Rootzone reality:

network of fluxmeters measuring nutrient losses under cropping rotations

Presented by Matt Norris

utrient losses in New Zealand

me key changes over the past few years:

- Regulatory policies
- Access to markets

eater requirement for growers to demonstrate:

- That their production systems are sustainable
- That they are taking proactive steps to mitigate nutrient losses from their systems

se of tools:

ootzone Reality: Objectives

Provide growers and regional authorities with robust **measurements of N and P leaching losses** from cropping farms across **sites and seasons**

We need data!

- As a platform for **discussion**
- To determine whether GMP's are having the desired **impact**
- To **inform** models and policy

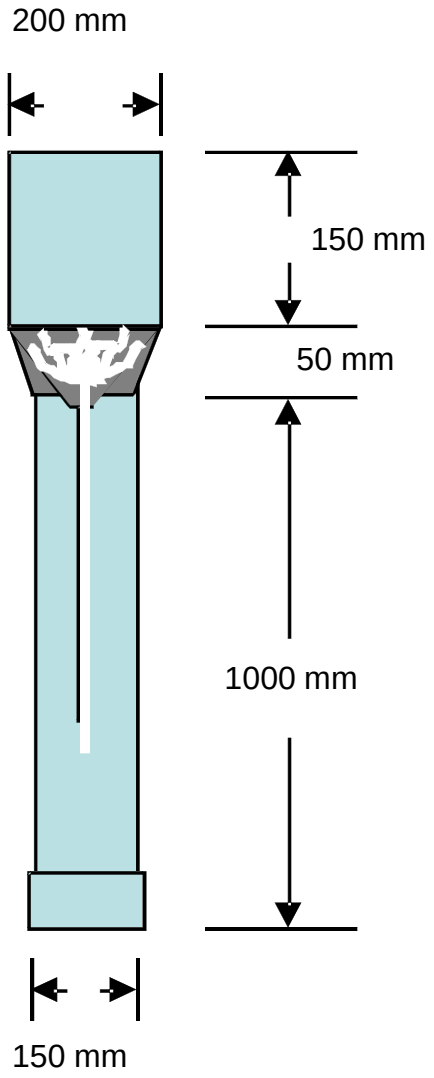
easuring N losses: the tension fluxmeter

What is a tension fluxmeter?

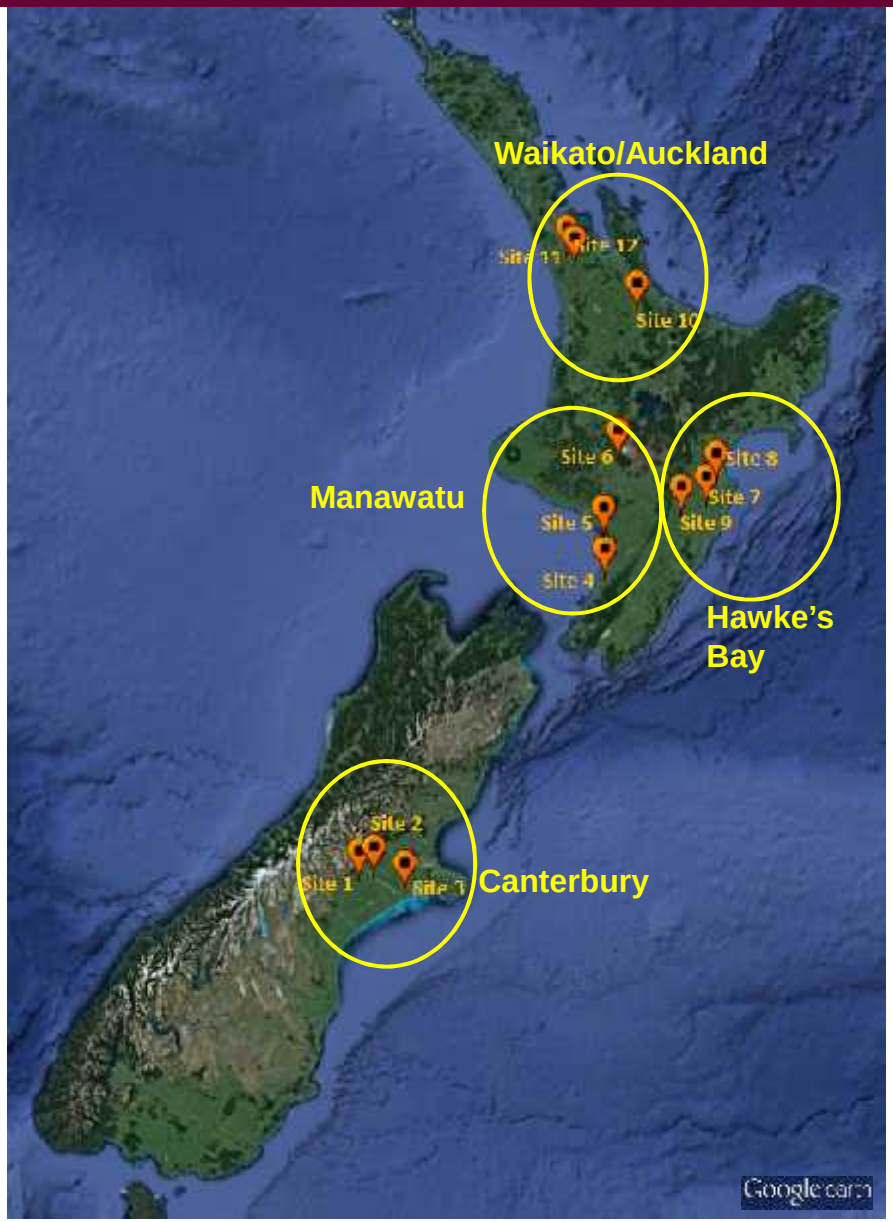
- » PVC pipe that intercepts drainage (stores ~14 L)
- » Filter zone to reduce sediment transfer
- » Passive wick
- » Drainage pumped to surface through plastic tubes

