Study on positions of twin scales and growth regulators on propagation of *Narcissus* (Daffodil) cv. Stamen cream

Abstract

Study was carried out to evaluate the influence of position of twin scales and growth regulators on propagation of *Narcissus* (Daffodil) cv. Stamen creamx. Results of the study reveals that out of eight treatment combinations tested in the experiment minimum days for callus initiation (26.00 days),root initiation (36.50days) and bud initiation (44.50days) after incubation resulted with combination of outer scales treated with IBA 100 ppm. Further maximum number of buds per chip (2.00), bud diameter (11.95mm),bud length(2.76cm) and bud weight (0.41g) were recorded with the same treatment. Inner scales treated with IBA 100PPM resulted with maximum days for callus initiation (37.50 days), root initiation (48.00days) and bud initiation (60.50days) after incubation. Least number of buds per chip (1.00), minimum bud diameter (7.45mm), bud length (1.30cm) and bud weight (0.19g) were also recorded with same treatment. Most of the differences among the treatments for almost all recorded parameters were statistically significant.

Key Words: **Growth Regulators, *Narcissus* (Daffodil) Cv. Stamen cream, Position of twin scales**

Introduction

Narcissus (Daffodil) is an important temperate bulbous crops and is suited for cut flower as well as in landscaping due to diversity in flower characteristics. There is a huge demand of Daffodil bulbs both in hilly and plains of India. Crop is globally recognized due to its elegant flowering. In India Daffodil bulbs are imported in huge quantity annually to meet the demand which costs

lot of foreign exchange. Average cost of imported bulb ranges from Rs 50 to 60 at national level. Natural multiplication in Narcissus by offset formation is slow and this causes hindrance in mass multiplication of elite cultivars. Thus advanced methods of bulb multiplication place an importance from commercial point of view (Alkema,1975;Hanks and Rees, 1979). Propagation through scaling ensures rapid multiplication rate and use of growth regulators augment the physiological process of propagation. It is always questionable which growth regulator and at which concentration can ensure better propagation. Besides this which scale performs good is a matter of research. Thus present study was carried out to develop a technology of Narcissus (Daffodil) propagation which can help to reduce import of bulbs.

Experimental programme

The present investigation out in the laboratory of Division of Floriculture and Landscape ArchitectureSKUAST-K Shalimar.

The bulbs were uplifted from the field in the month of July. After uplifting these bulbs were stored at room temperature for five weeks. Scaling was carried out in the month of August. Round bulbs (12-14 cm circumference) were opted for scaling. .Before scaling , part of the nose was removed and basal plate was trimmed, twin Scaling was done with a care that basal plate intact with twin scales. Outer, middle and inner scales were kept separately and were dipped for 15 minutes in growth regulator solutions treatment wise.

Transparent poly bags of ½ kg capacity were used in which vermiculite media was filled. Media was moistened with distilled water before filling in poly bags.

Growth Regulators

Solution of NAA (100ppm), IBA (50ppm) was prepared and required chips were treated before putting in the media.

Incubation and observations recorded

Transparent poly bags were incubated in Pant Growth Chamber and biometric observations were recorded including callus initiation (days) ,bud initiation (days),root initiation (days), no. of bulbils, bud diameter (mm), bud length (cm) and bud weight (g).

Statistical Analysis:-

Experimental data was analyzed statistically adopting the technique of analysis of variance ANOVA for CRD, the level of significance of treatment mean square at 5% probability was tested against F calculated value.

Results & Discussion

Results of the study reveals that out of eight treatment combinations tested in the experiment minimum days for callus initiation (26.00 days),root initiation (36.50days) and bud initiation (44.50days) after incubation resulted with combination of outer scales treated with IBA 100 ppm. Further maximum number of buds per chip (2.00),bud diameter (11.95mm),bud length(2.76cm) and bud weight (0.41g) were recorded with the same treatment. Inner scales treated with IBA 100PPM resulted with maximum days for callus initiation (37.50 days), root initiation (48.00days) and bud initiation (60.50days) after incubation showing in Table 1 and Fig. 1. Least number of buds per chip (1.00), minimum bud diameter (7.45mm), bud length (1.30cm) and bud weight (0.19g) were also recorded with same treatment. Most of the differences among the treatments for almost all recorded parameters were statistically significant. However general view revealed that IBA proved effective compared to NAA and inner scales showed poor results in propagation.

