

## Root Control Systems

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There are three pot designs which I wish to discuss; they are the Root Maker Pot, the SpringRing™ container, and the root control bag.

When I stumbled across a book entitled *Production of Landscape Plants* by Dr. Carl Whitcomb, I was excited about his concepts. He had done research on this very problem and had come up with some new ideas in pot designs. His work centred around the concept of air root pruning to produce trees with a high number of lateral roots originating from the root stem interface, and no root circling.

He came up with the Root Maker Pot which provides a means of air root pruning the taproot, thus stimulating secondary root growth and creating a fibrous root system without any circling.

It is recommended that direct seeding or cuttings only be employed when growing a tree, as pricking out can create kinking in roots which negates any further efforts at creating a well developed root system. Once a well-structured, fibrous root system has been initiated with the Root Maker Pot; it is essential that this be allowed to continue as the tree is potted into a larger container. The SpringRing™ container is also based on the work of Whitcomb (but since developed further by Ronneby Tree Farm) and also involves the air pruning principle. It is made of UV stabilised, high-density, polyethylene with deep open-ended cusps to which the root tips are guided as they grow out toward the container wall and are thus air pruned.

Ronneby Tree Farm (Victoria, Australia) are the second largest advanced tree nursery in Australia. They have been using the above systems most successfully for the growing of specimen *Eucalyptus* and many other trees, difficult to achieve using traditional, conventional pot methods.

The root control bag is another concept first established by Whitcomb, but since altered and developed over many years by Ronneby Tree Farm. This is an in-ground bag system, using the on-site soil as the growing medium. The Ronneby root control bags are made of a geotextile of great strength, in fact, the strongest on the world market as far as root control bags are concerned. It allows roots to penetrate the bag wall and grow out into the surrounding soil. Growth of root diameter is limited by the constriction of the geotextile wall and floor (typically 3 mm). Roots become limited in length (typically 2 m outside the bag) but they continue to source water and nutrients. The immediate benefit of root restriction is a reduction of apical dominance within the root, leading to profuse growth of vigorous lateral roots. Longer term benefits flow from starch-charged nodules which form on either side of the restriction. The root control bag, in effect, self-wrenches the tree; no other form of wrenching is necessary. After transplanting (when the bag is removed), roots develop from behind these nodules quickly. We use this system extensively on our own advanced tree nursery and our experience has shown that there is negligible transplant shock. This system allows harvesting on an almost year-round basis and I consider it has revolutionised specimen tree growing.