



Research Directions

Office of Research Services

Fingerprinting the Forests

Professor John Cairney, Centre for Plant and Food Science, is participating in research into global climate change and the associated effect upon forests. This ARC Discovery project will use innovative techniques to study the impacts of climate change and forest management on plant-soil-microbe interactions.



South east Queensland forest

'Global climate change (GCC) impacts on carbon and nutrient cycling in forests are not well understood, particularly below ground processes and their interactions with above ground processes' said Professor Cairney. 'Rhizosphere carbon, that is, the carbon in the soil surrounding plant roots, is closely linked to important plant-soil-microbe interactions. By using new techniques to quantify GCC impacts, biological and chemical fingerprints and nutrient cycling will be identified for more effective forest management'.

The study will incorporate multidisciplinary collaborative research from two of the world's international GCC forest experiments - in Sweden and USA - and long-term forest management experiments in south-east Queensland. These contrasting forest ecosystems will be used to test and develop bio-molecular, stable isotope and nuclear magnetic resonance (NMR) techniques, which will assist researchers to understand biological and chemical processes in the rhizosphere.

As a result of this research we will have an improved understanding of GCC and, particularly, how forest management impacts on nutrient cycling in those ecosystems. The research findings will also contribute to more effective forest management and biodiversity conservation.

Project Title: *Fingerprints of Global Climate Change and Forest Management on Rhizosphere Carbon and Nutrient Cycling.*

Research Partners: *Griffith University (administering institution), Swedish University of Agricultural Sciences and Duke University, USA.*

Funding for the UWS part of the study has been set at: \$75,354.

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