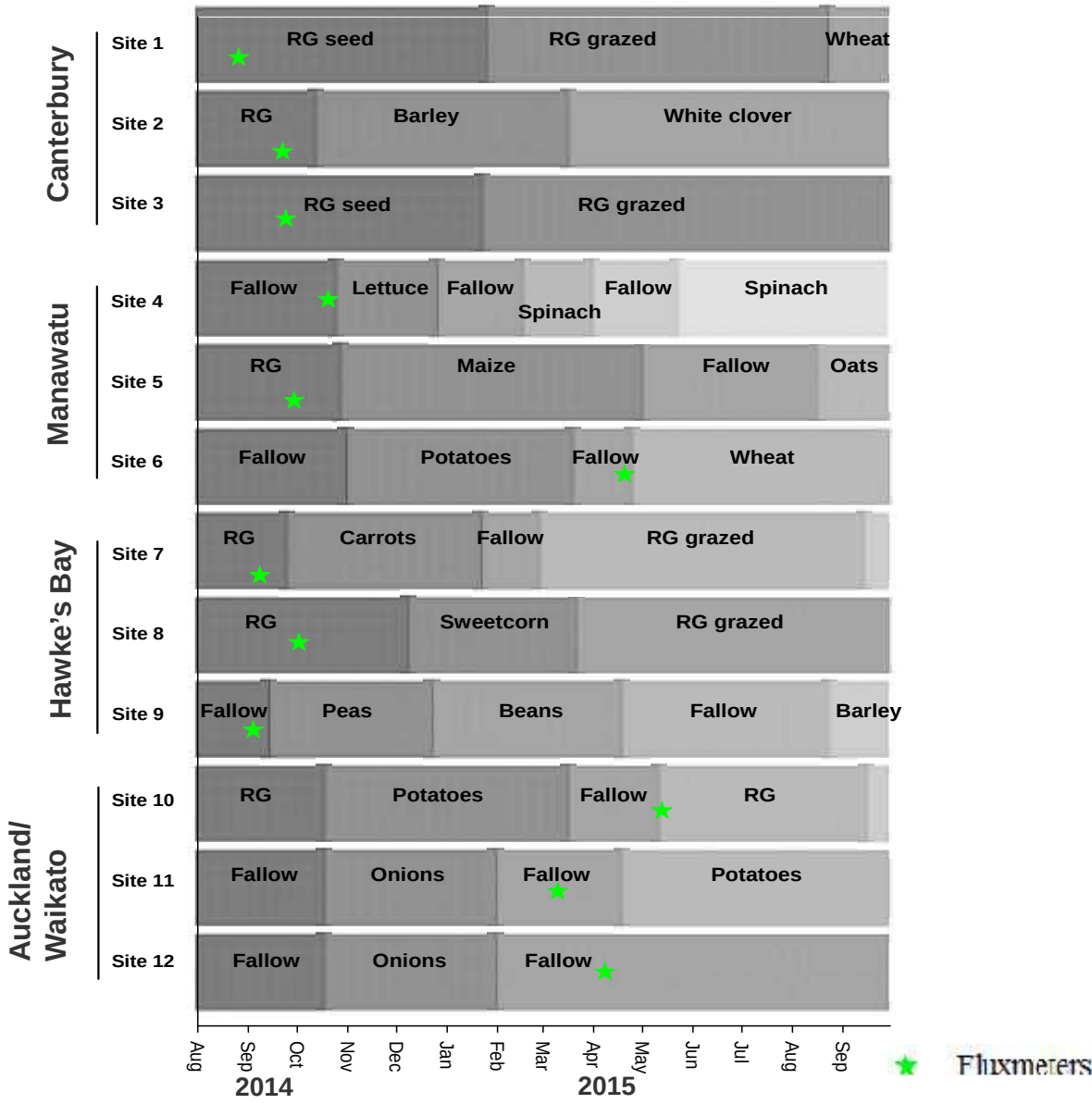
Top of fluxmeter is at a depth of 1.0 m

Drainage validated against a soil water balance



The fluxmeter network





ey measurements

Drainage

- Volumes
- Inorganic N (NO_3, NH_4)
- Phosphorus (DRP, total P)

