

## EFFECT OF IBA ON INDUCTION OF ROOTING IN STEM CUTTINGS OF PLUMBAGO (*PLUMBAGO ROSEA* L.)

*Plumbago rosea* L. commonly known as rose coloured leadwort or 'Chethikoduveli' belonging to the family **Plumbaginaceae** is a perennial shrub, the roots of which possess immense medicinal properties and are being used extensively in **ayurvedic** medicines. The crop is being propagated through stem cuttings. Subha (1990) suggested semi-hardwood, two noded cuttings as the best planting material. However, when stem cuttings are directly used for planting, the percentage of establishment is

very less. Therefore, the present study was undertaken at the College of Horticulture, **Trichur** during 1994 to find out the effect of rooting hormone, IBA on rooting of stem cuttings of plumbago.

The experiment was laid out in completely randomised design. IBA at two concentrations i.e., 500 ppm and 1000 ppm for 30, 45 and 60 seconds were tried. An absolute control was also maintained by dipping the cuttings in

Table 1. Effect of IBA on sprouting and root characters

IBA ppm	Period of treatment seconds	Survival after one month, %	No. of roots after three months	Root length after three months, cm	Time taken for sprouting, days
500	30	84 <sup>a</sup>	3.57 <sup>ab</sup> (13.00)	3.63	2.95 <sup>bc</sup> (9.00)
500	45	75 <sup>b</sup>	3.80 <sup>ab</sup> (14.00)	3.14	2.79 <sup>d</sup> (8.00)
500	60	77 <sup>b</sup>	4.37 <sup>a</sup> (19.00)	5.26	2.67 <sup>d</sup> (7.00)
1000	30	74 <sup>b</sup>	3.19 <sup>bc</sup> (10.00)	0.90	2.73 <sup>d</sup> (7.00)
1000	45	69 <sup>b</sup>	3.59 <sup>ab</sup> (13.00)	1.57	3.16 <sup>a</sup> (10.00)
1000	60	60 <sup>b</sup>	3.31 <sup>bc</sup> (11.00)	2.80	2.92 <sup>cd</sup> (9.00)
0	60	60 <sup>b</sup>	2.29 <sup>c</sup> (5.00)	1.96	3.11 <sup>ab</sup> (10.00)
		S	S	NS	S

Note : Figures in parentheses are original values and others are square root transformed ones. Figures with the same superscripts form one homogenous group. NS - Not significant; S • Significant

distilled water for 60 seconds. The cuttings were planted in **polybags** at the end of April and kept under partial shade and were irrigated with a rose-can. Cuttings were daily watched for the bud break and days for emergence of sprout was noted when the sprouts were 1 to 2 cm long. The percentage survival after one month was also recorded and the data on root characters were gathered three months after planting.

The results of the data on percentage survival, number of roots per cutting, root length and time taken for sprouting are furnished in Table

1. The highest number of roots per cutting was recorded when the cuttings were treated with IBA 500 ppm for 60 seconds and it was on par with other treatments at the same concentration but for lesser periods. The root length recorded was also maximum (5.26 cm) at this **concentration**, but was significant only at 10 per cent error. An increase in root number and root length by IBA treatment was reported in *Vitex negundo* L. and *Sida retusa* L. (Philip *et al.*, 1991). The superiority of this treatment over others is again justified by the fact that the time taken for sprouting was the least (7 days) at 500 ppm IBA. **Indole** butyric acid

was identified as the most effective auxin to stimulate adventitious root initiation in stem cuttings of many plants (Thimann, 1935). Galle (1965) had observed that treatment with IBA markedly increased the RNA content of basal tissues during the period in which root primordia were forming.

The results of the investigation have also revealed that the percentage survival recorded after one month was higher in the case of cuttings which were subjected to a quick dip with IBA 500 ppm for 30 seconds (84%) followed by IBA 500 ppm for 60 seconds (77%) whereas it was only 60 per cent in the control. When the concentration alone was

considered, IBA 500 ppm gave better survival (78%) compared to IBA 1000 ppm (68%). An increased survival percentage by IBA treatment has been reported in other crops like *Solanum hispidum* where 100 per cent survival was noticed in the case of IBA treated cuttings whereas it was only 70 per cent in the control (Badola *et al.*, 1991).

In plumbago, the IBA treatment increased the root number, root length, survival percentage and reduced the time for sprouting. Of the two concentrations tried, IBA 500 ppm gave a better result compared to IBA 1000 ppm thereby suggesting a lower concentration for more favourable results.

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