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Effect of Different Concentrations of IBA on Cutting of *Ixora coccinia*

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A B S T R A C T

The study was conducted to find out "Effect of different concentrations of IBA on cutting of *Ixora coccinia*" at Nursery Unit, College of Agriculture, Loni in 2022-2023. The experiment was laid out in Factorial Completely Randomized Design with fifteen treatments and three replications. The treatments comprised three types of cuttings i.e. Softwood cuttings, Semi hardwood cuttings and Hardwood cuttings and five concentrations of IBA, 0 ppm, 1000 ppm, 2000 ppm, 3000 ppm, 4000 ppm. The result obtained from the present investigation in respect of root parameters, it was observed that, minimum days to rooting was observed in treatment T13 (hardwood cuttings treated with IBA 2000 ppm). However, maximum number of roots cutting, length of main root, survival percentage of rooted cuttings, root volume, fresh weight of roots cutting-1 and dry weight of roots cutting-1was noticed in hardwood cuttings with 2000 ppm IBA.

Introduction

Ixora botanically referred to as Ixora chinensis L. this blooming plant is often used as a hedge element in landscape design and is a member of the Rubiaceae family. Plant originated in South East Asia's tropical and subtropical regions. Ixora also known as Rugmini (in India), and it goes by a number of common names in different regions including Chinese ixora, Jungle geranium, flame of the woods, jungle flame, West Indian Jasmine etc. As space become scares in urban areas vertical garden and rooftop greenery are becoming popular solution, ixora is well-suited for both these application which makes it a viable option for urban settings. Ixora can withstand relatively high levels of drought in urban landscapes where construction and land development areas are prone to erosion and water conservation is crucial. It alluring appearance and adaptability in various landscapes settings also drive demand in in urbanization and support the cultivation of this species In natural settings, plant root capacity is mediocre, primarily depends on physiological state of mother plant, time at which cuttings are taken, type of plant growth regulator used such factors influenc rooting success. Ixora propagation has numerous potential for generating profitable self-employment among small and marginal farmers, but seed propagation is unsuitable for the commercial output. As result ixora is vegetative propagated typically by means of layering and cuttings. Ixora is a medium-to-root plant and generally during

cuttings propagation, hardwood cutting is used which gives very low survival, but effective use of plant growth regulator and controlled environmental conditions like growth chamber can also give positive results in terminal, apical and tip cuttings. In the realm of propagation application of growth regulator for root initiation play a crucial role in field and additionally the presence of natural (IAA) and synthetic (IBA, NAA) auxins are critical for root development. Among the growth regulators IBA is the most often utilized growth regulator. Understanding the optimal use of growth regulators and demand for ixora by refining the method of propagation one can guarantee a consistent supply of maximum planting material from single plant by using terminal section multiple times in one year rather than only single stem cutting in the year. All things considered, this research may result in useful application that advances nursery

Materials and Methods

An experiment entitled, "Effect of different concentrations of IBA on cutting of *Ixora coccinia*", was conducted at an Nursery unit, Horticulture department, College of Agriculture, Loni, during Kharif season of the year 2025-2026. The experiment was laid out in a factorial completely randomize design (FCRD) with 15 treatment combinations which were replicated thrice. The present experiment was conducted in medium size polybags. The polybags were filled with propagation media of 2:1:1 ratio of garden soil, well decomposed farm yard manure (FYM) and sand. The mixture was filled in each polybags. The uniform cuttings were selected. Copper oxychloride was used as a fungicide to check the fungus attack. The planting media was of moderate fertility having pH value 7.5. The three types of cuttings were selected for planting i.e. softwood, semi-hardwood and hardwood cuttings. The cuttings were treated for 30 minute with different concentrations of IBA i.e. 1000 ppm, 2000 ppm, 3000 ppm and 4000 ppm and control (water dipping). Observations starting from 30 days after planting up to 120 DAP.

Results and Discussion

Effect of cuttings

The data in respect of days to rooting of cuttings, hardwood cuttings of ixora shows minimum days C3 (27.73 days) to rooting which was significantly superior over semi hardwood cuttings C2 (35.93 days) and softwood cuttings C1 (40.93 days). Similar results were also recorded by Gupta (1989) in hibiscus. As regards number of roots per cutting, was significantly influence by different types of cuttings. Hardwood cuttings of ixora recorded maximum number of roots cutting-1 C3 (7.24 roots) which was significantly superior over semi-hardwood cuttings C2 (4.35 roots) and softwood cuttings C1 (3.00 roots) which shows that the hardwood cuttings are best for commercial propagation of ixora. Similar results were observed by Thakor *et al.,* (1996) in Ixora and Ramesh kumar (2002) in bougainvillea.

