



**Research Note :**

**EFFECT OF IBA AND NAA CONCENTRATIONS ON ROOTING IN STEM CUTTINGS OF NIGHT QUEEN (*Cestrum nocturnum* L) UNDER SUB-TROPICAL VALLEY CONDITIONS**

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**ABSTRACT:** The experiment was carried out in simple randomized block design the different length stem cuttings of *Cestrum nocturnum* were treated with IBA and NAA solutions at 100, 200 and 300 mg L<sup>-1</sup> by soaking method. Among all the treatments, number of sprouted cuttings and rooting per cent (76.53), length of the roots/cutting (23.76 cm), fresh weight (6.06 g) and dry weight (1.33 g) of roots were higher in IBA 100 mg L<sup>-1</sup>. While the maximum length of sprout/cutting (190.00 cm) was in IBA 300 mg L<sup>-1</sup> and highest number of roots/cutting (91.00) was recorded in NAA 300 mg L<sup>-1</sup> treatment.

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**Keywords:** *Cestrum nocturnum*, stem cutting, IBA, NAA, rooting percentage.

*Cestrum nocturnum* (Night Jasmine or Night Queen or *Rat Ki Rani*) native of tropical America and West Indies is a shrub of family Solanaceae (Night shade family). It is a popular landscape plant in warm climate, for a mixed border, mid row plantation or as a background. It is also used as a free standing specimen. This shrub is attractive and unpretending and widely planted for its nocturnal fragrance. No fragrant garden should be without a *Cestrum*. It is an undisputed champion of fragrance at higher ground. The white flowers are not partially showy but on a warm, humid summer night as a plant in full bloom will pump out its rich, slightly musky aroma to a distance of 200 ft or more. Blooming being in the late spring and continue throughout the summer.

*C. nocturnum* is commonly cultivated in many countries as an ornamental plant due to its fragrant flowers that bloom at night (Tharman *et al.*, 13 and Vander, 15). It produces small white berries about 8-10 mm long, with 1-3 seeds capable of being dispersed by birds (Tharman *et al.*, 13), though it can also be propagated by asexual means from cut roots or buds from creeping roots. Although it is easily propagated by cuttings but early rooting with sufficient number amount having more chances of

survival after transplanting are still needed by gardeners. Taking above concept this experiment was taken and conducted.

This investigation was conducted at the Horticultural Research Centre of HNB Garhwal University, Srinagar (Garhwal), Uttarakhand, India. The experimental materials, consisted of 15 cm long hardwood stem cuttings of *C. nocturnum*, were collected from 3 year old plants. While preparing the cuttings, a slanting cut in each cutting was given on distal end and smooth sharp cut was given at lower (proximal) end just below the lower node. The experiment was replicated thrice with 10 cuttings in each treatment. A total 210 cuttings were tested. The cuttings were treated with IBA and NAA solutions at 100, 200 and 300 mg L<sup>-1</sup> by soaking method for 24 hrs. The cuttings were planted in 1 kg capacity perforated white polythene bags containing soil, sand and FYM mixture in 1:1:1 (v/v) ratio and kept in open condition for rooting. Experiment was laid out in randomized block design with three replications. The number of sprouted cuttings, number of sprouts per cutting, length of sprout per cutting, number of primary roots per cutting, length of root per cutting and fresh and dry weight of roots were recorded after three months. The data recorded were subjected to

statistical analysis for least significant difference as described by Snedecor and Cochran (11).

A perusal of Table 1 shows that the effect of different concentrations of IBA and NAA significantly affected the various growth characters of cuttings in *C. nocturnum*. The maximum (76.53) percentages of sprouted and rooted cuttings were recorded in IBA 100 mg L<sup>-1</sup> treatment. The sprouting and rooting percentage drastically reduced (43.27%) in IBA 300 mg L<sup>-1</sup> treatment. Data further revealed that the sprouting percentage continued to decrease (29.17%) by NAA application from 100 mg L<sup>-1</sup> up to 300 mg L<sup>-1</sup>. The minimum percentage of cuttings (22.23%) was sprouted and rooted in control set (Table 1). These results are in line with the findings of Rauch and Yamakawa (4) in respect to cuttings sprouted in night queen. The promotive effect of IBA on rooting has also been documented by (Thimmappa and Bhattacharjee, 14) in geranium and Sarasvathy *et al.* (6) in *Gymnema sylvestre*. Auxins naturally occurring or exogenously applied are required for initiation of adventitious roots on stems Thimmappa and Bhattacharjee (14). It appears probable that the success of IBA is due to its low auxin activity and its slow degradation by auxin destroying enzyme. Leopold (3) suggested that IBA is quite a strong auxin, while NAA is readily destroyed.

