

Original Research Article

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Standardization of Age of Kokum Seedling (*Garcinia indica* Choisy) for Transferring in Polybag

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ABSTRACT

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The demand of kokum graft, as well as, seedlings, is more in konkan region and Maharashtra, Goa region. To fulfill the demand, as well as for healthy grafts the experiment was laid out at AICRP Oil Palm, College of Horticulture, Mulde along with 12 treatments and 2 replications. Fresh clean seeds of ripe kokum fruits were sown on nursery bed and after germination they were used for transferring in 6x8'' poly bags having 4x6'' Soil +FYM +Rice husk+2gm VAM (2:1:1). As per T₁ treatment some seeds sown directly in poly bag, some seedling transfer as per treatments after sprouting T₂, 10 days T₃, 20 days T₄, 30 days T₅, 40 days T₆, 50 days T₇, 60 days T₈, 70 days T₉, 80 days T₁₀, 90 days T₁₁, 100 days seedling T₁₂. Observation were recorded at 30,180,270 and 360 days after transferring in poly bags. The result recorded that T₃ 10 days seedling recorded significantly minimum days to attain the graftable stage i.e., 173 days after transferring along with highest percentage of survival 98.17 %.

Introduction

Garcinia indica Choisy Kokum is one of the condiment underexploited tree belongs to family *Guttiferae*. It is commonly known as butter tree

Kokum in English and vernacular names are kokum, amsolbirand, atamba, mostly found in Konkan region of Maharashtra, Goa, Karnataka, Kerala and Surat district of Gujarat on the West Coast of India (Haldankar *et al.*, 2012 and Braganza *et al.*, 2012).

Due to dioecious nature of the plant, unproductive maleness, large genetic variability, slow growth, extended harvesting in rainy season etc. are some of the constraints for its area expansion (Patil *et al.*, 2012) As Kokum is a dioecious tree hence crosspollination is necessary for fruit setting. Tree starts flowering during November-December and fruits are harvested during April-May (Pruthi, 2009) In Maharashtra major area of konkan region occupied by kokum is more than 1000 ha and production of 4500 tones with productivity of 4.5 t/ha. In Goa, it is grown on 1200 ha area and production is 12000 tones with productivity of 8.5 t/ha (Senthilkumar *et al.*, 2014) It is observed that the growth of kokum seedling is very slow, hence, there is need to hasten seedling growth for getting vigorous rootstock for grafting at early stage of growth.

Potting media is the basic component which affects the growth of container seedling. Soil + FYM (3:1) is a basic media used for nursery production. However, requirement of soil as potting media in nursery programme is very huge and becoming scare with time. Different growing media other than soil like Cocopeat, Rice husk, FYM, Vermicompost etc. are light in weight and also have good porous structure which can be used as component along with soil. Very little work on use of different media on growth of underexploited fruit trees has been done hence, with this view; present investigation on Standardization of growing media for growth of Kokum (*Garcinia indica* Choisy)

Materials and Methods

The experiment was laid out at AICRP Oil Palm, College of Horticulture, and Mulde along with 12 treatments and 2 replications. Fresh clean seeds of ripe kokum fruits were sown on nursery bed and after germination they were used for transferring in 6x8''poly bags having 4x6''Soil +FYM +Rice husk+2gm VAM (2:1:1). As per T₁ treatment some seeds sown directly in poly bag, some seedling transfer as per treatments just after sprouting T₂, 10 days seedling T₃, 20 days seedling T₄, 30 days

seedling T₅, 40 days seedling T₆, 50 days seedling T₇, 60 days seedling T₈, 70 days seedling T₉, 80 days seedling T₁₀, 90 days seedling T₁₁, 100 days seedling T₁₂. Observation were recorded at 30,180,270 and 360 days after transferring in poly bags. The data were subjected to ANOVA as per the method given by Panase and Sukhatme (1985).

Results and Discussion

The pool data table 1 showed that regarding the growth parameter i.e. height of the seedling at 30 days after transplanting varied non significantly. The highest height recorded in T-12 (9.32cm). While the height at graftable stage significantly highest in T-3 (10 days seedling) (15.55 cm) along with graftable height at 173 days which were at par with T-2(Sprouts) (Just germinating), T-4 (20 days seedling), T-5 (30 days seedling) and T-6 (40 days seedling). Girth of the seedling varied non-significantly. At 30 days the highest girth was recorded in T-12 (2.09). The girth at graftable stage were recorded maximum in T-3 (10 days seedling) i.e.3.56 mm which are at par with T-2, T-5 and T-6.

