

Meeting nutrient loss targets on Rotorua dairy farms: 2014-2015 results from Parekarangi



= project researcher, led by Dr Ledgard, 2011-2016

SFF co-funders 2011-2014, Collective initiated, + in-kind

Ministry for Primary Industries
Manatū Ahu Matua



Bay of Plenty
REGIONAL COUNCIL



2015 co-funders



Farm system trial with simulated farmlets, 2 treatments:

1. Nil-N fert
 2. Plus-N, 140-160 kgN/ha/yr, same as main farm, nil winter N
- 6 paddocks per treatments, 25 suction cup samplers each
 - Regular leachate and pasture sampling
 - Drainage estimated (Woodward et al, 2001), lysimeter checked on-site
 - Data analysis, OVERSEER® comparison

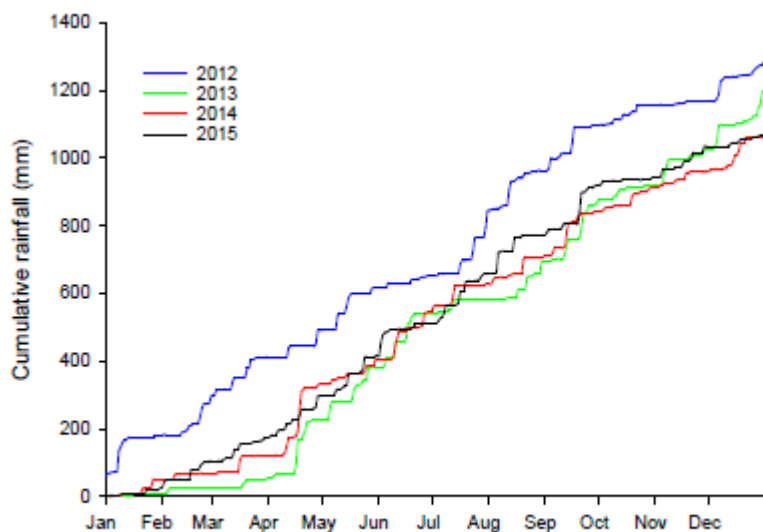


Figure 1. Cumulative annual Rotorua rainfall 2012-2015 (NIWA station 1770).

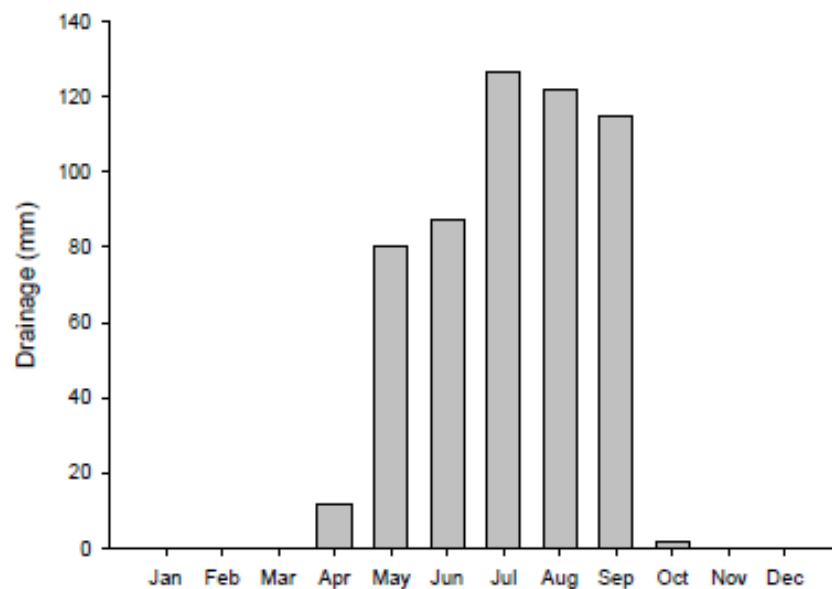
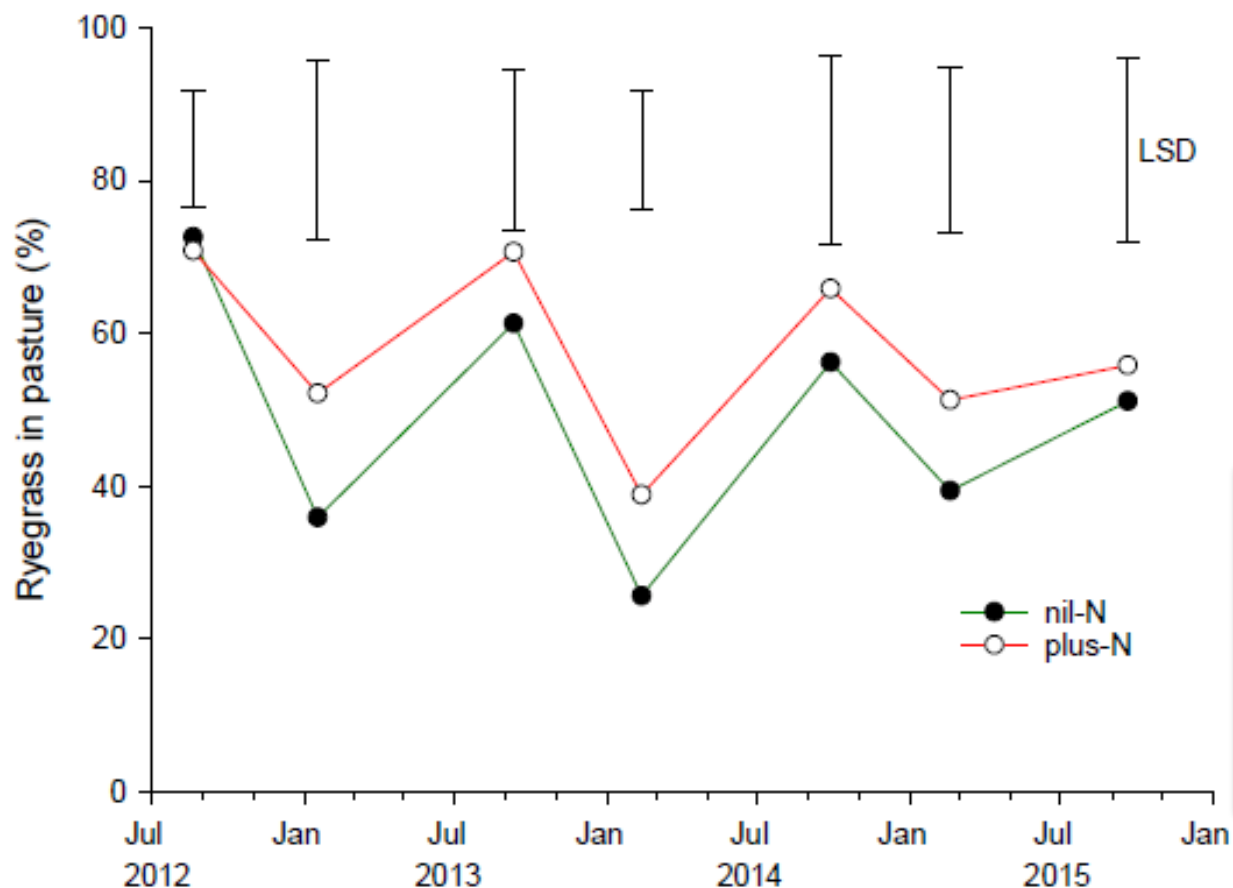


Figure 2. Monthly drainage at Parekarangi during 2015.

Pasture results

| N content of mixed pasture samples as % of dry weight | | |
|---|----------|-----------|
| Treatment | Feb 2015 | Sept 2015 |
| Nil-N | 2.62 | 3.79 |
| Plus-N | 2.80 | 4.50 |
| Least significant difference | 0.16 | 0.99 |



Pasture ryegrass content 2012 - 2015

Error bars are least significant difference (LSD) at $P < 0.05$

Pasture production 2015:

Nil-N 8.0 t DM/ha

Plus-N 9.2 t DM/ha

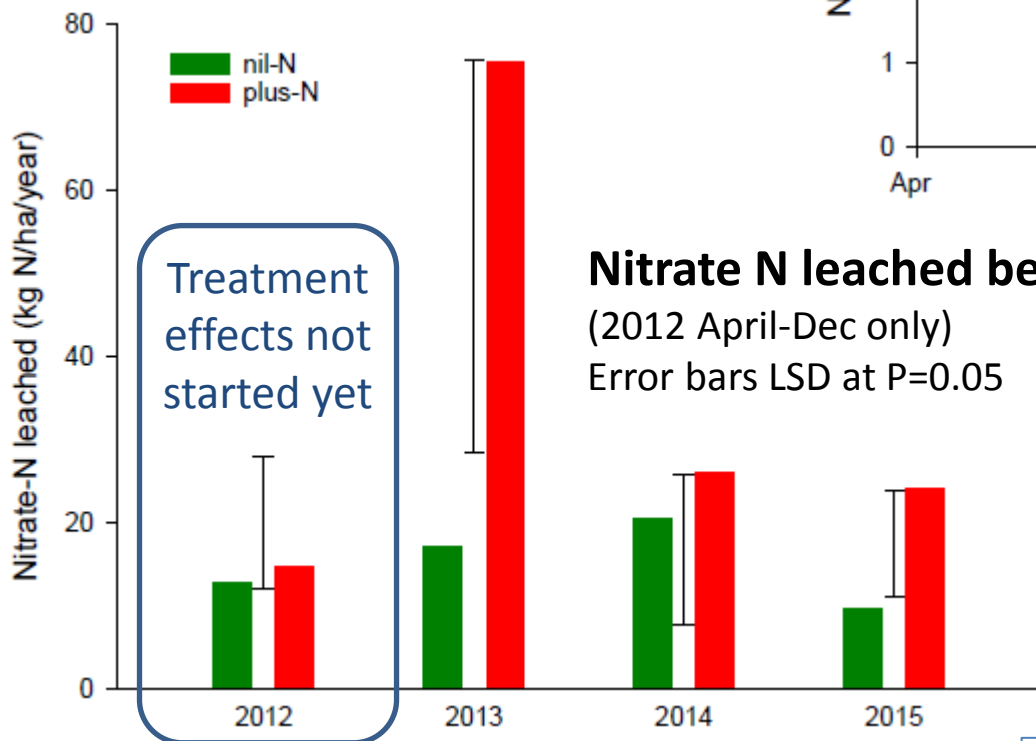
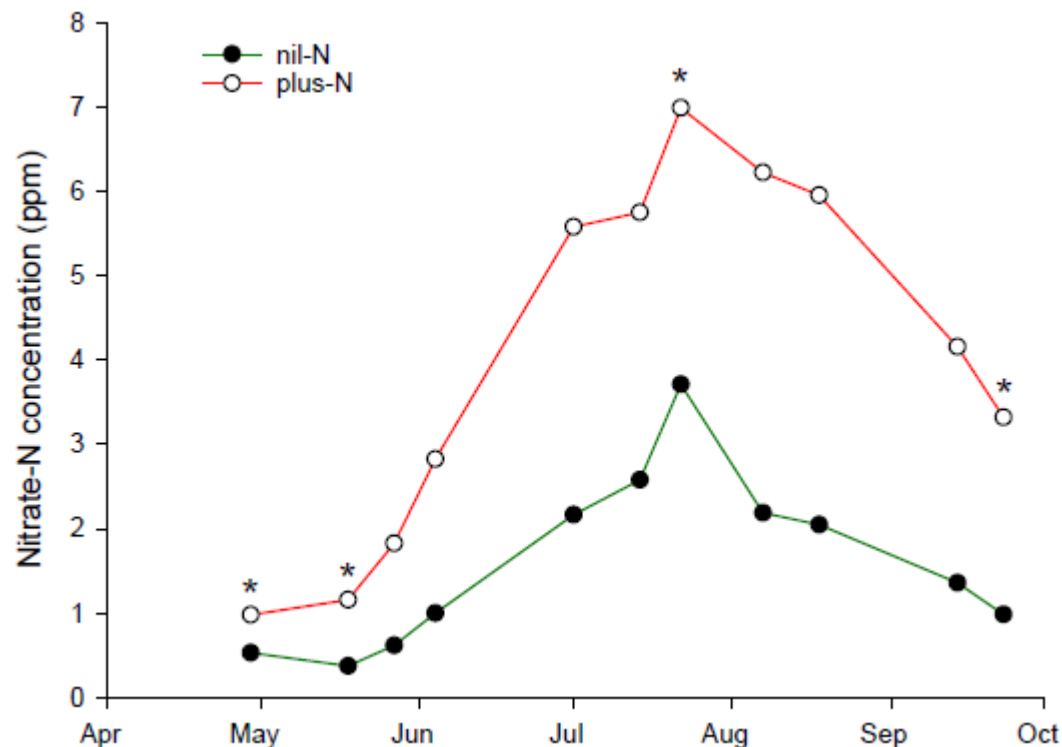
No statistically significant difference at $P < 0.05$

FYI: some cuts had sig. diff's, noisy pre/post grazing plate data; measure of pasture intake rather than growth

Leaching results

2015 Nitrate N concentrations in drainage

Asterisks indicate significant differences at $P < 0.05$



Nitrate N leached below 60cm

(2012 April-Dec only)

Error bars LSD at $P = 0.05$

| | Measured | OVERSEER 6.2.0 |
|--------|-------------------------------|----------------|
| | 2013-2014 average, kg N/ha/yr | |
| Plus-N | 51 | 58 |
| Nil-N | 19 | 40 |

Nil-N difference: partly nil-N pasture N content < OVERSEER assumes; partly <20 yrs as dairy farm



What next?

- Discuss results with AgResearch and DairyNZ
- Clarify OVERSEER validation/calibration scope
- Debrief with project participants
 - ~\$800k investment over 5 years...

