

GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

GRA FLAGSHIP PROJECT TITLE: Development of context-specific emissions factors from the application of nitrogenous fertilisers

Leader: Marta Alfaro, Chile

Council Champions:

1. New Zealand
2. Costa Rica
3. Fontagro
4. Spain
5. Chile
6. Ireland

Overview of project

- **Start date and project length:**

- March 2022
- 48 months

- **Brief description of project:**

- *Fertiliser, nitrous oxide, ammonia, emissions factors, GHG inventory, mitigation*
- Targeting emissions resulting from the application of nitrogenous fertilisers relate to N₂O emissions from N fertiliser inputs (EF₁), N₂O emissions from drained/managed organic soils (EF₂), N₂O emissions from atmospheric deposition of N on soils and water surfaces (EF₄), N₂O emissions from leaching and runoff (EF₅), and ammonia volatilisation. However, there is a dearth of information on the environmental and soil conditions and relevant variables that underpin estimates of these emissions, including related to farm systems and management practices (timing, amount, rate and location of fertiliser application) and there are large gaps in some regions and productive systems. The project seeks to compile existing data and undertake new field measurements to develop context specific emissions factors relating to the application of N fertilisers for the purpose of inventory improvement including N₂O mitigation accounting.

Key Participants and Resources

■ Current participants and resources:

1. Institutions involved in discussions to date have included: INIA – Chile, INTA Argentina, INTA – Costa Rica, Landcare Research - New Zealand, Teagasc – Ireland, Rothamsted Research – UK, AAFC-Canada, USDA – USA, Colorado State University – USA, Thuenen Institute – Germany, University of Goettingen – Germany, CAAS – China, ETH Zurich – Switzerland, IITA – CGIAR, CIMMYT – CGIAR, International Fertiliser Association, University of Costa Rica, AgResearch – New Zealand, La Molina University – Peru, Lincoln University – New Zealand, University Politechnic Madrid – Spain, Bangor University – UK, Aarhus University – Denmark, University of Oslo - Norway, Embrapa – Brazil, Queensland University of Technology – Australia, The Nature Conservancy Trust, University of Hohenheim – Germany.
2. Resources – in-principle, US\$ 0.4M has been secured for new research, as well as significant in-kind contributions through existing or planned field research. Further resources will be sought to support expanded participation and allow targeted field research to be undertaken.

■ Opportunities for involvement

1. Contributing historical and future measurements of N₂O and ammonia from diverse production systems and fertiliser treatments, with associated site information (database analysis e.g. DATAMAN initiative)
2. Contributing expertise in statistical analysis, modelling,
3. New funding collaborative initiatives