

An Experimental Assessment of Slag as a Substrate for Mangrove Rehabilitation

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Abstract

Rehabilitation of mangrove habitat has become common practice, but few studies have investigated the growth and survival of mangrove on artificial substrates. Managers attempting to plant mangrove in sites containing artificial substrates must remove substrates or risk poor performance of rehabilitation efforts. This study compared propagule retention, early survival, growth, flowering success, and nutrient concentrations of *Avicennia marina* (grey mangrove) grown on sand, naturally occurring substrate, and rock blast furnace slag over two growing seasons at an experimental site near Newcastle, Australia. Nutrient concentrations of experimental plants were also compared to those of naturally occurring plants. Experimental results showed significant differences ($p < 0.05$) in short-term survival, growth over the two growing seasons, and carbon and nitrogen concentrations between plants grown on different substrates. Comparison of plants grown in slag and plants from reference sites suggests, however, that slag does not lead to anomalies in nutrient concentrations of young mangroves. Although the results identified some differences between plants grown on river sand, naturally occurring substrate, and slag substrate, the absence of consistent differences suggests that mangroves planted in slag are under no greater risk of future failure than mangroves planted in naturally occurring substrate.

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