The number of leaves at 30 days seedling varied non- significantly. At 30 days the highest number of leaves after transplanting in poly bag was recorded in T-12 (9.32), while at graftable stage the highest number of leaves recorded in T-3 (10 days seedling) i.e. (11.97) which were at par with T2, T-5 and T-6. The leaf length at 30 days seedling varied non-significantly. At 30 days the highest number of leaves after transplanting in poly bag was recorded in T-12 (6.18 cm), while at graftable stage the highest leaf length recorded in T-3 (10 days seedling) i.e. (12.40 cm) which were at par with T2, T-4, T5 and T-6.

It revealed from table 2. The leaf width at 30 days seedling varied non- significantly. At 30 days the highest leaf width after transplanting in poly bag was recorded in T-12 (2.06 cm), while at graftable stage the highest leaf width recorded in T-3 (10 days seedling) i.e. (4.38 cm).The leaf area at 30 days seedling varied non- significantly.

Table.1 Effects of days of transplanting of kokum seedlings on height ,girth,number of leaves and leaf length of kokum seedling

Treatment	Height (cm)		Girth (mm)		Number of leaves		Leaf length	
	30 days	at graftable stage	30 days	at graftable stage	30 days	at graftable stage	30 days	at graftable stage
T ₁	Raised in polybag	4.49	12.82	1.26	2.89	3.80	10.87	3.81
T ₂	Sprouts (Just germinating)	5.41	14.94	1.32	3.30	4.40	11.83	4.46
T ₃	10days seedling	5.61	15.55	1.42	3.56	4.67	11.97	4.52
T ₄	20 days seedling	5.71	14.55	1.47	3.23	4.67	11.43	4.39
T ₅	30 days seedling	6.32	14.37	1.55	3.46	5.43	11.57	4.60
T ₆	40 days seedling	6.83	15.02	1.59	3.37	5.30	11.60	4.85
T ₇	50 days seedling	6.98	13.21	1.70	3.07	6.00	10.73	4.70
T ₈	60 days seedling	7.59	12.41	1.76	2.94	5.43	10.10	4.93
T ₉	70 days seedling	8.00	13.11	1.90	2.80	6.77	10.17	5.06
T ₁₀	80 days seedling	8.46	12.99	1.85	2.86	7.07	9.83	5.61
T ₁₁	90 days seedling	9.26	12.64	1.90	2.86	7.10	10.17	6.38
T ₁₂	100 days seedling	9.32	13.06	2.09	3.03	7.33	10.00	6.18
SEm±	0.30	0.67	0.03	0.17	0.21	0.40	0.21	0.44
CD @ 5%	0.86	1.93	0.09	0.48	0.59	1.14	0.61	1.27

Table.2 Effects of days of transplanting of kokum seedlings on leaf width ,leaf area ,number of survival seedling,number of seedling suitable for grafting.days required for 80%seedling to attain the graftable stage.

Treatment		Leaf Width (cm)		Leaf area (cm ²)		Number of survived seedling at graftable stage	Number of seedling suitable for grafting	Days required for 80 percent seedling to attain graftable stage
		30 days	at graftable stage	30 days	at graftable stage			
T₁	Raised in polybag	1.34	3.30	5.12	35.53	77.50	59.33	214
T₂	Sprouts (Just germinating)	1.41	3.61	6.31	47.99	92.17	73.67	198
T₃	10days seedling	1.52	4.38	6.85	51.55	98.17	78.67	173
T₄	20 days seedling	1.47	3.73	6.44	41.35	92.83	74.00	190
T₅	30 days seedling	1.65	3.64	7.55	44.50	90.83	73.00	198
T₆	40 days seedling	1.66	3.62	7.71	42.23	89.33	71.67	211
T₇	50 days seedling	1.62	3.21	7.61	31.78	92.17	73.67	204
T₈	60 days seedling	1.67	3.09	8.22	34.08	90.50	72.33	217
T₉	70 days seedling	1.64	3.31	8.82	32.86	78.50	62.67	227
T₁₀	80 days seedling	1.67	3.11	9.37	32.70	79.33	63.67	234
T₁₁	90 days seedling	1.78	3.18	11.55	33.70	74.33	59.33	240
T₁₂	100 days seedling	2.06	3.25	12.70	33.18	65.17	52.00	248
SEm±		0.04	0.12	0.55	2.90	12.28	3.66	6.41
CD @ 5%		0.13	0.35	1.59	8.31	35.25	10.51	18.41

