The Bioscan 11(3): 1729-1731, 2016 (Supplement on Agronomy)
AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
www.thebioscan.com

INFLUENCE OF DIFFERENT PROPAGATION METHODS AND WRAPPING MATERIALS ON BUD AND GRAFT SUCCESS IN JAMUN (*SYZYGIUM CUMINI* SKEELS) UNDER SHADE NET CONDITION

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KEYWORDS
Soft wood grafting
Patch budding
Jamun
Shade net condition.

Received on :
01.07.2016

Accepted on :
21.08.2016

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ABSTRACT
The results revealed that softwood grafts tied with degradable tape (M_1W_1) recorded significantly lowest number of days (14.47) for sprouting of grafts, minimum number of days (16.57) required for emergence of leaves, maximum shoot length of scion (5.55 cm, 8.47 cm and 13.75 cm) at 30, 60 and 90 days respectively, number of leaves (10.85) at 90 days, maximum fresh weight (6.89 g and 11.22 g), dry weight (2.23 g and 3.58 g) at 45 and 90 days after sprouting, respectively. Softwood grafting and degradable tape (M_1W_1) also recorded significantly maximum number of leaves (15.55), fresh weight (14.61 g), and dry weight (5.58 g) of sprouted scion at 30 days after planting in field.

INTRODUCTION

Jamun is a large evergreen tree attaining a height of 25-30 m and a stem girth 3-4 m. It is a beautifully shaped tree and is grown for its delicious fruits, shade and windbreak on the bunds road side avenues. Greenish white fragrant flowers intrichotomous partner commence in the first week of March and continue up to the end of April. Jamun is a cross-pollinated crop. This long lived tree bears fruits up to 60-70 years. The fruit is sub-acidic to sweet in taste. It is regarded as tonic and is used to strengthen the teeth and gums. The seeds are good for diabetes and rich in proteins (8.5%) and tannins (19%). Extracts of bark, leaf, stem buds and flowers possess moderate antibiotic characteristics (Bose. and Mitra, 2002). Pulp is processed for juice, syrup and ready to serve beverages. Jamun is propagated both sexually and asexually. However, at present the majority of nursery owners use the sexual method of propagation and due to the presence of polyembroyony, the new plant would be true-to-type but it attains bearing latter than vegetatively propagated plants and also grow tall and slender. As this crop has gained importance due to its medicinal and nutritive value, this is possiblewhen there is a standardization of a vegetative method of propagation. The tying and wrapping materials also had a significant effect on scion sprouting, shoot growth and survival of grafts (Olaniyan, A.A.1991 and Zenginbal *et al*., 2006) Normally nurserymen use 200 gauge white polythene for making strip for tying of grafts but sometimes they forget to remove itafter the success of grafts which results in girdling of the grafts and may cause death of the grafts so there is need of degradable wrapping material like degradable tape. Degradable tapes are easy to wrap and are effective to establish contact between stock and scion stick and it automatically degrades after a period of time and thus there is no need of removing it manually, which also saves the labour cost. Hence, the objective of study was to find out the suitable propagation method and wrapping material in jamun for better growth and development.

MATERIALS AND METHODS

The experiment was carried out at Horticultural Research farm, Department of Horticulture, Anand Agricultural University, Anand (Gujarat) India. The experiment was laid out in Completely Randomized Design (Factorial) with four treatment combinations *viz*., M_1W_1 (Softwood grafting + Degradable tape), M_1W_2 (Softwood grafting + Polythene strip), M_2W_1 (Patch budding + Degradable tape), M_2W_2 (Patch budding + Polythene strip) and four repetitions. The treatments consisted of two methods of propagation *viz*., softwood grafting Amin R.S. (1978) and patch budding carried out during July-November. Kikani *et al*.(1996). And kem *et al*. (2008) Buddable sized local jamun rootstocks with a stem diameter ranging from 0.55-0.60 cm were used for budding and grafting. The scion material was collected from the identified elite types of jamun trees (cv. Paras) from the horticultural research farm.

For the collection of bud sticks, the past season growth was tagged and defoliated 10 days prior to the budding and grafting operations. The bud sticks having about 10-12 cm length with 4 to 6 activated but unsprouted buds were selected for the grafting/budding operation. Degradable tape and polythene strip were used for tying of graft/bud union. For recording observations at the time of the grafting/budding and after the grafting/budding operation five plants were selected randomly from each treatment and observations were recorded.

