

An Overview of the South African Seedling Nursery Industry

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The concept of a seedling nursery industry only began in South Africa with the introduction of containerised seedling propagation methods and the development of large, specialised nurseries dedicated to servicing the market for vegetable seedlings. These specialised seedling nurseries really only developed from 1975 with the introduction of the Speedling system using the Todd Planter Flat (Todd, 1981). This was of particular interest for producing cabbage seedlings, but very quickly found another market in plantation tree seedlings (Barrett, 1980).

Some 2.2 billion seedlings are grown annually in South African nurseries (Nelson, 1991). The major vegetable seedling crops are cabbages, tomatoes and lettuce. Multi-seeded onions are also popular in some areas.

A particularly interesting aspect of these nurseries, apart from their sole purpose being to propagate containerised seedlings, was the strong cross-cultural influences when the same nursery propagated a wide range of seedlings. The very earliest nurseries very frequently grew vegetable and tobacco seedlings at a time when tobacco field extension staff knew only the highly developed bareroot nursery technique and its requirements. In spite of the well researched bareroot system for tobacco seedlings, the containerised nursery system rapidly became the dominant system.

The system was quickly adapted for containerised forestry seedlings. Within a mere 5 years of the first reports on containerised forestry seedlings, about 50% of the total forest seedling requirement was being produced in the Speedling system and incorporating copper lateral root pruning (Donald, 1986). About 240 million forestry seedlings are grown annually (Donald, 1991). Initially seedlings were grown almost exclusively by private nurseries. Increasingly, the forest companies have taken back control of tree propagation, in particular wanting to retain direct control over their genetic material. This means clonal forestry, either from cuttings or tissue culture. The forestry companies introduced a container based on Scandinavian designs. Two variants are now common, one based on a tube system as used in Brazilian clonal eucalypt nurseries (Unigro tubes), the other based on a Swedish tray (SAPPI tray). Neither of these tray types incorporates a lateral root pruning concept, only pruning at the bottom drainage hole. Coincidentally, these forestry companies are reporting tree instability problems thought to be associated with nursery management of plants in these containers.

The Seedling Growers' Association of Southern Africa (SGASA) has been a unifying focus for seedling nurseries. From small beginnings as an informal meeting of Speedling users, the Association now represents the bulk of the industry in South Africa. The focus has always been on research to resolve propagation problems or to develop new market opportunities. While some nurseries have remained within their chosen market sector, the Association represents all nurseries propagating containerised transplants. Membership is entirely voluntary — the membership fee being a sliding scale in proportion to the size of the nursery.

Bedding plants and other ornamentals are produced by some of the more generalised nurseries. The emphasis on small runs of each variety and regular deliveries to many outlets makes this a difficult market to service compared to vegetable or forestry seedling markets. The use of plug technology has meant that many of the techniques common in general seedling nurseries are also used in bedding plant nurseries. However, reliance on broadcast sowing and pricking out into punnets is also common.

Other nursery crops are being grown. Sugarcane has received considerable attention. This has the potential to become a major nursery crop, with the growing techniques from single nodes quite successful. Viral infections common to sugarcane are generally eliminated by hot water treatment of the seed cane material. Unfortunately, this treatment also seriously reduces the ability of single nodes to sprout.

Lawn and pasture grasses are a steady crop in some nurseries. Some pasture types are only propagated from runners and plug methods are very efficient. Lawn grass plugs represent an alternative to seed or direct sticking of cuttings, or instant lawn methods. Sweet potato (kumara) and tea cuttings are some of the less common crops grown successfully.

Nurseries are quite labour intensive. The two activities most likely to be automated are seed sowing and watering. Even in large nurseries, certain seed lots will still be hand sown. The expectation of accuracy from seed-sowing machinery is considerably lower than in New Zealand nurseries. Seed-sowing machines are generally used for the easier and longer runs of crops, particularly cabbage seedlings.

Watering is generally either by moving irrigation booms or fixed sprinklers. The degree of automation varies enormously. Fertigation is a very common practice.

Tray filling is commonly done by hand, and even where a filler is used, this is generally a simple hopper system with staff required to complete the filling process.

Nurseries can have 200 or so staff, although changes in labour laws are forcing a review of labour productivity. Some nurseries have shed a third of their staff through fairly simple productivity improvements such as introducing trolleys for moving plants into or out of the nursery, increasing use of simple conveyor systems in the head house, and a more in-line approach to filling and sowing functions.

The South African seedling nursery industry is unusual in the sense that so many seedlings are produced in specialised seedling nurseries and not simply in nurseries as extensions to vegetable farming or plantation forestry activities. This has resulted in a good cross flow of information and techniques not common in countries where the nurseries are more strongly associated with their client industries. In addition, the formation of the SGASA and its continued emphasis on research activities has maintained a common focus for the industry.

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