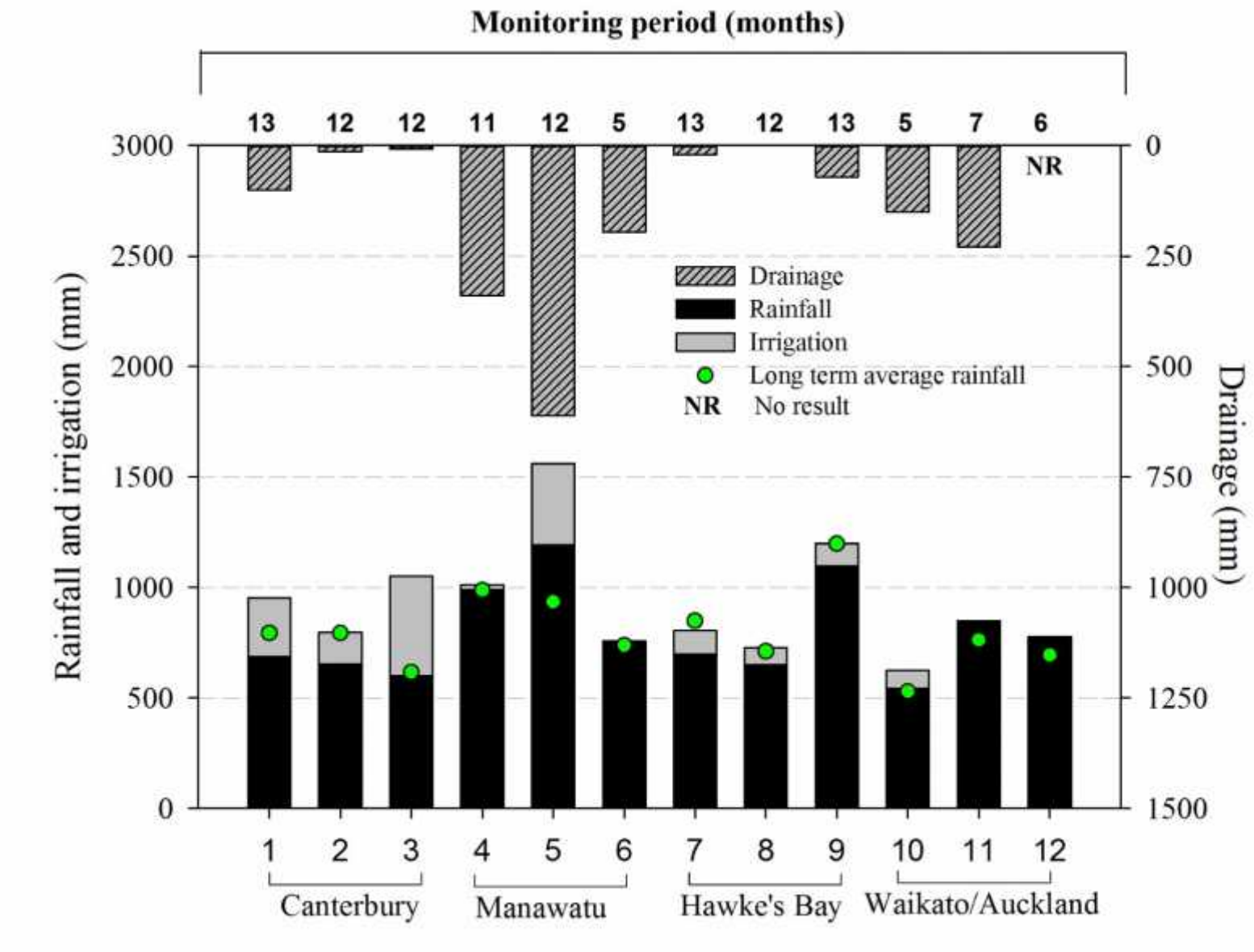
Crop biomass

- Dry matter
- N and P export

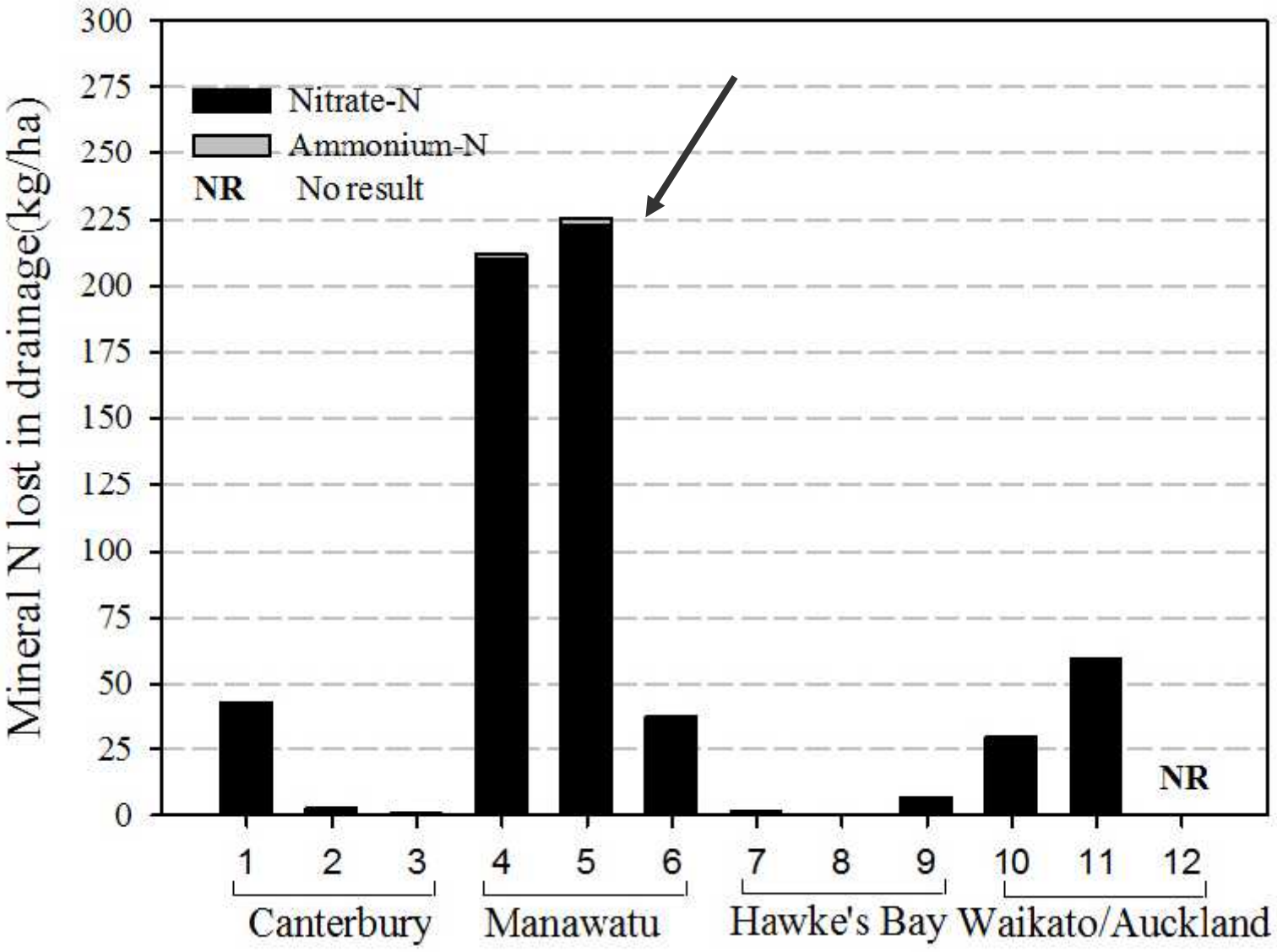
