

EFFECT OF IBA ON VEGETATIVE PROPAGATION OF *NERIUM OLEANDER* 'VARIEGATA' THROUGH CUTTINGS

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Abstract: An experiment was carried out at Horticulture Nursery, M.S. Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha during 2019-20. For the experiment sand was taken as rooting medium and experiment designed on Randomized Block Design (RBD) with 6 treatments and 4 replications. The treatments were T₁- Control, T₂- IBA @ 500ppm, T₃- IBA@ 1000ppm, T₄- IBA@1500ppm, T₅- IBA@2000ppm and T₆- 2500ppm. The results express positive response of IBA concentration towards rooting characteristics of Oleander. Application of IBA @ 2500ppm shows higher results on survival percentage, root length, root numbers, rooting percentage and fewer days taken for sprouting of cuttings.

Keywords: Cutting, IBA concentration, Nerium, Rooting

INTRODUCTION

Nerium oleander of family Apocynaceae is a shrub or small tree, with long, dark green leaves and number of single or double, sometimes fragrant flowers. 'Variegata' oleanders are having lavender flowers and variegated leaves. Sometimes its trained to an attractive small tree, multi-branched oleander also use as a quick-growing screen or large specimen planting. Oleander is basically propagated through cutting but there are compounds (growth retardants/inhibitors, polyamines, phenolics) that modify main hormone effects on rooting (Hartmann *et al.*, 2002). According to Bhatt and Tomar(2010) effect of different levels of IBA (0.,500, 1000, 1500 ppm) on rooting of *Citrus aurantifolia* Swingle (Kagzi-lime) was examined and found that treatment of 500 ppm IBA showed best results on root formation, length of root, thickening of root and leaf sprouting in shoot. Habibi Kotenaie (2010) reported that the increase of auxin concentrations tend to increase in oleander plant rooting (*Nerium oleander* L.) and subsequent increase in IBA decreased plant rooting. This result was also obtained in peat-perlite bed, but the rooting percent remained constant with increasing IBA concentrations in sand substrate. Owais (2010) examined different levels of IBA (3000, 6000, 9000, 12000 ppm) and quick dip (10 sec) on five Jordanian pomegranate varieties and suggested that increasing dose of IBA can increase rooting potential and other root characteristics. As *Nerium* is a hardy species and to produce planting

materials during cool season this above experiment was carried out to study the effect of IBA solution on vegetative propagation of *Nerium oleander* 'Variegata' cuttings.

MATERIALS AND METHODS

The experiment was carried out at Horticulture Nursery, Department of Horticulture, M.S. Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha during December- January, 2019-20. For conducting experiment sand was taken as rooting medium and experiment designed on Randomized Block Design (RBD) with 6 treatments and 4 replications and each treatment consist of 10 cuttings under polyhouse with fogger and sprinkler facility. The treatments were taken T₁- Control, T₂- IBA @ 500ppm, T₃- IBA@ 1000ppm, T₄- IBA@1500ppm, T₅- IBA@2000ppm and T₆- 2500ppm. Quick dip method was followed before planting of cuttings. Observations are taken on days required for sprouting (days), root length (cm), root number (no.), survival percentage (%) and rooting percentage (%).

Statistical analysis

The data, collected for all the characters involved in the study were subjected to statistical analysis for proper interpretation. The standard method of analysis of variance technique as described by Panse and Sukhatme (1967) was involved. Data on rooting characters of cuttings are prescribed in Table-1.

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Table 1. Effect of IBA solution on rooting of cuttings of *Nerium oleander* 'Variegata'

Treatment	Days required for sprouting (days)	Root length (cm)	Root number (no.)	Survival percentage (%)	Rooting percentage (%)
T ₁ - IBA @ 500 ppm	23.25	13.5	55.25	77.5	76.25
T ₂ -IBA @ 1000ppm	23.25	14.25	56	82.5	77.5
T ₃ - IBA @ 1500ppm	23.75	15.25	60.5	82.5	81.25
T ₄ - IBA @ 2000ppm	21.75	15.25	60.75	90	88.75
T ₅ -IBA @ 2500 ppm	20.75	16.5	66.75	92.5	92.5
T ₆ - control	26.00	12.00	46.25	70.00	72.5
SE(m) ±	0.353308	0.418952	0.849428	2.058182	0.919975
CD at 5%	0.753058	0.892975	1.810513	4.38691	1.96088

RESULTS AND DISCUSSION

Effect on days required for sprouting

Data with respect to effect on days required for sprouting in cutting with respect to control is given in the above table-1. From the table it can be observed that in treatment T₅- IBA @ 2500ppm take less days (20.75) compare to control (26). As far as other treatments are concerned there is no great significant difference between treatments T₁, T₂ and T₃ and T₅ and T₄ are at par to each other.

Data from the research indicated that T₅ (20.76) was taken less time to sprout compare to T₆ (26). This can be due to the exogenous application of auxin in the form of IBA stimulate endogenous auxin and causes early sprouting. This observation agreed with Bisaria AK, Rao PV (1988) in *Bohemrua nivea*.

Effect on root length of cuttings

The data pertained in the above table-1 revealed that loner root length in cutting was found in T₅ -IBA @ 2500ppm i.e. 16.5cm followed by T₄ and T₃ (15.25cm) whereas shorter root length found in control condition i.e. T₆ (12cm).

The data pertained from the above table shows that T₅ having good effect on root length and observed longest result i.e. 16.5cm and lowest in control (12cm). It is due to the concentration of chemicals. Das and Mohanty (2001) in jhumpuri and Bhuse *et al.* (2002) in long pepper also suggested that increase in IBA concentration increases root length.

Effect on number of roots

From the above table it can be extracted that number of roots in cuttings is more in T₅ (66.75) and lowest in T₆ (46.25). Both T₄ and T₃ as well T₂ and T₁ are at par to each others.

Data observed from above table shows that number of roots in cuttings is more in T₅ (66.75) and lowest in T₆ (46.25). This observation is well supported by Patil and Shirol (1991) and they suggested that due to variation in reduction of concentration of carbohydrates and phenolic compounds in cuttings at

the time of root initiation and can favourable for rooting in cuttings in oleander.

Effect on survival percentage of cuttings

The data revealed that effect of IBA concentrations were significantly varied. Highest survival percentage is found in T₅ (92.5%) and lowest in T₆ (70%). T₃ and T₄ are at par to each others.

The data revealed that highest survival percentage observed in T₅ and lowest in control (T₆). It may be due to high rate of carbohydrates reserved and availability of IBA in the cuttings. According to Purohit and Shekharappa (1985) it causes more production of shoots and roots per cutting in pomegranate and contributed to highest survival percentage of cuttings. This result supported by findings of Lakhani and Gajipara (1998) in pomegranate.

Effect on rooting percentage

Application of IBA on rooting of cuttings had a great effect and data show that T₅ (92.5%) possesses highest rooting percentage followed by T₄ (88.75%) and lowest in controlled treatment i.e. 72.5%.

Application of IBA on rooting of cuttings had a great effect and data show that T₅ (92.5%) possesses highest rooting percentage and lowest in controlled treatment i.e. 72.5%. Increase in rooting percentage is increased with concentration of IBA which is reported by Das and Mohanty (2001) in Jhumpuri crop.

CONCLUSION

From the above study it can be concluded that use of higher concentration of IBA@ 2500ppm during planting of cuttings of *Nerium oleander* 'Variegata' can increase root characteristics by increasing survival percentage and rooting percentage along with root number root length and reducing days taken for sprouting.

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