Introduction

Richard Eckard

The University of Melbourne

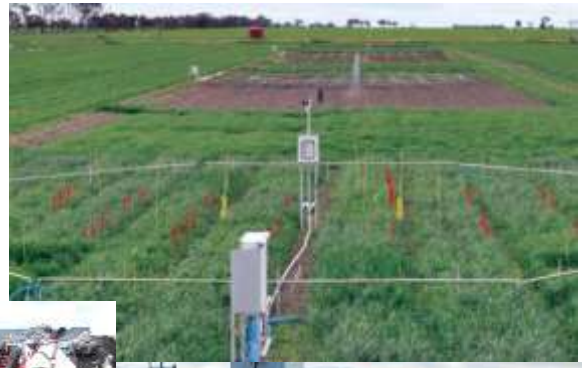
The Primary Industries Climate Challenges Centre (PICCC) is a joint venture between the University of Melbourne and the Victorian Department of Environment and Primary Industries

THE UNIVERSITY OF MELBOURNE

State Government Victoria
Department of Environment and Primary Industries

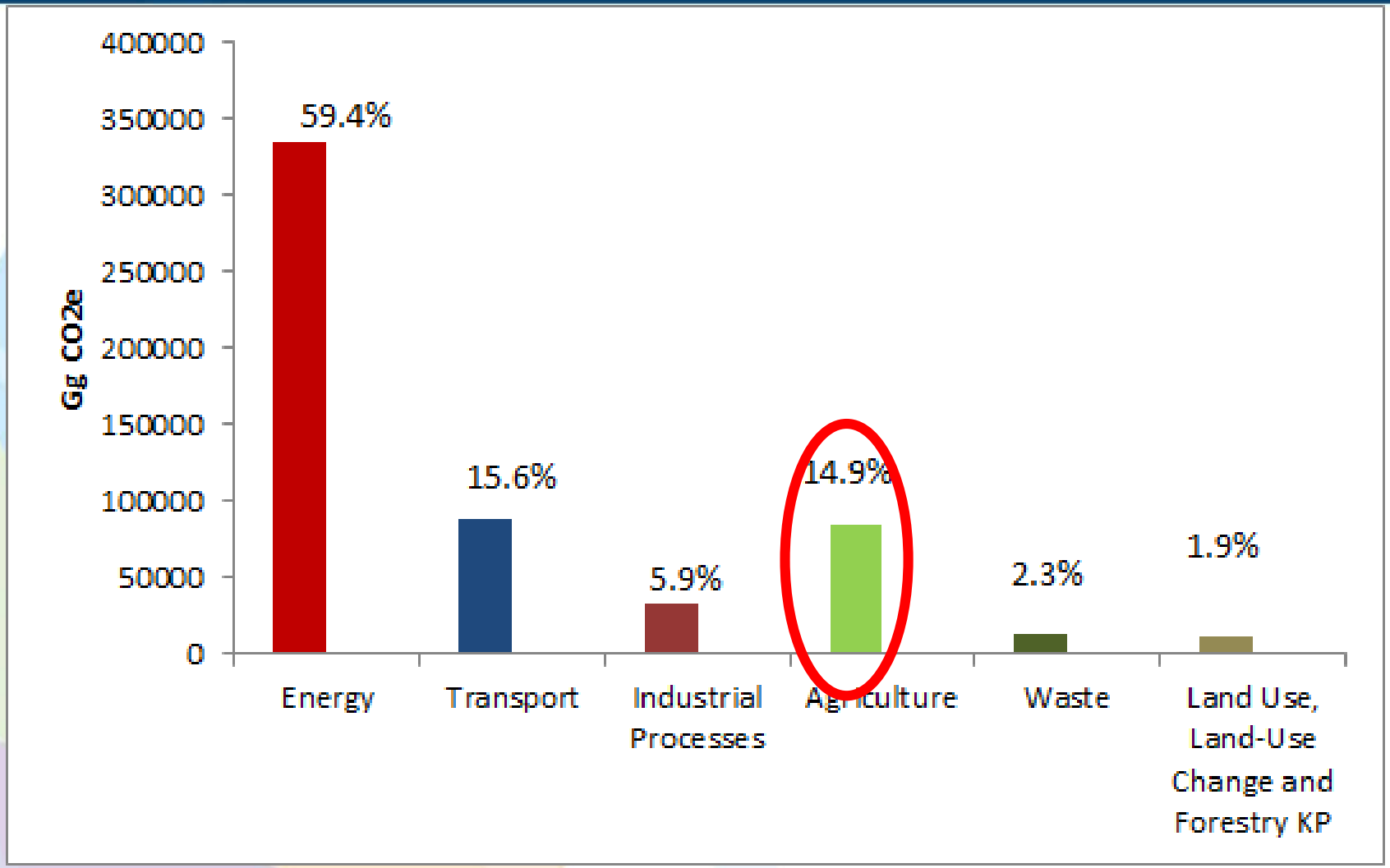
Primary Industries Climate Challenges Centre

