Annals of Arid Zone 49(1): 77-78, 2010

Short Communication

Effect of Variety, Time and Method of *In Situ* Budding on Bud Take in Aonla (*Emblica officinalis* Gaertn) in Arid Zone

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Aonla or Indian goose berry (*Emblica officinalis* Gaertn), belonging to family Euphorbiaceae, is an important fruit indigenous to India. It is hardy, prolific bearer and highly remunerative even without much care and can be successfully grown in variable agro-climatic conditions including arid and semi-arid regions. Due to its numerous neutraceutical properties, it is also called 21st century amrit phal. However, it is mainly recognized for its exceptionally high vitamin 'C' content (500-1500 mg per 100 g). Besides vitamin C, it is also rich in pectin, calcium, iron and phosphorus. Cultivation of aonla is spreading throughout India except high hills. Because of its wider adoptability and high nutritive value, there is a lot of demand. Availability of good quality planting material is a major constraint. Moreover, establishment of long distance transported budded aonla plants under arid condition is a real challenge. Under such situations, *in situ* budding could be a viable alternative to establish aonla orchard successfully. Among different budding methods, patch budding is found to be the most suitable commercial method of vegetative propagation of aonla (Pathak *et al.*, 1991). Higher success rate has been reported when budding is performed during the month of July. However, success in budding in nursery under harsh arid condition is very low and the problem is further aggravated by poor establishment of transplanted saplings. The present study was therefore, initiated to standardize the time and method of *in situ* budding in different varieties of aonla.

The study was conducted at Central Arid Zone Research Institute, Krishi Vigyan Kendra, Pali Farm, during 2007-08. The seeds, extracted from mature deshi aonla fruits in the month of February – March were sown in poly bags filled with rooting mixture of sand, clay and FYM during 2nd week of July. Due care for watering, weeding and plant protection measures for 5-6 months. These root stock seedlings were transplanted in the field at 6 x 6 m spacing in the month of February. Normal cultural operations were performed after transplanting and special care was taken to maintain proper moisture in the root zone to maintain them in active growing condition during the summer season. By middle of June these rootstock seedlings attained suitable thickness and budding was performed by two methods i.e., T and patch budding at three intervals i.e., 15th June, 15th July and 15th August by taking bud wood from three commercial varieties (Kanchan, Chakaiya and NA-7) from mother plant block of Horticulture Farm, CAZRI, Jodhpur. The experiment was laid out in factorial RBD with three replications and four plants in each experimental unit. The data were recorded on per cent bud after 45 days of budding and results were analyzed statistically.

Among different time of budding, the budding done on 15th July recorded the highest mean bud take survival (51.38%) irrespective of variety (Table 1). Comparison of two budding methods revealed significantly higher success (48.14%) by patch method as compared to 37.95% by T method. Likewise budding success was significantly influenced by variety. The variety Chakaiya recorded the highest bud take in both the methods i.e. 49.99% in T and 58.33% in patch method. In both the methods, budding success was least in variety Kanchan. The highest bud take success (66.66%) was recorded in variety Chkaiya by patch method, though the interaction of variety and time of budding was found to be non significant.

The higher success of patch budding may be attributed to larger bark area and more cambium contact as compared to T budding. This is in close conformity with earlier report by Kumari *et al.* (2004) in aonla. Significantly higher success in

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Table 1. Effect of variety, time and method of budding on per cent success in aonla (Emblica officinalis Gaertn)

Time of budding	Method budding						Mean
	T budding			Patch budding			
	Kanchan	Chakaiya	NA-7	Kanchan	Chakaiya	NA-7	
15 June	25.00 (30)	41.66 (40)	33.33 (35)	41.66 (40)	50.00 (45)	41.66 (40)	38.88 (38.33)
15 July	41.66 (40)	58.33 (50)	41.66 (40)	41.66 (40)	66.66 (55)	58.33 (50)	51.38 (45.83)
15 August	25.00 (30)	50.00 (45)	25.00 (30)	41.66 (40)	58.33 (50)	33.33 (35)	38.88 (38.33)
Mean	30.55 (33.33)	49.99 (45)	33.33 (35)	41.66 (40)	58.33 (50)	44.44 (41.66)	43.03 (40.83)
		37.95 (37.77)			48.14 (43.88)		

Note: Figures in parenthesis are angular transformed values.
CD (P=0.05), Variety - 5.669, Method - 4.63, Time of budding - 5.669.

buddings done in the middle of July may be correlated with favorable temperature and relative humidity that remained high during this period. The role of high humidity for increased bud sprouting has been emphasized by Hartman and Kester (1986). The effect of environmental factors is mediated through enzyme activity by cell division and elongation leading to shoot primordial formation (Tripathi and Kumar, 2004). This observation regarding seasonal difference corroborates the earlier findings of Phadnis *et al.* (1971) in cashew and Nath *et al.* (2000) in ber.

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