Soil fertility

- Range of N, P and C measures

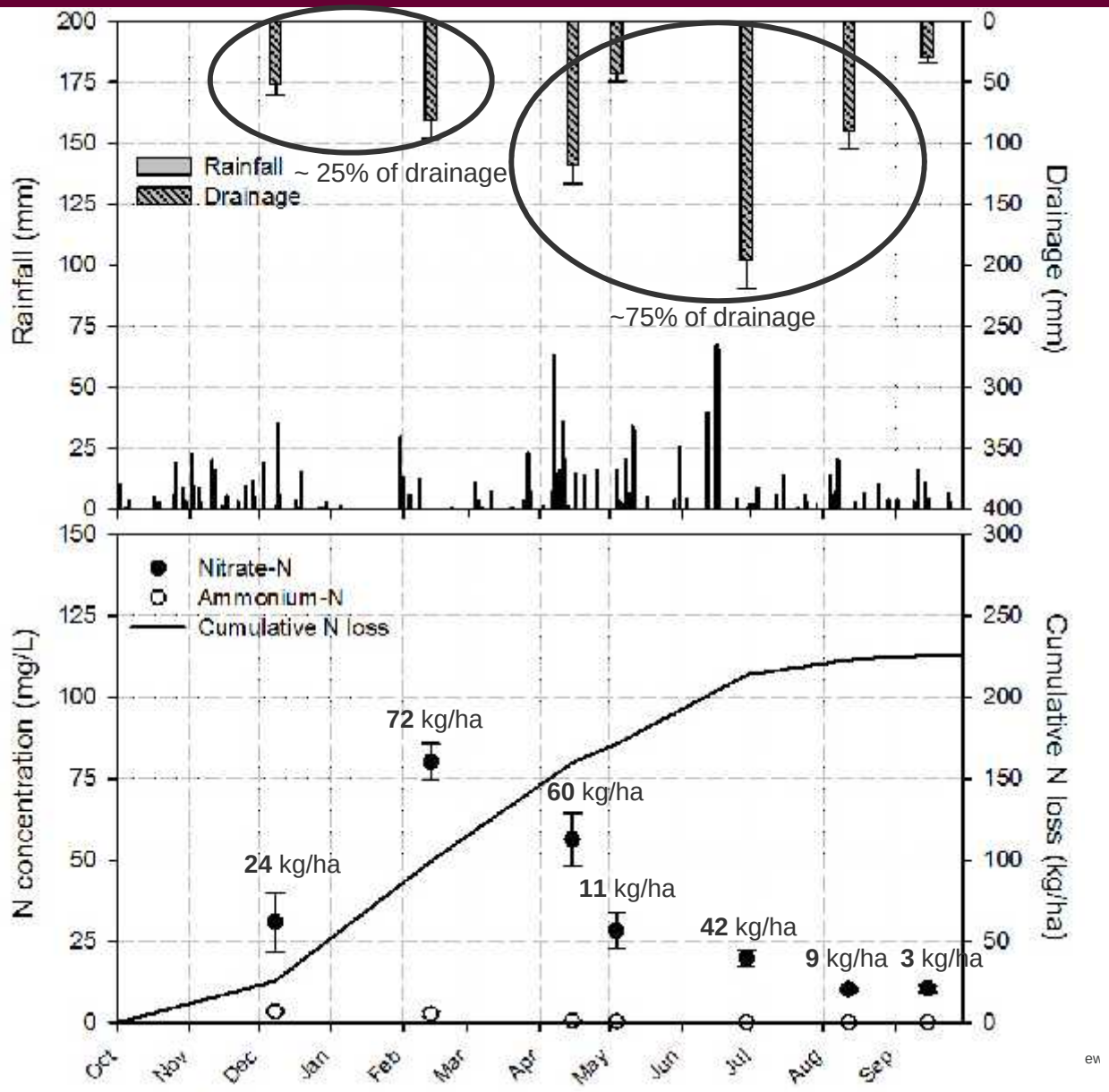
Measured drainage from Aug 14 – Sept 15