- Over 20 large research projects
  - Themes
    - Adaptation - AGFACE
    - Methane & nitrous oxide
    - Soil carbon
    - Whole farm systems analysis



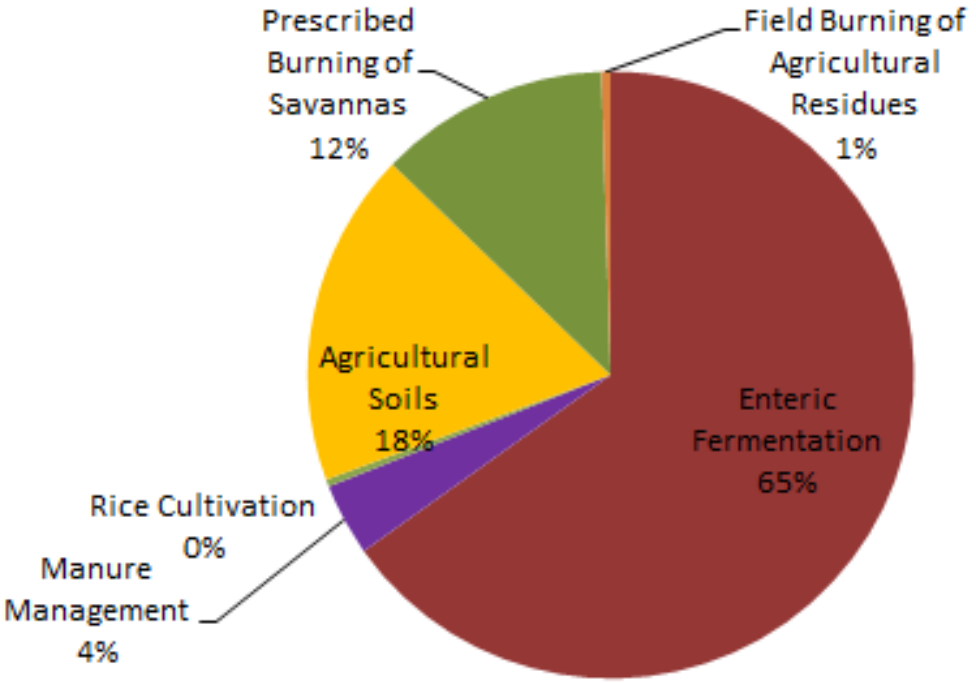
- Education and training
  - Post Grad Cert in Climate Change for the Primary Industries
  - PhD students and scholarships
  - National CFI Extension & Outreach training
  - On-line training in Carbon Farming for the CER

Australian GHG Inventory



DCCEE 2013

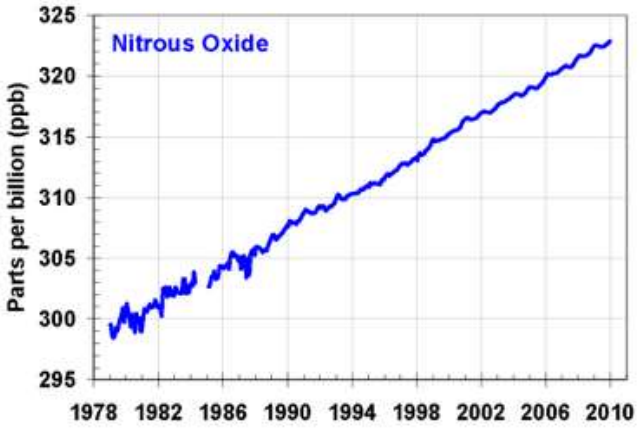
Australian GHG inventory



- Agriculture
  - 57% of all methane
  - 75% of all nitrous oxide
- Enteric Methane
  - 11.5% of National emissions
- Nitrous Oxide from soils
  - 3.4% of National emissions

DCCEE 2013

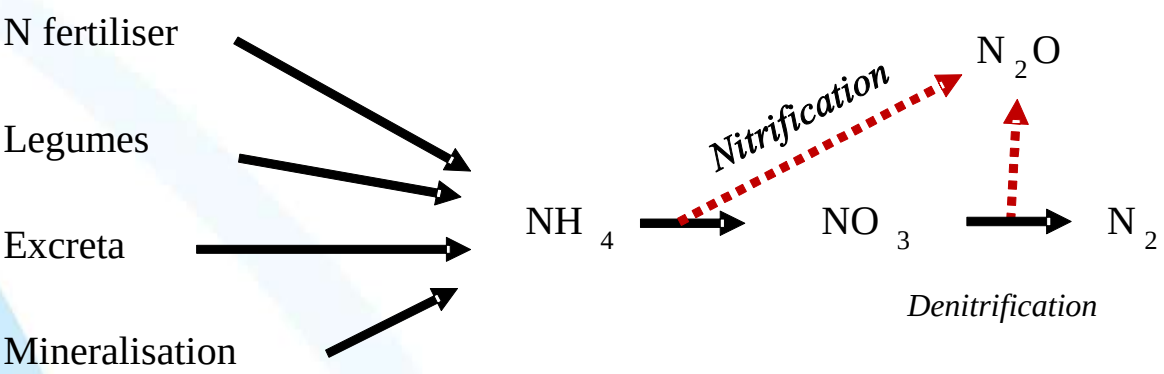
Nitrous oxide



- Atmospheric Concentrations
  - ~90% from agriculture
- High GWP
  - 298 x CO_2
- Agricultural implications
  - Actual losses are small (<10 kg N/ha/y)
  - Inefficient use of nitrogen
    - Up to 60% N lost from grazing
    - Up to 40% N lost from cropping

