

## Side-Slit Cell Trays: The Ford Report

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Our goal was to produce 5 million forestry seedlings per year in Rootainers. Nothing on this scale had been attempted before within forest nurseries in New Zealand. So while we had no previous experience within New Zealand to go by, equally we had no preconceived ideas to influence our production methods apart from the precept that Rootainers would be the container to use. This, at the time, was considered the container most suited to forestry's demands that seedlings grown in containers should have absolutely no root deformation that would, at some later date, impact on the stability of the tree.

Rootainers had largely filled this requirement for the relatively small-scale production of forestry seedlings in containers at that time.

However, when consideration was given to much larger production runs, we realised that the production system had to be totally integrated in some flow-through concept, and that everything had to revolve and evolve around the container used.

Filling/seeding systems, handling systems, and greenhouse/headhouse layout were all subservient to the type of tray used. It was very obvious to us that Rootainers were not suitable. Fortunately, we had experimented a year earlier with the new side-slit tray and, to our knowledge, this was the only container which could approach the Rootainer for minimising root deformation. However, there were other factors to consider, such as, suitability for automated filling and seeding, suitability to handling systems, ease of handling both manual and mechanical, preparation for filling/seeding, ease of storage/stacking (7 million cells can take up a lot of room), ease of washing, economic life, cost, and efficient use of greenhouse space.

In all these respects the side-slit tray seemed superior. The decision to use this type of tray was the first major planning decision made. All the other production systems were selected to complement the tray type. This was, to some degree, made easy by the fact that we are dealing with one species in large numbers, all of one age, on a long-term contract.

While there are several configurations and cell sizes of the side-slit tray available, our choice was for the "81" tray of 100-cc cell size, giving 546 cells per m<sup>2</sup> or effectively 450 cells per m<sup>2</sup> over the whole greenhouse. All other configurations of side-slit trays that we have trialed have proved equally as effective as the "81".

There is no doubt in our minds that experience gained during overseas travel in North America, Canada, and Scandinavia gave us the understanding and knowledge, that enabled our success in gaining a contract of such size as to allow the setting up of such a production facility. The cost of that experience was negligible compared with the cost and returns of the project. I am convinced that while New Zealanders may be the best yachties, the second best rugby footballers, and the best producers of bare-root forestry seedlings, we can still learn an awful lot from overseas experts and practitioners.

Side-slit trays have been developed in Scandinavia where containerised production of forestry seedlings has been standard practice for a long time. Growers there

are very, very skilled at that type of production. The tray's flat, square configuration, based on an agreed industry standard, lends itself very well to automated filling and seeding, is well suited to various types of handling systems, is comfortable to handle manually, and requires no preparation for filling. It stacks very well when empty (50,000 cells per pallet) and washes easily in an automated system. Greenhouse space seems to us to be efficiently utilised.

The tray is injection molded with, in the case of the brand we use, a very high level of quality control. That is not to say that other brands are not adequate. It is just that we have not been given the opportunity to watch the manufacturing process with other brands. We have been told to expect 10 years of life from the trays. If we achieve only 8 years, then using the list price as an example, gives a cell cost of something like 1.4¢ per cell per year.

Of course there must be some down side. First and foremost, high initial capital cost. This is off-set by the very high manufacturing specifications and the long life of the tray. Availability can be a problem. One supplier, I believe, maintains molds in New Zealand so that availability is apparently no problem. However, the alternative supplier manufactures in New Zealand only when significant orders justify freighting the mould out here. Otherwise the delay time of sea freight applies, although this is improving.

Edge effect (where the outside cells dry more rapidly than the rest) is a drawback that growers need to overcome in some way, but is helped to some degree by a handling system which minimises the number of exposed outside cells.

Some species, depending upon the vigour of the root system and the efficiency of air pruning allowed by the handling system, will root between cells making extraction difficult or well nigh impossible without the added process of cutting. One supplier has designed his trays with off-set slits thus minimising the bridging effect.

In our experience of growing in these trays for 2 years now, these deficiencies are relatively minor when considering the undoubted advantages.

To sum up, we are convinced, converted, and enthusiastic at the potential the side-slit tray presents. It will not suit all growers and one aspect we are very aware of is that we are locked into a particular system on a large scale. We needed to be confident. We are.