Measured N losses from Aug 14 – Sept 15



Measured N losses from Site 5



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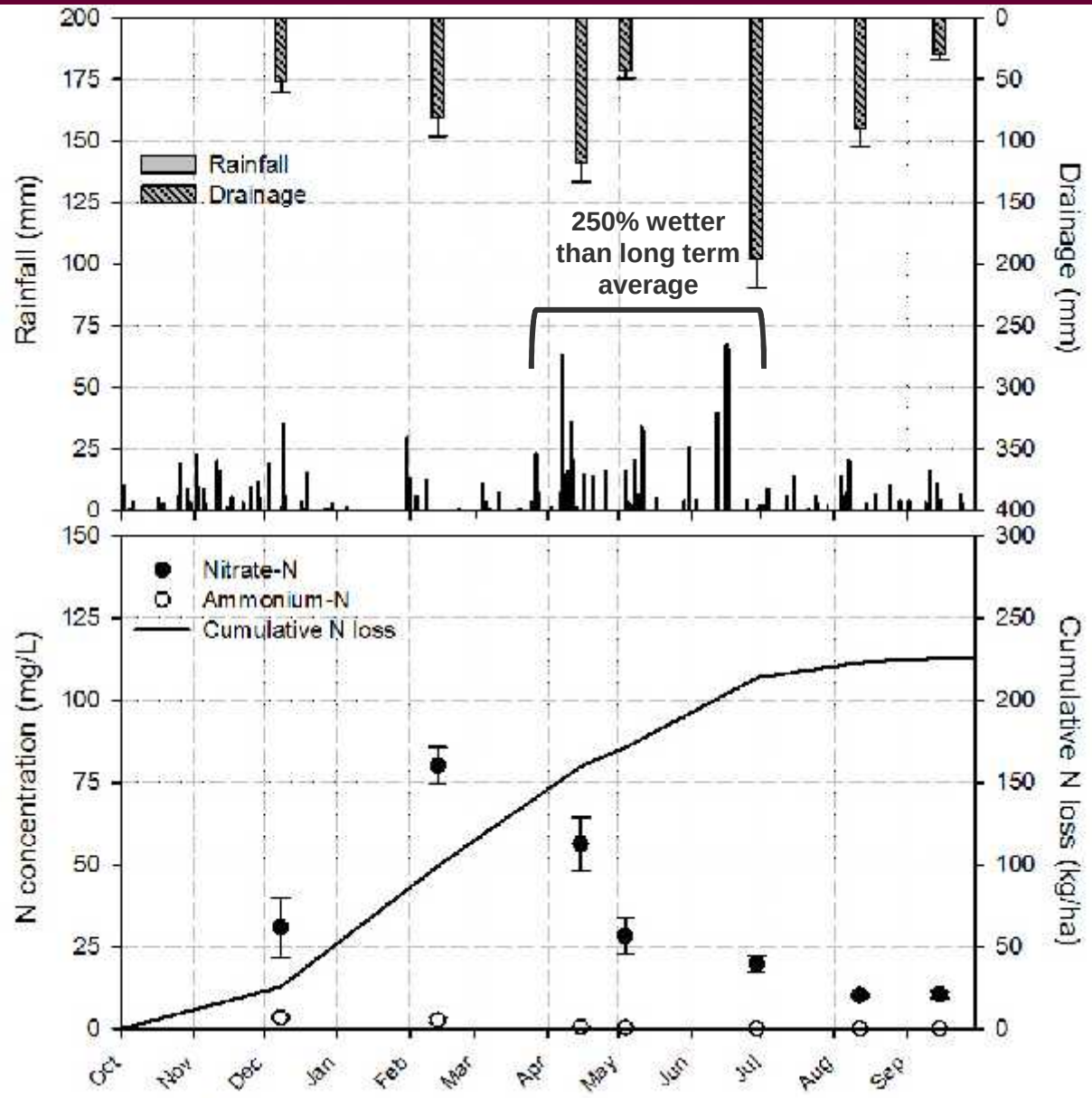

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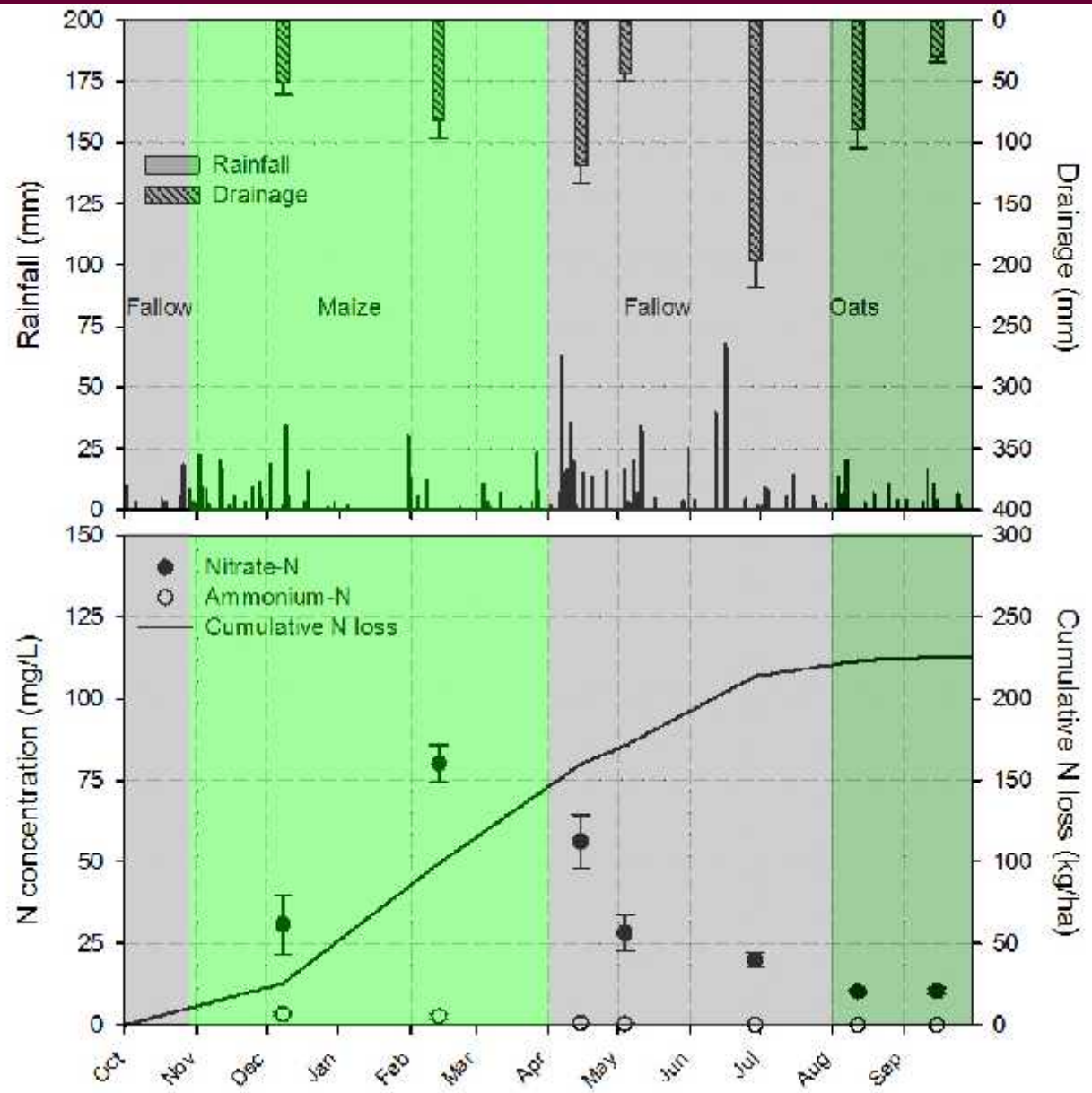