Fig.1

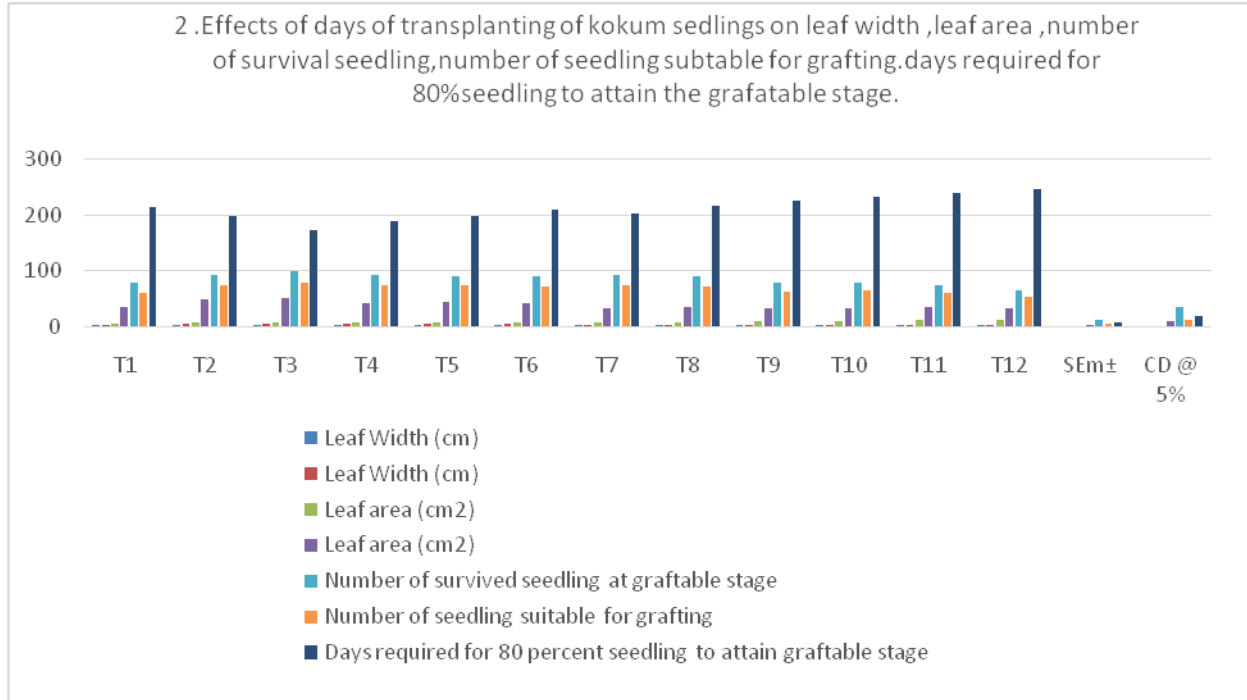


Fig.2 Growth performance of transplanted seedlings in poly bag at different days



Fig.3 Experimental view



At 30 days the highest leaf area after transplanting in poly bag was recorded in T-12 (12.70 cm^2), while at graftable stage the highest leaf area recorded in T-3 (10 days seedling) i.e. (51.55 cm^2) which were at par with T-2 (Sprouts) (47.99 cm^2). The survival of the seedling was highest 98.17 recorded in T-3 (10 days seedling) treatment while number of seedling attained (78.67) 80 % at graftable stage recorded in T-3 along with significantly minimise days i.e.173 days which was minimum to attain the graftable stage than any other treatment.

Treatment T-3 (10 days seedling) recorded significantly minimum days required to attain the graftable stage i.e.173 days after transplanting along with highest percentage of survival i.e., 98.17%.

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