SCION™
FORESTS ▪ PRODUCTS ▪ INNOVATION

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 supply our needs, while maintaining environmental health, we need to understand how water flows through the land, including planted forests.

Understanding water flows through forests

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

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

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

Using novel technology

We are collecting data on water use, storage and movement, at tree, stand and forest scales. These different scales will be connected by combining continuous on-site monitoring with remote sensing. The remote sensing techniques include a novel P-band radar method that uses microwave energy to penetrate the ground and measure variation in soil moisture levels. This combined data will allow us to develop a hydrology model that predicts how water moves through the landscape.

Optimising water use in planted forests

The hydrology model from 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 ways to optimise water use.

Improved water flows models will also allow us to identify and plan for the benefits that afforestation can provide to downstream users, including modifying storm water flows, providing a consistent water supply during dry periods 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*

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