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VEGETATIVE PROPAGATION OF JASMINE THROUGH CUTTINGS AND LAYERS

Jasmine which is very valuable for its sweet scented flowers and essential oil is mainly propagated vegetatively through cuttings and layers. Mist propagation helps in the regeneration of certain species which are difficult to root by stem cuttings. Application of root inducing substances particularly auxins has been resorted to enhance the rooting of cuttings and layers. Root formation during layering is also influenced to a great extent by season. The present study was undertaken to decide the effect of growth regulators on cuttings and layers and also to find out the best season for layering.

Uniform semihardwood cuttings (15 cm long) of two species of Jasmine viz., *Jasminun auriculatum* and *Jasminum grandiflorum* were treated with IBA and NAA each at concentrations of 2000, 3000 and 4000 ppm in quick dip mehthod. Of the 300 cuttings under each treatment, 150 cuttings were kept under mist and 150 under open conditions. Random samples of 30 cuttings were uprooted from each treatment at fortnightly intervals and observed the rooting and other root growth parameters like number, length, fresh weight and dry matter content.

For layering studies, two types of growth regulators viz., IBA and NAA each at 100 and 250 ppm were treated on simple layers (45 layers per treatment) of *Jasminun auriculatum* at monthly intervals. Random samples of 15 layers were cut at monthly intervals and observed for rooting and other root growth parameters such as number, length, fresh weight and dry matter content.

Results indicated that in *Jasminum auriculatum* there was no significant difference between the treatments with regard to rooting as well as other root growth parameters while in *Jasminum grandiflorum* the auxin treatments differed significantly particularly under mist conditions. Under mist, cuttings of /. *auriculatum* produced maxium rooting (13.33 per cent) on 75th day when treated with IBA 4000 ppm and NAA 3000 ppm whereas in control rooting was only 6.67 per cent even under mist condition. Under open condition there was no rooting for IBA 4000 ppm and NAA 3000 ppm. On the 15th day of planting, the cuttings treated with 3000 ppm and 4000 ppm produced at least 3.33 per cent rooting while there was no rooting at all for any other treatment. However, rooting was considerably low in this species. The shy rooting behaviour of this species even with auxin treatment may perhaps be due to the presence of certain endogenous inhibitors. Veeraraghavathatham *el al.* (1983) have reported an increased activity of auxin degrading enzymes namely IAA oxidase and peroxidase in the stem tissues of /. *auriculatum* which might have contributed to the shy rooting behaviour of this species.

In the case of *J. grandiflorum,* under mist, maxium rooting of 50 per cent was recorded when cutting were treated with IBA 2000 ppm followed by 40 per cent rooting with IBA 3000 ppm after 75 days of planting the cuttings. There existed a significant difference between the treatments with regard to other root growth parameters. Under mist IBA

Table 1. Effect of growth regulators and season on percentage of rooting of layers

Month of layering	Interval of separation of layers (days)	Treatment (ppm)						
		IBA 100	IBA 250	NAA 100	NAA 250	Control	χ^2 value	Mean (season)
January	30	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-
February	30	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-
March	30	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-
April	30	-	-	-	-	-	-	-
	(.0	-	-	-	-	-	-	- "
	90	26.67	13.33	26.67	13.33	-	2.74NS	18.75
May	30	-	-	-	-	-	-	-
	60	6.67	6.67	6.67	20.00	-	2.65NS	9.52
	90	33.33	20.33	53.33	20.33	50.00	5.64NS	32.81
June	30	-	6.67	6.67	-	-	2.27NS	3.17
	60	20.00	53.33	26.67	33.33	66.67	5.50 NS	34.92
	90	20.00	60.00	-	33.33	50.00	14.50"	29.69
July	30	-	-	-	13.33	-	6.61 NS	3.17
	60	13.33	-	20.00	-	-	6.43NS	7.94
	90	20.00	26.67	20.00	33.33	-	2.33 NS	23.44
August	30	13.33	13.33	-	26.67	-	5.27	12.70
	60	40.00	26.67	13.33	53.33	6.67	6.00NS	33.33
	90	80.00	40.00	40.00	20.00	6.67	12.19"	43.75
September	30	6.67	-	6.67	6.67	-	1.26 NS	4.75
	60	13.33	33.33	26.67	6.67	-	5.07NS	19.05
	90	6.67	13.33	20.00	6.67	-	2.41 NS	10.94
October	30	-	-	-	-	-	-	-
	60	6.67	26.67	6.67	6.67	-	4.95NS	11.11
	90	6.67	-	-	-	-	3.32 NS	1.56
November	30	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-
December	30	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-
	90	-	-	-	-	-	-	-
Mean growth regulators	30	1.67	1.67	1.11	3.89	-	4.98NS	
	60	8.33	12.22	8.33	10.00	8.33	2.18 NS	
	90	16.11	13.89	13.89	10.56	10.42	2.84 NS	
Effect of Season χ^2 value	30	50.86"						
	60	122.61"						
	90	141.41"						

** Significant at 1 per cent level of probability NS - Not significant

2000 ppm produced more number of roots whereas the longest roots were produced in treatment with IBA 3000 ppm. IBA 4000 ppm under mist condition recorded maximum fresh weight and dry matter content of roots. The effectiveness of IBA on induction of rooting of cuttings in various species of jasmine has been well established by several workers (Bajpai and Farmer, 1958; Bose *el al.*, 1972 and 1975; Singh, 1976 and 1980 and Singh and Motial, 1981). The profound influence of mist propagation may be attributed to the presence of very high humidity which reduce transpiration and respiration rates that results the most ideal condition for rooting.

The results of layering studies revealed that rooting was mainly confined to rainy season only, particularly the period from June to September (Table 1). Maximum mean rooting of 43.75 per cent was recorded in August on the 90th day of layering. From August onwards there was a decrease in rooting and during the months of January, February, March, November and December, there was no rooting at all for any of the treatment. There was no significant difference between the growth regulator treatments with regard to rooting as well as other root growth parameters except for the layers done in June and August, which were cut after 90 days of operation. The beneficial effect of season on rooting of layers may be attributed to reduced soil temperature and high humidity which make ideal conditions for the differentiation of callus to roots. Shippy (1930) stated that low moisture and humidity prevailing during summer months inhibit callus formation and result cell desiccation. The present study indicated that the season of operation is highly critical for the ultimate success in layering.

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