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10. © Biodegradable pots, the whys and the wherefores -- a journey into the unknown. Woolmore, M. International Plant Propagators' Society, combined proceedings, 2010, 60:182-184. 2011.

Biodegradable Pots, the Whys and the Wherefores — A Journey into the Unknown©

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Lyndale Nurseries Auckland Ltd. is a specialist propagation nursery situated in Whenuapai, Auckland. It grows approximately 3 million young plants per annum covering a wide range of (some 900 different cultivars) outdoor trees and shrubs, which are sold to growers all over the country (population 4.3 million).

Lyndale worked in conjunction with a plastic pot manufacturer to produce a biodegradable pot in which to supply its young liner plants.

Young woody plant production in New Zealand is unique in that plants have over the last 40 years been supplied in plastic 4-, 5-, and 7-cm pots, which are charged on invoice but fully refundable on return. With legal restriction placed on the use of methyl bromide there has been no effective practical way to sterilize the used pots.

INTRODUCTION

A yachting trip in the outer Hauraki Gulf of Auckland produced the catalytic moment.

I saw at first hand plastic waste washed up on an otherwise pristine white sandy beach. Waste which was directly linked to our industry.

A plastic plant pot was washed up in amongst the sand dunes and led me to decide that I could do a little better than this. I decided at that point to explore the possibility of not growing in plastic pots but something that was more environmentally friendly.

Working primarily with Ronald Davidson of Interworld Plastics, we set about exploring biodegradable plastics.

We designed a pot incorporating the advantageous side slots we saw in forestry tree handling systems. One of the motivating factors was to have as many openings as possible to enhance air exchange, encourage air pruning of roots, and, last but not least, to have less bio plastic in the structure.

We developed a pot design that worked well but failed to get the unit cost down to a price which we believed would ensure success, i.e., general acceptance of the concept.

CHINESE INPUT

Some 4 years into the project we had unsuccessfully tried a myriad of additives to the biodegradable plastic resins in an attempt to "dilute" the expense of this product.

A chance encounter with a Chinese company producing plant containers out of rice husks led us to offer them our starter pot design for production.

We now had a young plant or propagation growing on line (GOL) pot, which was priced close to its plastic equivalent and was biodegradable.

Trials back in New Zealand with a range of formulations led us to select a formulation, which was expected to degrade in a period of 12–18 months.

Our trailing indicated that this formulation was in fact breaking down slightly faster than this in our nursery situation.

We have subsequently learnt that the matrix of available water, temperature, nutrients, and the presence of soil organisms all play significant roles in determining