# Towards a complete nitrogen budget from subtropical dairy farms: three years of pasture nitrogen losses in surface runoff

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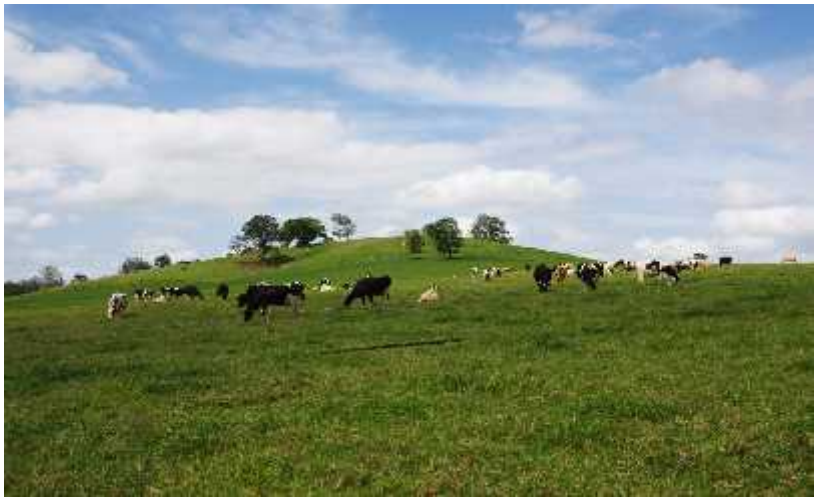

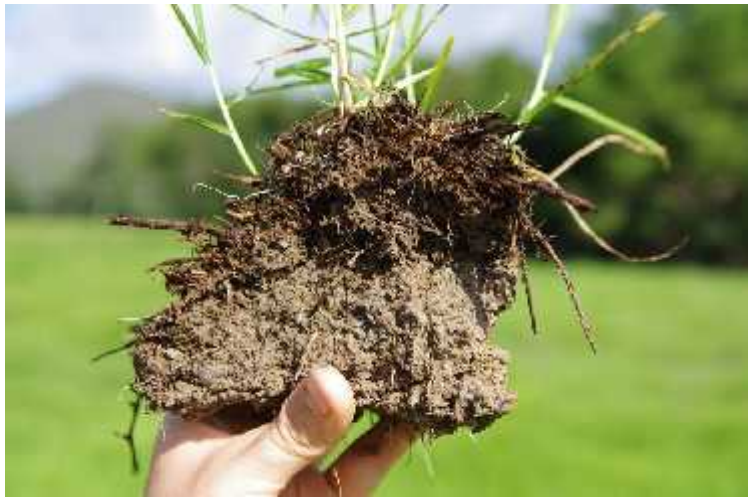

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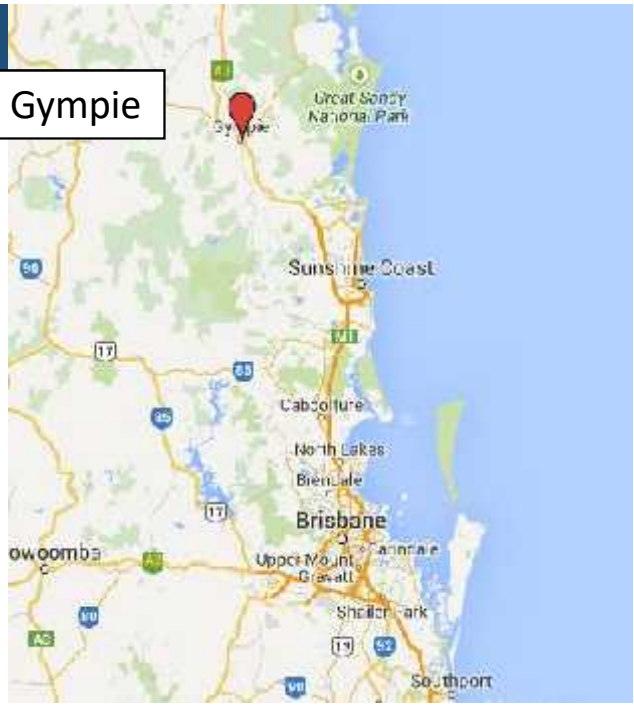
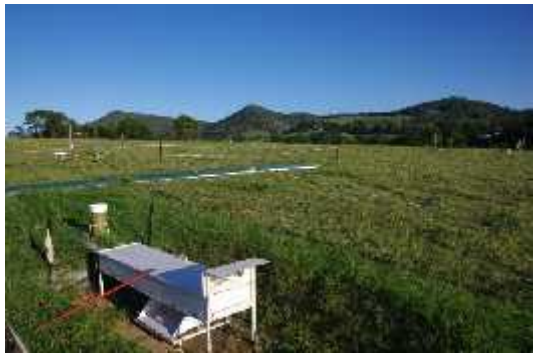
# Background and methods

- Dairy farm 10km due east of Gympie, Queensland on a 6º slope, 1130 mm MAP, 5.3% SOC
- Milks 240 head >40 years, N application >300 kg year$^{-1}$
- Two replicate tipping bucket run-off collectors for 3 years from June 2012 to July 2015.
- Bounded plots 32 m long with a 12 m wide collector
- Automated samplers collected water samples for $NO_3^-$, $NH_4^+$ and organic N



# Results and Outcomes

- 7 runoff events over 3 years: annual N loss = 7.7 kg N $ha^{-1}$
- largest → drought followed by flood in Jan 2013
  - daily rainfall >230 mm, 200 mm runoff
  - N loss >16 kg N $ha^{-1}$, 84% as $NO_3^-$
  - <4.5 kg N loss from next two years despite large runoff due to summer pasture growth and limited soil $NO_3^-$
- Total N loss estimated at 120 kg N $yr^{-1}$ (Rowlings et al 2016) → runoff **not** a major loss pathway