The data in respect of length of roots of cuttings, the maximum root length C3 (7.04 cm) was recorded in hardwood cuttings which was significantly superior over semi-hardwood cuttings C2 (6.38 cm) and softwood cuttings C1 (3.14 cm). These results are in close conformity with the findings of Ramesh Kumar (2002) and Sahariya *et al.,* (2013) in bougainvillea. The data in respect of survival percentage of cuttings, the maximum survival percentages of cuttings C3 (62.33%) was observed in hardwood cuttings which was significantly superior over remaining types of cuttings such as semihardwood cuttings, C2 (49.06%) and softwood cuttings, C1 (36.86%) respectively. Similar results were stated by Gupta (1989) in hibiscus. The data in respect of root volume, the maximum root volume C3 (5.80 ml) was recorded in hardwood cuttings which was significantly superior over semi-hardwood cuttings C2 (3.69 ml) and softwood cuttings C1 (1.58 ml).

Effect of IBA

The cuttings treated with A2 (IBA 2000 ppm) required minimum number of days (30.77 days) to rooting of cuttings which was followed by the treatment, A1 (IBA 1000 ppm) (32.22 days). The maximum days to rooting of cuttings, A0 (40.66 days) was recorded in control treatment. From the above results, it was shown that, IBA (2000 ppm) increases the number of roots and auxin are effective on initiation of rooting of cutting of Horticultural crops has been reported by many workers, (Sherer *et al.,* 1985). Similar results were also reported by Asl *et al.,* (2012) in bougainvillea. The maximum number of roots cutting-1 was recorded in treatment A2 (IBA 2000 ppm) (5.76 roots) which was significantly superior over all other treatments. The minimum number of roots cutting-1 A0 (3.81 roots) was recorded in control treatment.

Table.1 Effect of Different Treatments on Rooting Characteristics and Survival Percentage

Treatments	Days to rooting	Number of root	Length of main root (cm)	Survival percentage (%)	Root volume
	Cutting				
C1- Softwood	40.93	3.00	3.14	36.86	1.58
C2-Semi-hardwood	35.93	4.35	6.38	49.06	3.69
C3- Hardwood	27.73	7.24	7.04	62.33	5.80
F test	Sig	Sig	Sig	Sig	Sig
S.E (m)±	0.37	0.05	0.07	1.00	0.05
C.D at 5%	1.08	0.14	0.22	2.90	0.16
	IBA concentration				
A_0- 0 PPM	40.66	3.81	4.73	37.44	2.63
A_1- 1000 PPM	32.22	5.30	5.80	48.11	4.01
A_2-2000 PPM	30.77	5.76	6.37	60.33	5.13
A_3- 3000 PPM	34.66	4.81	5.51	55.22	3.55
A_4- 4000 PPM	36.00	4.56	5.20	46.00	3.14
F test	Sig	Sig	Sig	Sig	Sig
S.E (m)±	0.40	0.06	0.09	1.29	0.07
C.D at 5%	1.40	0.18	0.28	3.74	0.22
	Interaction C x A				
F test	Sig	Sig	NS	NS	NS
S.E (m)±	1.02	0.13	0.20	2.74	0.16
C.D at 5%	2.97	0.39	-	-	-

Similar results were obtained with the findings of Asl *et al.,* (2012) and Sahariya (2013) in bougainvillea. The treatment A2 (IBA 2000 ppm) produced maximum root length (6.37 cm) which was significantly superior over all other treatments and minimum root length A0 (4.73 cm) was recorded in control treatment.

The similar results are also observed in Ixora, Mehraj *et al.,* (2013) Shiva and Nair (2008) in hibiscus and Maryam Shirzad *et al.,* (2012) in *Ficusbenjamina*. The treatment A2 (IBA 2000 ppm) recorded maximum survival percentage of cuttings (60.33%) which was statistically significant over all other treatments. The minimum survival percentage of cuttings observed in control treatment, A0 (37.44%).

The above findings were also recorded by Niaz *et al.,* (2002) and Mehraj *et al.,* (2013) in bougainvillea. The significantly maximum root volume (5.13 ml) was recorded in the treatment A2 (IBA 2000 ppm) which was statistically superior over all other treatments. The minimum root volume, A0 (2.63 ml) was recorded in control treatment. The above results clearly indicated that, the root volume of plant was significantly superior in hardwood cuttings and in IBA at 2000 ppm (A2). The maximum root volume in IBA (2000 ppm) might be due to proper concentration of IBA and type of cutting (hardwood cutting) as the number of root, length of root and fresh weight of root were significantly superior in hardwood cutting and IBA (2000 ppm.)

In conclusion, from the present study, it can be concluded that, in respect of root parameters, it was observed that, minimum days to rooting, maximum number of roots cutting-1, length of main root, survival percentage of rooted cuttings, root volume are recorded with hardwood cutting and 2000 ppm IBA.

Author Contributions

U. H. Patil: Investigation, formal analysis, writing—original draft. V. T. Deokar: Validation, methodology, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding

author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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