soft wood grafting performed on 16th January, 2011	1.17	1.30	1.40
3	Soft wood grafting performed on 1st February, 2011	1.40	1.50	1.60
4	Soft wood grafting performed on 16th February, 2011	1.50	1.67	1.77
5	Soft wood grafting performed on 1st March, 2011	1.10	1.27	1.37
6	Soft wood grafting performed on 16th March, 2011	1.10	1.22	1.33
7	Soft wood grafting performed on 1st April, 2011	1.10	1.19	1.30
8	Soft wood grafting performed on 16th April, 2011	1.03	1.13	1.25
9	Soft wood grafting performed on 1st May, 2011	0.90	1.07	1.20
10	Soft wood grafting performed on 16th May, 2011	0.90	0.97	1.13
11	Soft wood grafting performed on 1st June, 2011	0.83	0.93	1.07
12	Soft wood grafting performed on 16th June, 2011	0.83	0.88	1.05
	S.E.± (Mean)	0.21	0.02	0.02
	C.D. at 5 %	0.61	0.06	0.06

percent are shown in (Table 1), also these results are in close agreement with Kudmulwar *et al.* (2008) and Gholap *et al.* (2000) in case of custard apple who reported that scion bud sticks for grafting are available only after December onwards. Being deciduous nature of the crop it shades its leaves in the month of December and January and plant remain dormant from January onwards and subsequently sprouts April onwards when one or two unusual rains receive in the month April or May. During the dormant conditions bud sticks stores sufficient amount of food material which results in more success of grafting in the month of February and March.

Diameter of graft union (cm)

Among the various treatments the maximum diameter of graft union was observed in treatment soft wood grafting performed on16th February, 2011 ($T_{4)}$ at 60, 120 and 180 days after grafting respectively *viz* 1.5, 1.67 and 1.77cm which is followed by soft wood grafting performed on 1st February, 2011 ($T_{3)}$. While minimum diameter of graft union was observed in treatment grafting at 16th June, 2011 at 60 , 120 and 180 days after grafting ($T_{12)}$ respectively 0.83, 0.88 and 1.05 cm which is followed by grafting at 1st June, 2011 ($T_{11)}$. These results are close confirmation of Kudmulwar *et al.* (2005) and Gojamunde (1993). This might have been due to the dormant conditions bud sticks stores sufficient amount of food material are used for graft union in the month of February and March.

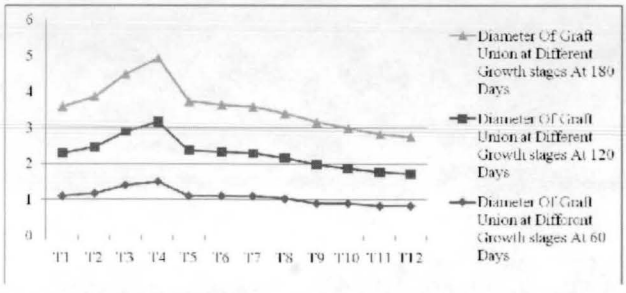

Fig. 1. Diameter of graft union at 60, 120 and 180 days after grafting (cm)

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