



Forest Flows research programme

The Forest Flows programme will focus on developing methods to predict and optimise water use and supply in planted forests to answer the questions: Where is the water? Where is it going? And who gets to use it?



Water is vital to life

With changing climate and land use, New Zealanders want to know that we have:

- a reliable water supply
- healthy rivers and streams
- access to water for recreation
- protected cultural values

To ensure the best use of land and water to produce food, fibre and energy, while maintaining environmental health, we need to understand how water flows through the land, including planted forests.

Understanding water flows through forested catchments

We don't have enough information on how water flows through forested catchments.

Agricultural models don't work well for forests. Current forest models are largely site-specific and can't be accurately applied across New Zealand.

What we do know, is that annual water yield, or 'water in' minus 'water out', hides the complex distribution, use and circulation of water that happens in forested catchments.

Using novel technology

This programme will allow us to develop a hydrology model from data collected on water use, storage and movement, at tree, stand and forest scales. To bridge these different scales, we will combine data from continuous on-site monitoring with remote sensing. The remote sensing will include a novel P-band radar method, which uses microwaves to penetrate the ground and measure variation in soil moisture levels.

Optimising water use in planted forests

The hydrology model generated in this programme will include information on water use for different tree species and genotypes. Improved understanding of water flows in planted forests will allow us to develop a tool to optimise water use.

Improved models of water flows will also allow us to identify and plan for the benefits that afforestation can provide to downstream users, including stormflow modification, low-flow water supply and improved water quality.



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About Scion

Scion is a New Zealand Crown research institute that specialises in research, science and technology development for forestry, wood and wood-derived materials, and other bio-material sectors.

Scion's purpose is to create economic value across the entire forestry value chain, and contribute to beneficial environmental and social outcomes for New Zealand.



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Prosperity from trees *Mai i te ngahere oranga*