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Short communication

Effect of indole butyric acid (IBA) concentration on sprouting, rooting and callusing potential in bougainvillea stem cuttings

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ABSTRACT

A study was conducted in 2008-09 to investigate the influence of Indole Butyric Acid (IBA) at 0, 1000, 1500 and 2000ppm concentrations on rooting potential in hardwood cuttings of four varieties of bougainvillea, i.e., Louise Wathen, Thimma, Mrs. Butt and Shubhra. The experiment was laid out in Randomized Block Design with sixteen treatments and four replications. Results indicated that both IBA concentration and variety had significant effect on sprouting, rooting, callusing and establishment of cuttings. Louise Wathen cuttings treated with 1000ppm IBA were superior in response with 85.39% sprouting, 75.46% rooting and 80.78% callusing. Establishment (100%) was also best in this treatment.

Key words: *Bougainvillea* spp., indole butyric acid, bracts, callusing

Bougainvillea is one of the most important semi-scandent, fast growing climbers imparting beauty to gardens in North India with its brightly coloured bracts. During Feb-June and again, in Sept-Dec. Colour of the bract ranges from deep magenta to white, including purple, mauve, orange, red, scarlet, crimson, pink and yellow. It can be planted as a hedge, as standard or semi-standard shrub or bush, in pots, as bonsai, or, can be even trained against light-coloured walls. It is most suited for planting in boulevards, city squares and expressways. It is propagated by cuttings and layering. Plant growth regulators have been reported to stimulate root formation in the propagation material (Kale and Bhujbal, 1972; and Nath, 1999). The present investigation was carried out to study the effect of different concentrations of IBA on rooting potential of stem cuttings of four different varieties of bougainvillea, viz., Louise Wathen, Thimma, Mrs. Butt and Shubhra, and to arrive at the best treatment for a given variety.

The investigation was carried out at Main Experimental Station, Department of Horticulture, Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad, during 2008-09. Hardwood cuttings 20-23cm long and 7-10mm thick of the four varieties listed above were harvested from fully mature woody shoots of previous year's growth. Cuttings were then treated with three concentrations of IBA (1000, 1500 and 2000 ppm) for 30 minutes and planted in nursery beds, along with the control, under open-condition. Planting distance was 20cm between rows and 10cm within the row. Sixteen treatments with four replications were included in Randomized Block Design, in the first week of March. Observations on sprouting percentage were made when most number of cuttings sprouted. Rooting and callusing percentage was calculated upon digging out the cuttings in July, i.e., 19 weeks after planting. Rooted cuttings were planted back into nursery beds for three months for studying their rate of establishment.

Data in Table 1 reveal that percentage sprouting, rooting, callusing and establishment increased significantly on application of indole butyric acid, in comparison to the control. It was also noted that increasing the concentration of IBA from 1000 to 2000ppm resulted in reduced in response. Hardwood cuttings of Louise Wathen treated with 1000ppm IBA were found to be significantly superior to rest of the treatments with respect to sprouting (85.39%), rooting (75.46%), callusing (80.78%) and establishment (190%). Lowest values for all types of response were recorded in Shubhra cuttings under control. Beneficial effect of IBA (1500ppm) on rooting has also been recorded by Kale and Bhujbal (1972) in Cuttings of Bougainvillea var. 'Mary Palmer'. Kanmadi *et al* (1997) reported highest

Table 1. Effect of IBA on rooting of cuttings in four varieties of bougainvillea

Treatment	Sprouting %	Rooting %	Callusing %	Establishment %
V_1C_0	53.78	22.27	32.31	92.50
V_1C_1	85.39	75.46	80.78	100.0
V_1C_2	69.53	56.95	65.84	100.0
V_1C_3	63.81	49.33	55.50	97.50
V_2C_0	45.00	26.19	37.66	95.50
V_2C_1	74.14	63.81	69.53	97.50
V_2C_2	61.77	50.83	56.95	95.00
V_2C_3	56.95	43.56	52.34	90.00
V_3C_0	34.56	16.58	31.29	82.50
V_3C_1	60.27	49.38	58.61	92.50
V_3C_2	53.78	42.12	53.78	90.00
V_3C_{03}	49.39	37.73	45.00	87.50
V_4C_0	32.90	10.65	22.50	80.00
V_4C_1	58.45	47.68	58.45	87.50
V_4C_2	50.83	40.67	49.39	85.00
V_4C_3	45.06	33.05	39.17	82.50
CD(p=0.05)	4.684	4.850	5.232	5.525

V_1 = Louise Wathen C_0 = Control (No IBA)
V_2 = Thimma C_1 = 1000ppm IBA
V_3 = Mrs. Butt C_2 = 1500ppm IBA
V_4 = Shubhra C_3 = 2000ppm IBA

percentage of primary and secondary roots per cutting in bougainvillea var. 'Mahara' at 1000ppm IBA. Singh and Singh (2002) reported best rooting response at 2000ppm IBA in the variety 'Thimma'. Increasing the concentration of IBA from 1000 to 2000 ppm resulted in decreased sprouting, rooting, callusing, etc. In Louise Wathen, rooting at 1000ppm was 75.46%, but was only 49.33% at 2000ppm. Similarly, significant reduction in callusing (55.5%) and establishment (97.5%) was observed at 2000ppm IBA in this variety. Shepherd and Winston (2000) reported 125ppm IBA to be the best concentration for improving rooting in variety 'Thimma' when 0, 125, 250, 500 and 1000 ppm IBA concentrations were used.

Increase in all three types of response varied significantly among different varieties at similar concentrations of IBA. Variety 'Louise Wathen' proved best for all propagation parameters, followed by 'Thimma'. Values for sprouting, rooting, etc., were found lowest in the case of 'Shubhra' at the same concentration of IBA. Even at 1000ppm IBA, sprouting (58.45%), rooting (47.88%), callusing (58.45%) and establishment (87.50%) were significantly poor in 'Shubhra' compared to the other three varieties.

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