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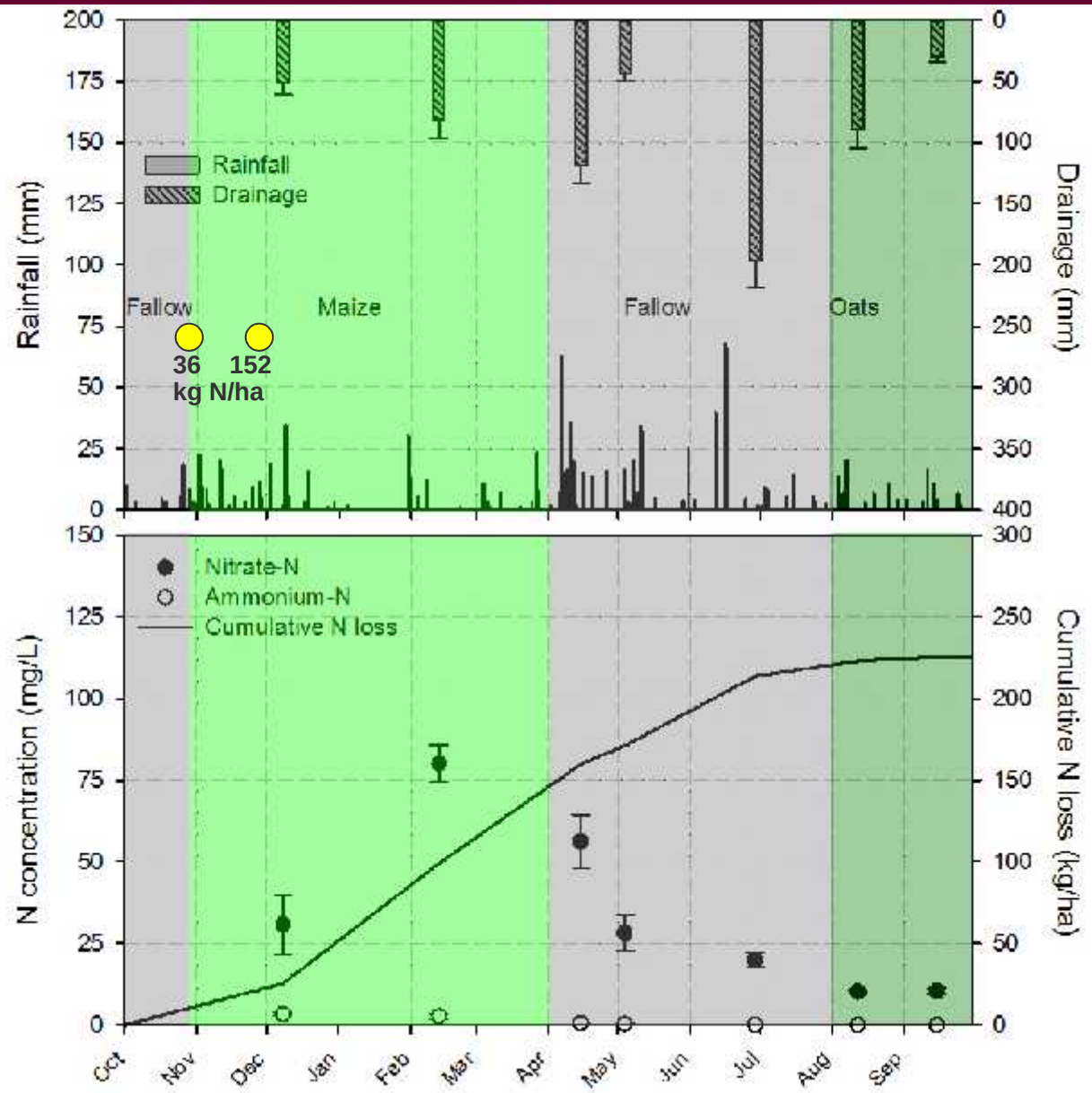