The maximum number of sprouts/cutting (22.20) were recorded in NAA 200 mg L<sup>-1</sup>

concentration. However in case of IBA, the effect on number of sprouts/cutting remained constant. These findings are similar to Gupta *et al.* (2) who reported that number of sprouts/cutting was highest in NAA treatments. The maximum length of sprout/cutting was recorded in 300 mg L<sup>-1</sup> (190.00 cm) concentration of IBA followed by 200 mg L<sup>-1</sup> (169.33). While, NAA application resulted decrease in length of sprouts with a minimum length of sprout/cutting (Table 1). These findings are similar to Singh (9) in *Bougainvillea* in respect average length of sprout per cutting. The number of leaves/cutting was recorded maximum (56.66) in 300 mg L<sup>-1</sup> concentration of IBA. The minimum number of leaves/cutting (44.43) was recorded in control. These findings are in consonance with Singh (10) in respect to number of leaves per cutting in jasmine (*Jasminum sambac*). Increase in leaf number may be due to their significant effect on inducing vigorous rooting system by growth regulators thus enabling the cuttings to absorb more nutrients thereby producing more leaves as reported by Stancato *et al.* (12).

The highest number of roots/cutting (91.00) was recorded in 300 mg L<sup>-1</sup> concentration of NAA. The lowest number of roots/cutting (29.00) was recorded in control treatment (Table 1). These findings are similar to Reddy *et al.* (5) in respect to number of roots. The maximum length of roots/cutting (23.76 cm) was recorded in 100 mg L<sup>-1</sup> concentration of IBA and the minimum length of roots/cutting (9.66 cm) was recorded in control

**Table 1: Effect of IBA and NAA on vegetative propagation through stem cutting of *Cestrum nocturnum*.**

Treatment	Sprouted cuttings	Rooting per cent	Number of sprouts/cutting	Length of sprout/cutting (cm)	Number of leaves/cutting	Number of primary roots/cutting	Length of root/cutting (cm)	Fresh weight of roots/cutting (g)	Dry weight of roots/cutting (g)
100 mg L <sup>-1</sup> IBA	76.53	76.53	22.20	136.33	53.33	33.33	23.76	6.06	1.33
200 mg L <sup>-1</sup> IBA	53.28	53.28	15.53	169.33	45.53	51.00	19.83	6.04	1.27
300 mg L <sup>-1</sup> IBA	43.41	43.41	15.53	190.00	56.66	46.00	22.00	3.70	0.92
100 mg L <sup>-1</sup> NAA	60.00	60.00	15.53	127.33	47.76	83.66	18.00	3.52	0.90
200 mg L <sup>-1</sup> NAA	46.53	46.53	15.53	125.33	50.00	82.00	22.00	6.03	1.15
300 mg L <sup>-1</sup> NAA	42.50	42.50	12.20	102.30	50.00	91.00	19.33	4.27	0.95
Control	22.23	22.23	15.53	114.33	44.43	29.00	9.66	1.59	0.26
C.D. (P=0.05)	9.16	9.16	1.64	16.95	48.67	13.99	17.98	0.92	0.86

(Table 1) confirming to results of Singh *et al.* (8) in long pepper with respect to length of roots/cutting. The maximum fresh weight (6.06 g) of root/cutting was recorded in 100 mg L<sup>-1</sup> concentration of IBA and the minimum weight (1.59 g) of fresh root/cutting was recorded in control. Similarly, the maximum dry weight (1.33 g) of roots/cutting was recorded in 100 mg L<sup>-1</sup> concentration of IBA and the minimum dry weight of roots/cutting (0.26 g) was recorded in control (Table 1). These findings are agreed with the findings of Singh *et al.* (8) in long pepper. Reddy *et al.* (5) in *Bougainvillea*, Singh (10) in *Bougainvillea peruviana* and Awad *et al.* (1) in *Bougainvillea glabra* with respect to average dry weight of roots/cutting in night queen.

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