

ABSTRACT

The vegetative propagation of trees by stem cuttings for use in reforestation in Jamaica

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Vegetative propagation is a process in which new plants are created from existing ones via asexual means. It is an important tool for global reforestation, entailing the relatively fast production of new plants using simple and readily available technology, as well as the ability to maintain desirable genetic characteristics.

Alchornea latifolia, *Cinnamomum montanum*, *Juniperus leucayana*, *Podocarpus urbanii*, and *Turpinia occidentalis* were tested for rooting using stem cutting techniques. Cuttings were obtained from stockplants at Cinchona Botanical Gardens in St. Andrew, and placed in a misthouse on the Mona campus of the University of the West Indies in polythene bags containing sterilized coarse sand. Rooting and other characteristics were observed for three months.

The method involved using the auxins NAA (naphthalene acetic acid) or IBA (indole -3- butyric acid) with or without additions of kinetin or boric acid in varying proportions to treat cuttings by the soak technique prior to planting. Measurements were made on roots, callus, and leaf parameters.

Rooting potential depended consistently upon the species and sometimes on the auxin treatment used. Rooting varied, with low percentages (1.6 to 13.5 %), in experiments on cuttings of the five species using NAA with and without boron. These results showed differences in rooting for species but not for treatments. The highest percentage rooting (21.0 %) was observed when *Cinnamomum montanum* and *Alchornea latifolia* cuttings were treated with a wider range of concentrations of NAA and IBA. Again, rooting percentage depended significantly upon the species, with *Cinnamomum montanum* producing more rooted cuttings (31.3 %) than *Alchornea latifolia* (10.8 %). Hormone treatment did not significantly affect rooting percentage but did influence root growth (as length of roots and number of secondary roots) with the highest auxin (NAA and IBA) concentration of 400 ppm stimulating greater root growth than other treatments. The addition of boron or kinetin to auxin treatments did not appear to increase the rooting response. The ability of a cutting to maintain leaves or produce a callus during propagation was found not to be a determinant of rooting.

Rooting of stem cuttings as a commercial means of plant production has good potential for *Alchornea latifolia* and *Cinnamomum montanum* but may not be viable for *Juniperus leucayana*, *Podocarpus urbanii*, and *Turpinia occidentalis*, at least when propagation is carried out at low altitude.