RESULTS AND DISCUSSION

The results revealed that softwood grafting tied with degradable tape (M_1W_1) recorded lowest number of days (14.47) for sprouting of graft. This finding is in conformity with the results obtained by Halandakar *et al*. (2001) and mulla *et al*. (2011) Significantly the lowest number of days (16.57), maximum shoot length of scion (5.55, 8.47 and 113.75 cm) after sprouting at 30, 60 and 90 days (Table 1.) required for emergence of leaves this might be due to early cambial activity and degradable tape prevented desiccation of cut surface and increased callus formation that has positive effect on growth of scion stick. Hartmann *et al*. (1990) Chovatia *et al*. (2000) Zenginbal *et al*. (2006), and Significantly the maximum number of leaves (10.85) at 90 days after sprouting was observed in softwood grafting tied with degradable tape (M_1W_1). This might be due to the maximum cambial connectivity between stock and scion in softwood grafting enabling water and mineral supply easily via rootstock which resulted in maximum vegetative growth and degradable tape prevented desiccation of cut surface and increased callus formation. The above finding is in conformity with results of Jacob *et al*. (2001) Dubey *et al*. (2004) Fatima and Abdel (2006) Khopade and Jadhav (2013).

The maximum fresh weight *i*.e. (6.89 g and 11.22 g) and dry weight *i.e.* (2.23 g and 3.58 g) were recorded significantly when grafts tied with degradable tape (M_1W_1) at 45 and 90 days, respectively. (Table 2) This might be due to maximum cambial connectivity between stock and scion which resulted in more vegetative growth attributed to increase in fresh and dry weight and degradable tape prevented desiccation of cut surface and increased callus formation.These results are in conformity with the finding of Bharad *et al*.(2006) and Bodakhe *et al*. (2010).

The grafts tied with degradable tape (M_1W_1) also significantly recorded maximum number of leaves (15.55), maximum fresh weight (13.88) and dry weight (4.49) at 30 days after planting in field (Table 2).

ACKNOWLEDGEMENT

We are thankful to the Dean and Principal, B. A. College ofAgriculture, AAU, Anand and Head, Department ofHorticulture, AAU, Anand for accepting the thesis and providing necessary facilities for my study and research work to conduct.

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Table 1: Effect of different propagation methods and wapping materials on number of days required for sprouting, number of days required for emergence of leaves, shoot length of scion and number of leaves

Treatments	Number of days required of sprouting of grafts/buds	Number of days required for emergence of leaves	Shoot length of scion (cm) At 30 days	At 60 days	At 90 days	Number of leaves at 90 days
M_1W_1	14.47	16.57	5.55	8.47	13.75	10.85
M_1W_2	17.5	19.32	4.25	6.88	10.92	9.35
M_2W_1	19.22	21.22	4.17	6.25	9.77	6.72
M_2W_2	20.2	22.55	4.6	6.15	9.25	6.6
S. Em±	0.427	0.302	0.199	0.198	0.214	0.231
C.D. at 5%	1.31	0.93	0.61	0.61	0.65	0.71

Table 2 : Effect of different propagation methods and wrapping materials on fresh weight, dry weight and number of leaves after planting in field

Treatments	Fresh weight of scion/bud		Dry weight of scion/ bud		Number of leaves per scion/bud	Fresh weight of scion/bud	Dry weight of scion/bud
	At 45 days	At 90 days	At 45 days	At 90 days	At 30 days after planting in field	At 30 days after planting in field	At 30 days after planting in field
M_1W_1	6.89	11.22	2.23	3.58	15.55	16.02	5.58
M_1W_2	4.74	9.75	1.55	2.21	12.5	13.2	3.94
M_2W_1	3.39	7.99	0.96	1.94	9.05	11.74	3.4
M_2W_2	3.19	7.43	0.81	1.66	8.4	11.33	3.07
S. Em±	0.321	0.195	0.115	0.135	0.43	0.193	0.201
C.D. at 5%	0.98	0.59	0.35	0.41	1.32	0.59	0.62

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