

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



Research ensuring plants continue to grow

Researchers are assessing the role of climate change on the key nutrient behind plant growth, seed production and carbon storage.

Inorganic nitrogen, in the form of ammonium and nitrate, is absorbed by plants from the soil and is vital in plant development and growth. There has been widespread concern climate change will affect the availability of nitrogen in the soil and thus land ecosystems will suffer.

A group of University of Tasmania researchers, led by Dr Mark Hovenden of the School of Plant Science, has undertaken a world-first study into the effects of both increasing temperature as well as carbon dioxide levels on soil nitrogen.

Dr Hovenden said that while increased carbon dioxide levels decrease nitrogen in the soil, increased temperatures seem to have the reverse effect. The combination of warming and increased carbon dioxide levels have little or no effect on nitrogen levels.

Now Dr Hovenden and his team are looking to find out why, thanks to an Australian Research Centre Discovery Grant (DP0984779) of \$450,000 over five years.

Dr Hovenden said this new study would look at the two types of inorganic nitrogen and the types of gases that are produced during the nitrogen cycle along with their interactions with climate change.

“For people working in ecosystems, especially with climate change, understanding this is the Holy Grail and we’re at the forefront of this,” he said.

“This project also has great economic importance as it relates directly to increasing our ability to understand the cycling of nutrients in ecosystems, both natural and agricultural, and thus will help inform methods to improve sustainability.”

During the nitrogen cycle, organic material is broken up and filtered back into the soil as organic nitrogen before soil organisms or bacteria work to break it down to inorganic nitrogen. Plants are mostly only able to access inorganic nitrogen.

During this cycle, gases such as nitrous oxide are released in to the atmosphere. This is a greenhouse gas and contributes directly to global warming.

Dr Hovenden said the study will research whether warming and carbon dioxide concentrations influence the levels of nitrous oxide in the environment.

“The results of this study will be applicable to agricultural and natural land resource management. In particular, it will be important for the agricultural industry, because of the importance of nitrogen nutrition in all agricultural systems.”

Results apply worldwide but will be especially important in Australia where the soils are already low in nitrogen availability, he said

“We start off with very little nitrogen in the soil so any loss is severe.”

Researchers will collaborate with projects in New Zealand, the United States, Germany and the Department of Primary Industries in Victoria.

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