IPCC 2007

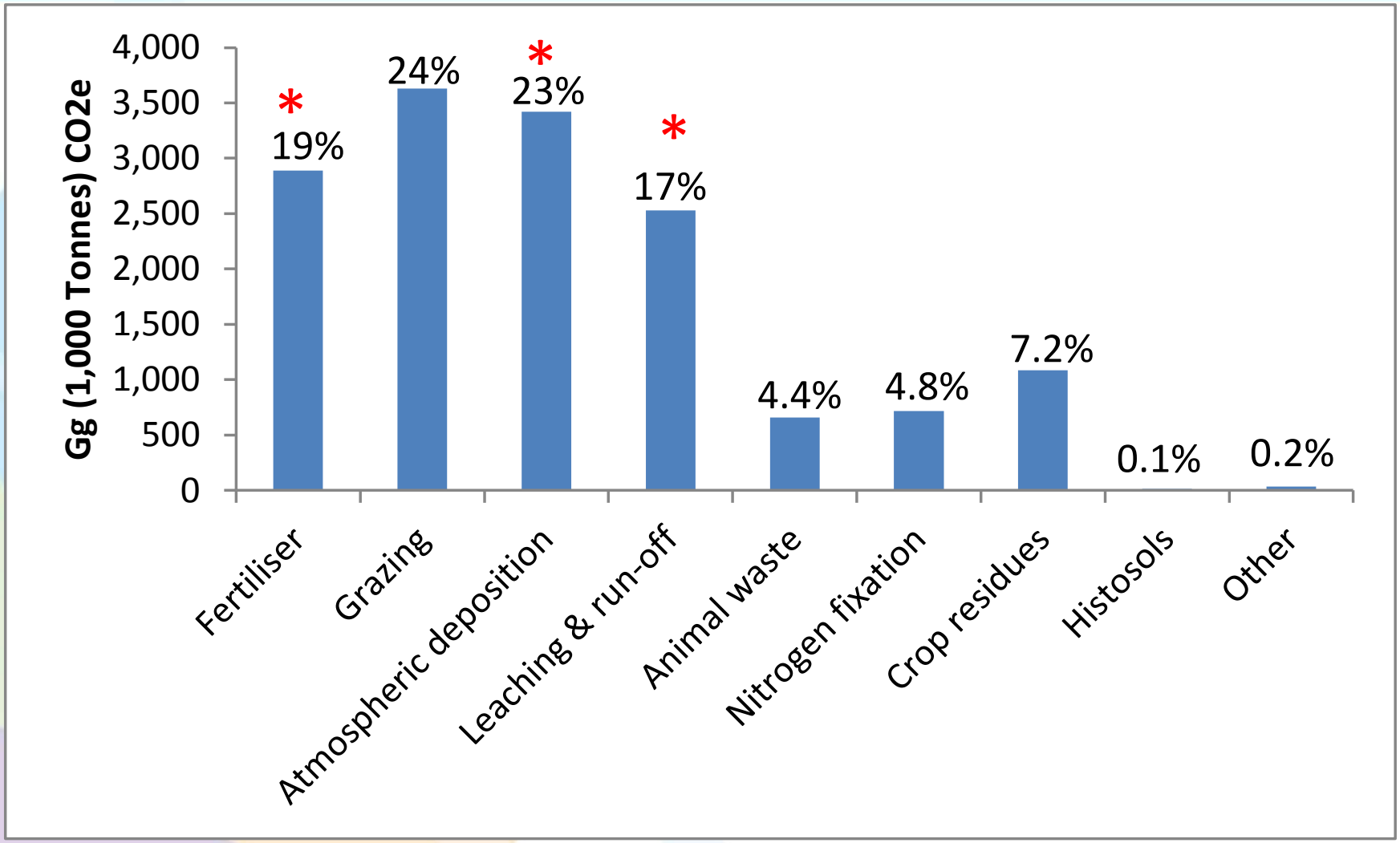
Nitrous oxide production in soils



Factors affecting N_2O:

- Soil N (NO_3)
- Soil Temperature
- Soluble C
- Soil pH
- Anaerobicity
  - WFPS
  - Compaction

Nitrous oxide from agriculture



National Agricultural Nitrous Oxide Research Program (NANORP)

- Yields can be increased while
  - Increasing NUE
- Rate, source, timing, placement, formulation
  - Matching fertilizer N rate & timing
    - With plant N demand
    - Based on residual soil N and
    - Soil organic matter and residues.
  - Formulation
    - Nitrification inhibitors and EEF

www.piccc.org.au

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