

Bare-root or containerised forestry future?

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They often say ‘nothing lasts forever’, and it seems not even systems and technologies that have served New Zealand forestry well for over 100 years are immune to this fate. Bare-root technology has been the mainstay for the establishment of plantation forests in this country. At present less than 20% of radiata tree stocks are grown in containers, with an increasing trend towards containers. So why change now?

With similar growing conditions and species to parts of Australia, South Africa and countries in South America, New Zealand plantation forestry systems are often compared to them. These countries have all moved away from bare-root production and are almost exclusively, and very successfully, using containerised growing systems.

These trends have also become key topics for some New Zealand forestry nurseries who are contemplating containerised growing systems. The most cited reasons to implement containerised growing systems are the reduced production period in the nurseries or an increased use of cuttings. However, labour shortages, skills, automation and the ability to extend the planting season using container-grown trees seem to be the decisive drivers today to move away from bare-root technology. Also, mechanised planting, which is of growing interest for some companies, requires containerised plants.

Nursery managers expect labour costs for lifting bare-root seedlings to increase in the coming years due to higher labour demand. Automation and ergonomics within the workplace are also considered, especially when labour shortages arise. Containerisation can automate a lot of these manual processes and provide more pleasant working conditions in sheds and at elevated propagation tables compared to crouching in the bare-root beds in the weather.

An extended planting season (e.g. eight months/year) offers greater employment certainty to nursery and planting contractors, and thus more continuity in the workforce, a problem that has plagued the industry for decades. Greater certainty means skills can be developed and retained in the industry rather than being transitory employment as it often is currently. As any forestry nursery manager will know, you can grow very good seedlings in the nursery, but as any forest manager will also know, if the planting or handling of those seedlings once they leave the nursery is poor then many of the gains can be lost, almost immediately. The benefits of increased flexibility around planting and dispatching times have certainly become more obvious after the COVID-19 lockdowns and the associated interruptions to nursery and forestry schedules, which could reoccur any time.

Undeniably, the initial capital costs to set up a containerised nursery are significant. Thus, establishment of these facilities requires a viable long-term economic decision, where cost-benefit analysis or modelling frameworks could help support decision-making. Perspectives of at least 10–15 years should be considered and investment in new infrastructure always requires a level of confidence in future markets. Some of New Zealand’s big radiata producing nurseries have made the decision to grow container plants and for them it seems to be a profitable business case despite the high initial costs.

Predictions on the future always come with a level of uncertainty, but there are some global mega-trends which are expected to impact forestry and nurseries across New Zealand. Climate change will have an impact on seedling establishment. This concerns the time of planting and potentially drier planting sites and therefore the need for more flexibility around dispatch and planting.

New Zealand’s Government has committed to carbon neutrality by 2050, confirmed by pledges to the Carbon Neutrality Coalition. It is one of just six countries in the world that have passed their carbon neutral targets into law. This creates a level of certainty on a long-term perspective that the ambitious afforestation goals by 2030 and 2050 will persist in the future and create a continuous demand for commercial forestry nursery plants.

Lastly, growing concern for environmentally-friendly practices, sustainability or hygiene in the nurseries (disease, run-off, fungicides, herbicides) will undoubtedly have some influence on certification, legislation and the social licence to operate in the future. In a fully containerised system, it is easier to implement non-chemical disease control and include integrated pest management alternatives. There is also increased opportunity to recapture, sterilise and reuse nutrients and water and prevent their escape into natural environments. The single use of growing mediums significantly reduces the likelihood for nurseries and seedlings to be vectors for soil-borne pathogens.

We will undoubtedly face increasing legislative and social pressure to lessen our impact on the environment. These factors will continue to drive improvements in our bare-root production systems, but will equally make containerisation a more and more attractive alternative.

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