Position of scales plays an important role in propagation of daffodils due to physiological and ontogenic reasons. Apical dominance influence on inner scales as being close to growing point may be the rea son of poor performance as far as propagation is concerned. Poor callusing and slowing growing adventitious roots can be factor of poor performance of inner scales. From physiological point of view callus cells are active and draw nutrients from other adjacent cells and balances organogenesis phase. Lower apical dominance which allows utilization of available nutrients more efficiently in outer scales might have caused earliness in bulbil development. Mid and outer scales are active in propagation Mirza *et al*. (2013).

Plant growth regulators play an important role in augmenting physiological aspects and callus initiation.IBA helps in promotion of rooting and aids metabolic process of cell enlargement. Dhiman & Sindhu (2007) reported positive influence of IBA in stimulating callusing, bulbils formation and other reproductive parameters of Lilium scaling. Keun and Suk (1996) while

working on propagation of *Lilium* reported that changes of endogenous ABA-and GA-like substances were closely related to the degree of dormant bulblet formation at all temperatures. Park, Nou Bog (1996) reported bulblet formation and growth was best when 'Stargazer', *L. longiflorum*, 'Gelria' and *L. lancifolium* scales were treated at 300 ppm, 100 ppm naphthyl acetic acid (NAA) and 100 ppm indole butyric acid (IBA), respectively. Masoodi *et. al* (2018) while working on chipping of daffodils and treatment of chips with growth regulators found maximum number of bulbils with chips treated with growth regulators compared to untreated chips. The above findings are in close association with the current study.

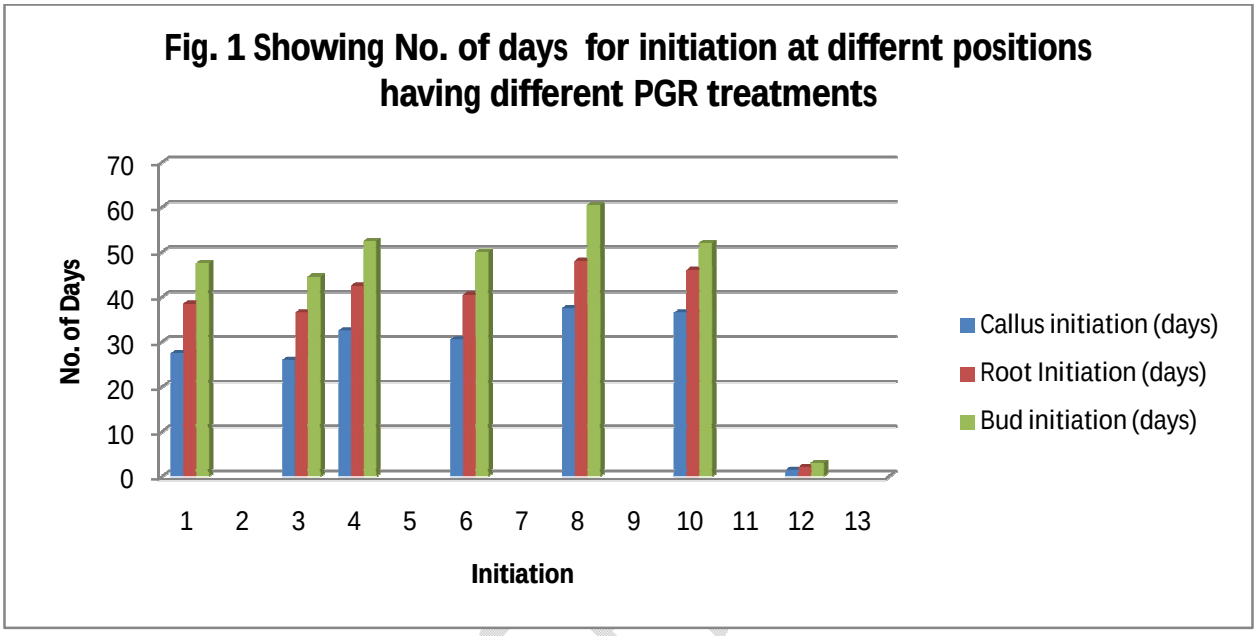
Conclusion:

