

## Effect of growth chemicals, type of cutting and season, root formation of carnation (*Dianthus caryophyllus* L.) cutting

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### ABSTRACT

The rooting formation of carnation cuttings as influenced by type of cutting growth chemicals and season was studied. The result depict that 550 ppm NAA gave best result in most of the parameters like earliness in root formation. The rooting Percentage, number of roots, root length and weight. IBA +IAA+NAA @ 550ppm each and IAA 550ppm alone were the next best treatments. Tip cutting showed better results response to growth chemicals and rooted better than basal cutting. Roting was better in rainy season as compared to winter season except for some stem parameters.

**Key words:** Growth, Chemicals, Season rooting cutting, Carnation,

### INTRODUCTION

Carnation (*Dianthus caryophyllus* L) flower is valued for it's excellent keeping quality wide area of colours and forms and ability to dehydrate after continuous transportation. The carnation is one of the most important commercial flowers ranks in second in the world floriculture statistics and held a share of 19% (Singh and dad loin 1984). Carnation can be propagated by terminal stem cutting, seed and also by tissue culture. The seed propagation is mainly used for border carnation, while the perpetual carnation is propagated vegetative. However, commercially on large scale specialist propagator uses the micro propagation. Year round propagation can be done carnation provided temperature inside the poly house is maintained at 21°C with 70-80% relative humidity (1) the type of cuttings to be used and the correct time of planting to rooting of carnation are important aspects to be investigated upon

The effectiveness of auxins to induce rooting improvement in rooting percentage and survival of rooted cutting has been studied (2) there exist a lot of carnation on the optimum concentration not only with the nature and concentration of the auxin and of plant species, but also with session (4). The present work was thus undertaken to find out the optimum concentration of the auxins required for root initiation, vegetative growth and further survival of cuttings. The selection of suitable plant material and best season for carnation propagation.

### MATERIALS AND METHODS

The experiment was the conducted at the Horticultural Research farm, C.S.A University Kanpur during 2000-2001. The terminal and Basal cutting of carnation variety a standard type were collected cutting were taken from healthy stock plants grown in polyhouse cuttings 10-12 cm long having 3-5 pairs of leaves with

acute 0.5cm below the node were taken washed coarse sand was used as the rooting media .the rooting media was filled in polythene bags of 15cm 5cm size which was drenched with 0-15 percent bavistin a day better to planting of cuttings to prevent rooting of cutting. The experimental design selected was factorial completely randomized block design. Eight growth chemicals treatments were tried including the control. 15 cutting were used for each treatment, replicated thrice .The basal portion of the cutting were dipped in the growth chemicals solutions for 12minute for all treatments, including distilled water control. They were air-dried for few seconds and immediately planted any same medium to a depth of 1.25-2.15cm. The experiment was conducted in a naturally controlled polyhouse. Intermittent misting was given with hand spray pump every, 15 cutting were kept separately for each treatment in the polyhouse was maintained between 25-30 °C. The medium was drenched with bavistin (0-15%) at fortnight intervals to check fungal infection.

The first planting was done in the first week of September in year 2001. The mean maximum temperature for September was 25.3 °C and the mean minimum temperature was 20 °C with a rainfall of 21mm and relative humidity of 80.5%. The second planting was done in the first week of November, When the mean maximum temperature was 30 °C and the mean minimum temperature was 10.6 °C with a rainfall of 3.5 mm and relative humidity was 60.9%.

### RESULTS AND DISCUSSION

The time taken to root was less in tip cuttings than in basal cutting during both season (Table- 1). It was variable for all treatments than control in both type of cutting during season, but no difference was observed during winter season, where all treatments were at par with control.

The higher concentrations of root promoting chemicals in

Table 1 : The time required for rooting and percentage rooting in carnation cuttings is influenced by type of cuttings, growth chemicals and season.

Name of treatment	Time of rooting						Grand mean	Rooting percentage						Grand mean
	Rainy season			Winter season				Rainy season			Winter season			
	Tip	Basal	Mean	Tip	Basal	Mean		Tip	Basal	Mean	Tip	Basal	Mean	
IAA550ppm	15.80	20.80	18.30	17.25	24.25	20.15	19.52	91.11	24.45	57.78	77.75	17.75	47.75	52.76
IBA550ppm	10.80	22.35	16.57	18.35	24.70	21.52	19.04	84.40	22.23	53.31	57.75	15.85	36.66	44.98
NAA550ppm	9.80	13.80	11.80	13.80	18.80	16.30	14.05	86.67	26.75	56.71	77.70	22.20	49.95	53.33
IAA+IBA@550ppm	14.60	16.30	15.45	15.94	23.62	19.78	17.61	68.90	22.25	45.56	75.50	17.70	46.60	46.07
IAA+NAA@550ppm	14.98	16.60	15.79	18.20	19.24	18.72	17.25	75.50	17.75	46.62	75.50	11.12	43.31	44.96
IBA+NAA@550ppm	10.16	15.50	12.83	14.60	23.25	18.92	15.87	77.75	13.40	45.57	55.50	11.13	33.31	39.44
IAA+IBA+NAA550ppm	12.85	15.20	14.02	15.91	19.50	17.20	15.61	80.15	22.25	51.20	51.12	17.75	34.43	42.81
Control	20.90	24.40	22.65	24.70	17.15	20.92	21.78	28.90	8.90	18.90	20.15	4.40	12.27	15.58
	Type of cutting			Growth chemical				Type of cutting			Growth chemical			
	R		W	R		W		R		W	R		W	
C.D. at 5%	0.32		2.21	0.92		NS		4.57		4.80	9.12		0.61	12.90 13.58

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