Plant Propagation

_Polyscias fruticosa_ and *P. filicifolia* stem and leaf cutting trials

_Project by_
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The propagators

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The propagated plants

Origins: tropical south-west Pacific islands, east of Australia

Traditional uses: ornamental plant, culinary additive

Current uses: ornamental plant, medicinal uses

Propagation: many species and cultivars, propagated the world-over (mostly tropics)

Experimental treatments and design

IBA Stim-root #2

Stem cutting (heel cut)

Leaf cutting (with petiole)

Replication: n = 10 for each treatment (cutting type + IBA/no-IBA), repeated twice

Environment: 100% perlite substrate, mist frame – total of 7 weeks

Hypothesis

Heel cuts, as well as IBA application, will have the greatest root system development.
Results and discussion

The *P. fruticosa* species were, in general, easier to propagate. As the plant stems and leaves were far smaller than those of *P. filicifolia*, handling, planting, and maintenance of the cuttings were less of a challenge. Some of the *P. filicifolia* were found to have fallen over while in the mist frame, due to their long stems and large leaflets creating a top-heavy cutting. *P. fruticosa* was also the more successful of the two species in generating healthy adventitious roots.

The treatment results supported our initial hypothesis; heel cuts and IBA applications resulted in the most developed root systems. This can likely be attributed to the increased wounding area of the heel cut – exposing more cambial tissue to generate more root initials – and the added auxin which stimulates adventitious root development. Interestingly, non-IBA treated heel cuts generated the most new shoots. This could be attributed to less auxin present to suppress cytokinin synthesis, thus resulting in quicker shoot development.

Future experiments with these species could attempt to precisely quantify the best IBA dose to promote both healthy root and shoot development. We hypothesis that a smaller and more controlled dose of this growth hormone would be ideal in promoting this desired equilibrium.

Thank you

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Useful references: