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Note on propagation of lac-hosts with growth-regulators

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The propagation of plants through vegetative means has been practised in forestry (Nanda *et al.*, 1968) to obtain plants of desired character and multiply them within a short period. A trial was undertaken to grow host plants of lac of specific importance from stem cuttings with the help of growth-regulators. The trial was aimed at studying the effect of growth-regulators in combinations and determining the optimum season of planting.

Stem cuttings (22 cm long) of 4 different lac hosts of specific importance were obtained from one-year-old mature shoots of uniform size. The cuttings were treated with mixtures of indole butyric

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acid and indole propionic acid, IBA and α-naphthalene acetic acid, IPA and NAA at 50 and 100 ppm for *Moghania macrophylla* (Willd.) O. Ktze and *Albizzia lucida* Benth. For *Samanea saman* (Jacq.) Merr. and *Grewia serrulata* DC., the combinations used were IBA+NAA, IBA+indole acetic acid and IAA+NAA. The basal portions of the cuttings were dipped in the solutions for 24 hr. A set was treated with distilled water to serve as the control.

Ten cuttings were selected for each treatment, and these were planted in well-prepared nursery beds under natural conditions. The investigation was carried out during January, March, June and September for 3 successive seasons. Observations on the rooted plants and rooting response with reference to number and length of roots were recorded after 3 months of planting in different seasons.

Considerable variation was observed in the rooting response of the cuttings (Table 1). The application of growth-regulator mixtures was effective in inducing rooting, whereas the stem cuttings in the control failed to produce any roots. The performance on the rooting response of the host species varied with the growth-regulator and its concentration. These differences in their root development may be attributed to differential reactions of the growth-regulators on the host plants. The mixture of IBA+IPA at 100 ppm was found best for *A. lucida*, IPA+NAA at 50 ppm for *M. macrophylla*, IAA+NAA at 100 ppm for *S. saman* and IBA+IAA at 50 ppm for *G. serrulata* in establishing larger number of rooted plants. This shows that the root-inducing capacity of the host species depends on the type and combination of the growth-regulator used. The performance of IBA+NAA was consistent and comparatively uniform in inducing roots in all the 4 host plants. It indicates better synergistic activity between these 2 growth-regulators. Similar results have been reported by many others (Jauhari and Mathew, 1962; Singh *et al.*, 1965). Callus formation in all the established cuttings of all the 4 host species was quite satisfactory with a fibrous and well-branched root-system.

Table 1. Rooting response of cuttings of lac hosts with growth-regulators and its seasonal effect

Growth-regulators	Concentration (ppm)	Rooted plant (%)			
		Jan	Mar	Jun	Sep
	Albizzia lucida				
IBA + IPA	50	20	50	30	20
	100	10	60	40	10
IBA + NAA	50		20	10	
	100		10	20	
IPA + NAA	50		30		
	100	10	30	20	
	Moghania macrophylla				
IBA + IPA	50	20	20	60	30
	100		10	30	20
IBA + NAA	50		20	80	40
	100			20	10
IPA + NAA	50	20	40	100	60
	100		30	40	20
	Samanea saman				
IBA + IAA	50		10	20	
	100		10	10	
IBA + NAA	50		10	20	20
	100		20	30	10
NAA + IAA	50		20	50	20
	100		40	70	20
	Grewia serrulata				
IBA + IAA	50		20	50	
	100		20	40	
IBA + NAA	50		10	20	10
	100		30	30	10
NAA + IAA	50		10	10	10
	100			10	

The planting of stem cuttings in March gave maximum success for *A. lucida* (60%), whereas June planting had shown better results for *M. macrophylla* (100%), *S. saman* (70%) and *G. serrulata* (50%) in establishing rooted plants. In June, success could be achieved for all these hosts with all the combinations of growth-regulators. The cuttings of 3 host plants did not strike roots at all in January, whereas in *A. lucida* rooting occurred only with IBA+IPA. In September, rooting response was observed in *M. macrophylla* from all the treatments but not in 3 other host plants. This shows that the time of planting had a pronounced effect on the rooting of cuttings. Seasonal variation in rooting response was also reported by Singh (1950), Singh and Teotia (1951), Jauhari and Rahman (1959), Nanda *et al.* (1968)

Table 2. Rooting percentage, average number of roots and average root length in stem cuttings of different lac hosts

Growth-regulators	Concentration (ppm)	Rooted plant (%)	No. of roots/plant	Root length cuttings (cm)
		A. lucida		
IBA + IPA	50	50	4	28.6
	100	60	3	20.3
IBA + NAA	50	20	4	6.2
	100	10	5	14.6
IPA + NAA	50	30	4	8.2
	100	30	2	15.0
		M. macrophylla		
IBA + IPA	50	60	4	13.5
	100	30	2	9.6
IBA + NAA	50	80	3	18.5
	100	20	2	7.5
IPA + NAA	50	100	3	22.6
	100	40	3	13.2
Control (Water)		30	2	9.5
		S. Saman		
IBA + IAA	50	20	2	8.7
	100	10	3	6.2
IBA + NAA	50	20	3	18.5
	100	30	4	10.7
IAA + NAA	50	50	4	19.5
	100	70	6	26.3
		G. serrulata		
IBA + IAA	50	50	4	22.6
	100	40	5	15.8
IBA + NAA	50	20	3	16.3
	100	30	4	11.6
IAA + NAA	50	10	6	11.5
	100	10	5	6.7

and Singh *et al.* (1965). The poor response in striking roots coincides with the onset of winter season when these host-plants usually remain in dormant condition.

In regard to root production and root lengths (Table 2), IBA+IPA at 100 ppm was much better than other treatments for *A. lucida* and IPA+NAA at 50 ppm for *M. macrophylla*, whereas IAA+NAA at 100 ppm was most effective for *S. saman* and IBA+NAA at 50 ppm for *G. serrulata*, thus confirming the results reported earlier.

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