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Solutions to the environmental and climatic challenge.

Evaluation of the solutions to environmental and climatic change by farmers and dairy sector experts.

Chaired by Dr Ants Roberts, Chief Scientific Officer at Ravensdown

Keith Cameron

Professor of Soil Science, Head of Centre for Soil and Environmental Research

Keith Cameron is Head of the Centre for Soil & Environmental Research at Lincoln University. He is a Fellow of the Royal Society of New Zealand, NZ Institute of Agricultural Science and the NZ Society of Soil Science. In 2008, he was appointed by The Queen as an Officer of the New Zealand Order of Merit (ONZM) in recognition of 'Services to Agricultural Research'. His research expertise is in nitrogen cycling in agroecosystems, nitrogen fertilisers, nitrate leaching, ammonia emissions, soil molecular biology, soil physics and soil fertility. He enjoys collaborating in research projects that support farmers achieve sustainable production and protect the environment.

Grant Edwards

Assistant Vice Chancellor, Dean of Faculty of Agriculture & Life Sciences; Professor of Dairy Production.

Grant Edwards is Assistant Vice-Chancellor, Professor of Dairy Production and Dean of the Faculty of Agriculture and Life Sciences at Lincoln University. Grant has research and teaching interests in dairy production systems.

Coming from a farming background in Wellsford, Northland, Grant completed a Bachelor of Agricultural Sciences with Hons from Lincoln University in 1990. He was awarded a Rhodes Scholarship in 1991 and through this scholarship completed a DPhil in Behavioural Ecology at Oxford University in 1994.

Grant then held research and teaching positions at AgResearch, and Imperial College London, before returning to Lincoln University in 2005, first as a senior lecturer in pasture science, before moving to a position as Professor of Dairy Production in 2009. Grant is interested particularly in how alternative forages can be used to improve the profitability and environmental performance of dairy farms, and uses a mixture of component research, farm systems research and demonstration farms to show this. Grant is currently research aim leader on the forages for reduced nitrate leaching programme and sits on the steering group of Forage Value Index.

The environmental footprint of our farms is an important indicator of our future success.

As we've studied nutrient loss and GHG emissions from our farms it's become clear that pasture farming can have a high environmental footprint.

We need to address these issues in order to win the respect of the public, and to support the provenance and reputation of our products with our consumers.

In solving the challenge of achieving low footprint dairy we want to maintain our grazed pasture base. We want systems with high profit, high provenance and low footprint.

'Protecting and nurturing the environment' is Commitment #1 in New Zealand's Dairy Tomorrow Strategy, this includes the four main water quality issues (N, P, sediment and E coli), plus methane, nitrous oxide and biodiversity.

Today we're going to focus on N losses (nitrate and nitrous oxide) - these are priority issues for dairy farmers to address.

1) *Why are pastoral systems leaky for N?*
2) *What are the solutions that we have available now and in the pipeline for N – and how will these impact on N losses:*
    - *Alternative forages (especially Plantain)*
    - *Optimum use of N fertilisers*
    - *Pastoral 21research – managing inputs, infrastructure*
    - *Winter crops – Fodder beet, Catch crops*
    - *Inhibitors.*
3) *How do these mitigations fit with the policy targets that local farmers are facing?*
   N loss reductions of c. 30% are required in the Selwyn and Hinds catchments in Canterbury.