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EFFECT OF ROOTING HORMONE ON ROOTING AND SURVIVAL OF NERIUM (*NERIUM ODORUM* L.) *VAR.* PINK SINGLE

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Abstract

Nerium, botanically called as *Nerium odorum* L. has been referred as the glory of the garden, belonging to the family Apocynaceae and native of the Mediterranean region extending to subtropical Asia, but are now well distributed in all the tropical and subtropical countries. It is much valued for its exquisitely fragrant flowers which are widely used in making garland, religious offerings and extraction of perfume. Nerium has earned tremendous popularity due to its year round flowering, wide range of shades, varied sizes of flowers with long lasting flower life and dwarf to tall growth habit. It is also used for some medical purposes. In horticulture, auxins, especially IAA, IBA and NAA are commonly applied to stimulate root initiation when rooting cuttings of plants. However, high concentrations of auxin inhibit root elongation and instead enhance adventitious root formation. An experiment was conducted to find out the effect of rooting hormone on root formation of Nerium Var. Pink single at Floriculture research complex in the Department of Horticulture, Faculty of Agriculture, Annamalai University during the year 2017-2018. The semi- hard wood cuttings with 4-5 nodes were treated with different concentration of auxins by quick dip method using IAA, IBA and NAA (1000, 2000, 3000, 4000 and 5000 ppm) along with untreated control and planted during 1st week of November 2017. The results have clearly indicated that 4000 ppm of IBA has given highest percentage of rooted cuttings, no of roots per cuttings, length of longest root, length of basal portion of cuttings showing root, and fresh weight of roots per cuttings. Survival of rooted cuttings was cent percent in all the concentration of IBA.

Key words: Hormone, Nerium, root, pink single.

Introduction

Nerium scientifically known as *Nerium odorum* L. belongs to Apocynaceae family, fresh flowers are used for making garland, worshipping in home and temple, hair adornment and floral decorations. The shrub is having an ornamental value for avenue planting, border planting and potted plants (Huxley, 1992). Apart from its ornamental use and loose flower production, this shrub is also known for its medicinal purpose (Adome *et al*., 2003). Among the loose flowers grown in Tamilnadu, nerium occupies 5th place with respect to its volume in trade after jasmine, chrysanthemum, rose and crossandra. Its cultivation in Tamilnadu is estimated around 1,408 ha with the production of 33,780 t (Kannan *et al*., 2016). During the last one and a half decade, nerium witnessed a steady increase in cultivable area and production of loose flowers. Cuttage is so far the easiest and cheapest method of propagation in Nerium. The adventitious root formation in cuttings or layers of various easy and difficult to root plant species can be enhanced with the use of growth promoting substances. It has been revealed in many plant species that, auxins stimulate root regeneration through interaction with certain organic compounds in the plants in general and carbohydrates in particular. Root promoting chemicals stimulated the rooting and survival of Nerium cuttings (Nambisan *et al*., 1977). But the work was very meagre in Nerium. It was, therefore, felt necessary to try some of the growth regulators for rooting in cuttings of Nerium cv. Pink Single which is the important cultivar in south India, to find out the optimum concentrations by quick dip method as recommended by Hartmann and

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Effect of rooting hormone on rooting parameters and plant survival of nerium (*Nerium odorum*.l) var. Pink single.

Treatment	Rooting percentage	No. of roots per cutting	Length of longest root (cm)	Length of basal portion of cutting showing root (cm)	Fresh weight of roots per cutting (g)	Survival percentage
IAA 1000 ppm	55.72	7.61	15.23	10.56	0.90	90
2000 ppm	58.04	7.84	15.54	10.65	0.96	95
3000 ppm	60.28	10.81	18.01	11.30	1.32	100
4000 ppm	81.47	15.63	24.69	15.58	1.97	100
5000 ppm	74.12	13.11	21.39	13.44	1.62	95
IBA 1000 ppm	62.43	9.37	16.72	10.98	1.13	100
2000 ppm	68.92	11.57	19.24	11.98	1.43	100
3000 ppm	78.72	14.53	23.54	14.87	1.83	100
4000 ppm	89.43	18.23	28.14	17.72	2.31	100
5000 ppm	86.12	17.38	27.03	16.98	2.18	100
NAA1000 ppm	60.28	8.69	15.76	10.74	1.04	90
2000 ppm	64.56	10.13	16.91	11.17	1.23	95
3000 ppm	71.53	12.38	20.33	12.71	1.50	100
4000 ppm	83.72	16.41	25.81	16.28	2.07	100
5000 ppm	76.54	13.79	22.49	14.17	1.71	95
Control	52.14	6.47	14.78	09.73	0.78	80
SED	1.06	0.35	0.51	0.33	0.03	-
CD(p=0.05)	2.13	0.72	1.04	0.67	0.07	-

Kester (1968).

Materials and Methods

The present investigation was carried out at the Floriculture research complex in Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar during the year 2017-2018. The experiment was laid out in randomized block design with 3 replications. The treatment comprised of Cuttings treated separately with various concentrations of IAA, IBA and NAA (1000, 2000, 3000, 4000 and 5000 ppm) solutions by quick dip method for five seconds. Control cuttings were treated with distilled water. Semi hand wood cuttings of 20 cm long with 4-5 internodes were taken from 4 years old mother plants. Treated cuttings were then planted in polythene bags with 30 cuttings in each treatment. The data on root parameters were recorded 12 weeks after planting of the cuttings. The rooted cuttings of 5 were transplanted on the same day and a further observation in respect of percentage of survival was taken after 30 days after transplanting.

Results and Discussion

All the concentrations of IAA, IBA and NAA significantly influenced the rooting parameters. Among the various plant growth regulators tried IBA showed the best results followed by NAA and IAA in all the root characters. The better effect of IBA might be due to its slow translocation property and stability. The results are in close conformity with the findings of Gowda *et al.*, (1989) who noticed IBA was more beneficial in the production of higher percentage of rooting with more number and longer roots per cutting in *Jasminum sambac* and Sreelatha *et al.*, (1991) who reported that IBA has better effect than NAA on rooting of the jasmines. Among the various concentrations, 4000 ppm gave the best result in all the three plant growth regulators. IBA 4000 ppm resulted in maximum rooting percentage, number of primary roots, length of longest primary root, length of basal portion of cuttings showing root and fresh weight of the roots per cutting. Similar results were also reported by Singh and Motial (1981) who reported that both IBA and NAA treatments could significantly increase the length of primary root in case of *J. sambac* and as well as IBA 4000 ppm increased the maximum length of primary root. Here the increase in the length of roots over the control may be due to the enhanced hydrolysis of carbohydrates caused by the auxins. However, lowest values in all the rooting parameters were recorded under control.

Highest survival (100%) was recorded with all the concentrations of IBA, 3000 and 4000 ppm of NAA and IAA. Control performed lower survival percentage than all the treatments. The better survival with auxin

treatments might be synchronized due to higher length and more number of roots which could facilitate more absorption of water and nutrients from the soil. These findings are in close conformity with the results of Bhattacharjee and Balakrishna (1983) opined that IBA and noticed highest percentage of survival in *J. sambac* cuttings.

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