

RESEARCH DIRECTIONS

Small things make a big difference

Associate Professor Ian Anderson from the Centre for Plant and Food Science is investigating how the diversity and activity of forest soil microbes is affected by climate change, through a Life Sciences Research Award from the NSW Office for Science and Medical Research.

'Coping with climate change arising from greenhouse gas emissions is recognised as a major challenge for Australia and NSW' says Associate Professor Anderson. 'The NSW Government has led the way in the development of climate change policy, with the Greenhouse Gas Abatement Scheme establishing local markets for emission reductions. Under this scheme, carbon sequestration (a process for capturing and storing carbon dioxide to remove it from the atmosphere) in new forest trees or in soil, is an allowable offset. However, the accurate inclusion of soil carbon within such a scheme depends on the development of accurate accounting models to determine just how much capacity forest soil has to capture carbon.'

Working closely with forest managers, Associate Professor Anderson will measure changes in the types and numbers of tiny forest soil fungi in response to drought and elevated atmospheric carbon dioxide. This will give clues to how the fungi respond to climate change and their ability to store carbon in soil under these conditions. Some fungi form symbiotic associations with forest tree roots where the fungi increase the tree's acquisition of scarce minerals from soil while the tree provides the fungi with carbon. Given these fungi act as a conduit for carbon delivery to soil they may be extremely important in soil carbon storage. This study's information about how future climate change is likely



to affect forest soil fungal diversity and activity will assist in the development of working models of forest growth and carbon sequestration.

This project will be of significant value to the Australian community by improving the carbon accounting models that are necessary to successfully implement accurate emissions trading schemes in NSW and throughout Australia. This will contribute significantly to the management of Australia's environment and natural resources, thus improving the economy and creating a cleaner environment for all Australians.

Project Title: Climate change impacts on carbon sequestration in Australian forests: the role of soil microbial diversity

Funding has been set at: \$400,000

Contact details: i.anderson@uws.edu.au,

<http://www.uws.edu.au/pafs>

February 2009