

# Forest Genetics

## Superior stock for an exporting industry

TechNZ supports the biotechnology sector to develop new products, processes and services and improve technical knowledge and R&D capability. Up to \$50 million is invested each year in New Zealand businesses to grow world-class companies through innovative technology.



### The Company

Forest Genetics CellFor Limited produces large numbers of genetically superior radiata pine trees for forest growers in New Zealand and Australia. The trees have high disease resistance, grow faster and straighter and can be custom developed with other desirable characteristics such as an enhanced ability to capture carbon, or extra stiffness for use in construction.

Forest Genetics was founded in 2002 by Drs Mike and Sue Carson, scientists with international reputations for their work in tree breeding. The company is poised for significant growth on the back of investment partnerships with an investor from the Western Bay of Plenty Business Investor Forum and forest owners Kaingaroa Timberlands Partnership.

### The Research and Development

Forest Genetics has successfully used TechNZ's investment to boost their pine tree breeding programme. TechNZ – the Foundation for Research, Science and Technology's business investment programme – supports the biotechnology sector to develop new products, processes and services and improve technical knowledge and R&D capability.

It takes up to eight years to grow tree varieties to a stage of maturity that allows forestry scientists to select those displaying desirable characteristics. By that time, says Dr Mike Carson, optimum propagation conditions have passed.

To speed up production, tissue cultures of new varieties were created from immature seed extracted from green pine cones, and were preserved in liquid nitrogen. Sample plants of each new variety were then established in widely distributed forest trials, and once premium varieties had been identified, frozen tissue from the selected tree stock was replicated using a process called somatic embryogenesis.



## Fact File

**Location:** Rotorua

**Staff:** 4 full-time equivalents and up to 50 contract staff

**Exporting:** Sales in Australia expected to grow rapidly

**First TechNZ investment:** 2006

**Value of TechNZ investment:** \$303,000

**Projected revenue from latest R&D:** \$5 million by 2010

Above: Mike and Sue Carson founded Forest Genetics to grow genetically superior pine trees.

“ Dr Mike Carson says TechNZ investment has been crucial to Forest Genetics' success, at a time when it was difficult to secure outside investment. “TechNZ got us through that lean period.” ”

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New Zealand Government

“ The project TechNZ supported at Forest Genetics is a shining example of long-term research being applied to market needs. The scientists that founded Forest Genetics have distinguished research careers and are applying their in-depth knowledge to providing new solutions to an industry that is vitally important to New Zealand. ”

Shane Stuart, TechNZ Business Manager

The original technology for freezing and later multiplying selected tissue stock into hundreds of thousands of young trees had been perfected by Forest Genetics' Canadian partner, CellFor Inc, for use with loblolly pines.

“We used the TechNZ investment to adapt our Canadian partner's techniques to radiata pine and significantly boost rates of production from each piece of tissue, so we have the capability to produce millions of little trees at an affordable price,” says Dr Mike Carson.

The TechNZ funding contributed to the cost of research contracted to crown research institute Scion and to running field trials.

“It's a complex and challenging process. It's not only about increasing quantities, but also toughening the young trees so they can survive and grow outside of laboratory conditions.”

The TechNZ-supported project was completed six months ahead of schedule, and production of fully tested, improved varieties is in full swing.

Dr Carson says the TechNZ investment has been crucial to Forest Genetics' success. “We had only our own capital and it was difficult to secure outside investment, partly because forestry has been in the doldrums and partly because ours is a complex activity and investors didn't fully understand what we were trying to do. TechNZ got us through that lean period.”

Subsequent private investment in Forest Genetics has positioned the company for strong growth, says

Dr Carson. “Having both Phil Wells [from the Western Bay of Plenty Business Investor Forum] and the Kaingaroa Timberlands Partnership on board has tapped us into a wealth of new ideas, networks and contacts and brought a new level of rigour to our business planning and reporting.”

## The Achievements

Forest Genetics is growing rapidly, selling around 300,000 young trees in 2008 and anticipating sales of several million plants a year by 2010. The company contracts growers around New Zealand, including Timberlands Limited, to produce its production varieties.

Forest Genetics retains a small core staff of skilled scientists and technicians, uses seasonal labour in its plant nursery and contracts other forestry specialists to work on particular projects or issues.

Dr Carson says research and development is an ongoing focus, and the company has around 50 field trials running in New Zealand and almost as many in Australia as it continues to identify even better varieties and cross them to produce the next generation of superior trees.

Forest Genetics is projecting revenue from its New Zealand sales of more than \$5 million by 2010 with comparable earnings likely in Australia as it replicates its business model across the Tasman.

[www.forest-genetics.com](http://www.forest-genetics.com)



Forest Genetics has 50 field trials underway to identify better pine tree varieties.

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