Title	Chemical di-nitrogen formation bypassing nitrous oxide
Countries Involved	New Zealand (Landcare Research), United States of America
Objective	To investigate the chemical (abiotic) transformation process for environmental N removal and N2O mitigation by building on new knowledge that organic and inorganic forms of N can be combined abiotically to form N2 without the N2O intermediate; and how nitrogenous organic compounds in soil control this process for the purpose of minimizing N2O production and shunting excess N to the atmospheric N2 sink.

Title	Farming microbes for better farms
Countries Involved	New Zealand (University of Otago), Canada, Norway
Objective	To determine the prevalence of NDNR in NZ and international soils, and identify factors limiting NDNR controlled N2O reduction within urine patches. Microbiological and molecular genomics/transcriptomics techniques will be combined to study these novel NDNR and determine factors that influence their abundance in NZ pastures.

Title	Reducing N2O emissions from urine patches
Countries Involved	New Zealand (University of Otago), Ireland, Norway
Objective	To build on recent advances in microbial and molecular techniques to identify the regulators of denitrification, specifically those of nitrous oxide reductase (N2OR) at the microbial level.

Title	Discovery of new nitrification inhibitors
Countries Involved	New Zealand (Lincoln University), Australia, China
Objective	To start the process of discovering new nitrification inhibitors by conducting phenotype screening of potential inhibitors against dominant ammonia oxidisers. Screening will include non-target organisms, including representative heterotrophic Gram negative and Gram positive bacteria, to avoid unwanted side-effects of any potential nitrification inhibitor.

Title	**Animal delivery of DCD in urine by provision in feeds**
Countries Involved	New Zealand (AgResearch), Ireland
Objective	A cost-effective nitrous oxide mitigation technique, based on animal delivery of the nitrification inhibitor dicyandiamide (DCD) in urine via provision in feeds, was developed.

Title	**The consequences of full-inversion tillage for Nitrous Oxide emissions**
Countries Involved	New Zealand (Plant and Food Research)
Objective	To extend an existing GPLER project (SOW14-GPLER-SP23-PFR) to allow more comprehensive measurement of the impact of full-inversion tillage pasture renewal on nitrous oxide emissions and nitrate leaching.

Title	**Updating the existing Nitrous Oxide chamber methodology guidelines**
Countries Involved	New Zealand (AgResearch)
Objective	To update the LRG's existing Nitrous Oxide Chamber Methodology Guidelines (2012) to include more thorough analysis of the sources of variability associated with N2O emissions, additional guidance for establishing criteria for deciding on the best flux measurement method, procedures for 'backfilling' missing N2O measurements, and a new chapter on N2O modelling.

Title	**Nitrous oxide and methane emissions associated with high metabolisable energy forage**
Countries Involved	New Zealand (AgResearch)
Objective	AgResearch has been working for a number of years using a GM approach on the development of a variety of ryegrass that has enhanced yield and nutritional value. A claimed potential co-benefit of this material is that it will reduce both nitrous oxide and methane emissions.

Title	**The development of a soil water based decision support tool**
Countries Involved	New Zealand (AgResearch)
Objective	To assess the mitigation potential of a decision support system that uses soil moisture and forecast rainfall information to guide day-to-day farm management decisions designed to reduce N2O emissions; deliver guidance on relations between soil moisture and the application of N to reduce annual on-farm emissions; and demonstrate that stock and fertiliser management connected to soil water can reduce a farm's annual N2O flux.

Title	**Guidelines for measuring N2O emissions from agricultural soils using chamber methodologies**
Countries Involved	NZ (AgResearch), Australia, Canada, Chile, Denmark, Finland, United Kingdom, United States of America
Objective	Internationally agreed standardised guidelines and protocols to follow when using chamber methodologies to measure N2O emissions from agricultural soils (arable and grassland) have been developed.

Title	**Robust models for assessing the effectiveness of technologies and management to reduce N2O emissions from grazed pastures**
Countries Involved	NZ (AgResearch), United Kingdom, France, Italy, Switzerland
Objective	To provide robust and proven tools with which to undertake assessments of the impact of N2O mitigation options in grassland systems.