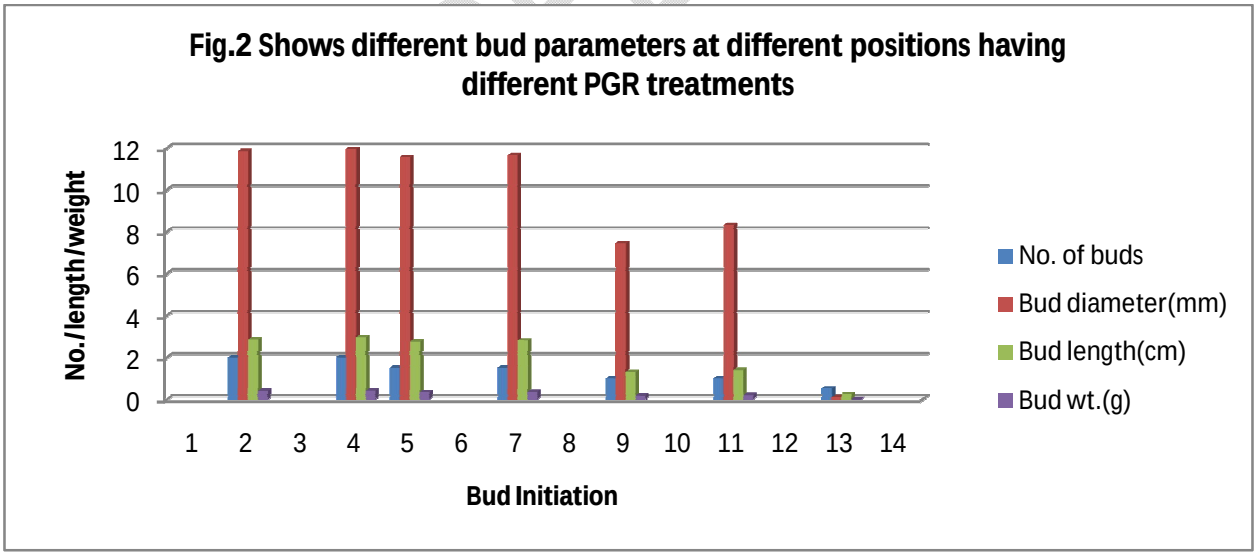
Study conducted on the **Effect of different positions of twin scales on different parameters in *Cv. Stamen* cream** concluded that outer scales and middle scales treated with IBA 100 ppm can be opted at commercial scale for propagation of daffodils.

Table I : Effect of different positions of scales on different parameters in *Cv.Stamen* cream

Position	PGR (Treatment)	Callus initiation (days)	Root Initiation (days)	Bud initiation (days)	No. of buds	Bud diameter(mm)	Bud length(cm)	Bud wt.(g)
Outer scale	NAA 100ppm	27.50	38.50	47.50	2.00	11.85	2.86	0.40
	IBA 100 0ppm	26.00	36.50	44.50	2.00	11.95	2.96	0.41
Middle scale	NAA 100 ppm	32.50	42.50	52.50	1.50	11.55	2.76	0.34
	IBN 100 ppm	30.50	40.50	50.00	1.50	11.65	2.81	0.36
Inner scale	NAA 100 ppm	37.50	48.00	60.50	1.00	7.45	1.30	0.19
	IBA	36.50	46.00	52.00	1.00	8.32	1.40	0.21

	100 ppm							
CD p≤0.O5		1.51	2.02	3.03	0.52	0.11	0.25	0.01





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