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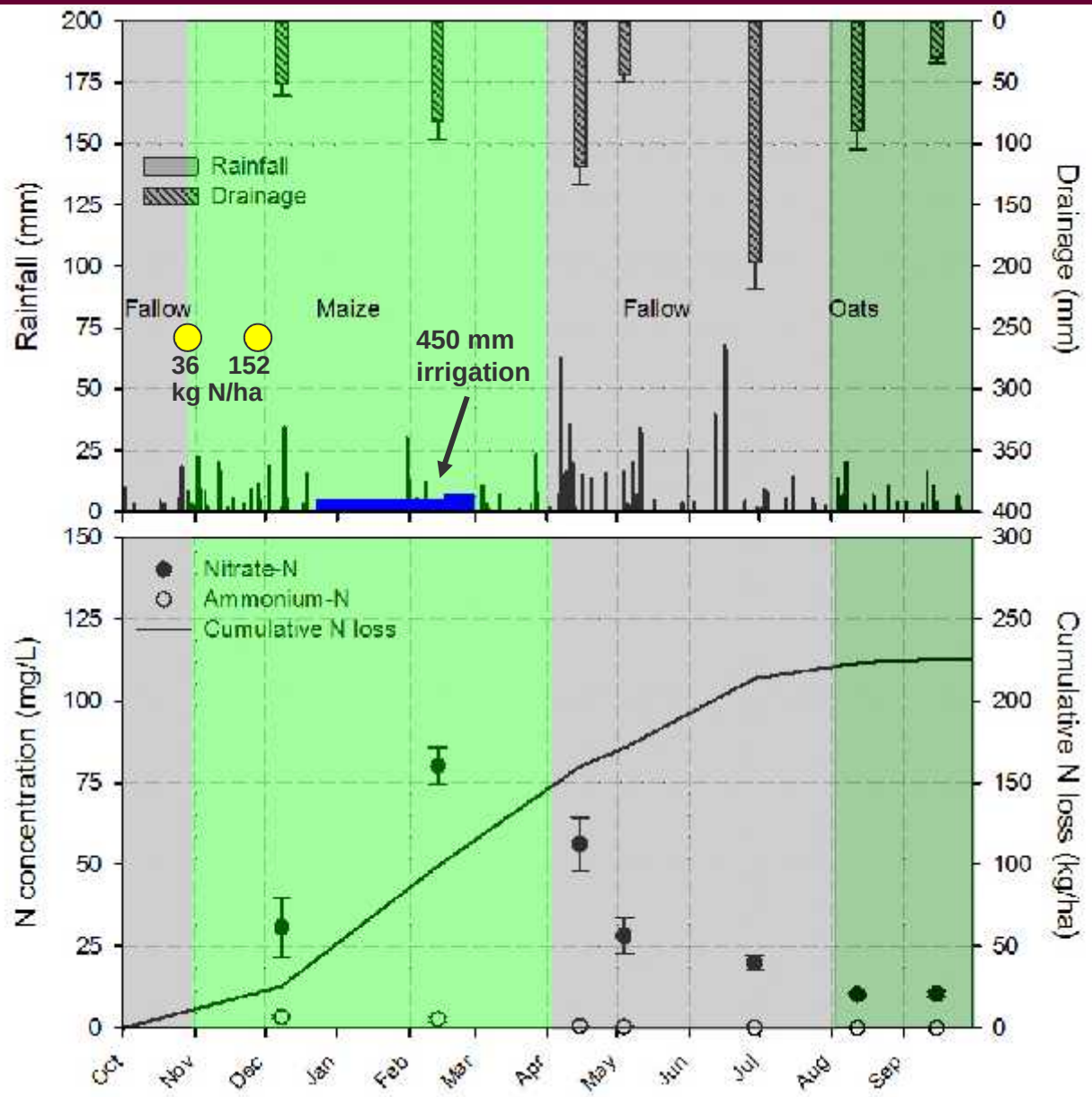

Overall synthesis from network to date

In Year 1:

- Captured drainage ranged from 0 to 611 mm
- N losses ranged from 0 to 226 kg N/ha

Winter and spring losses dominate

- Rainfall is a key driver
- In general irrigation is not resulting in significant drainage

Need to consider the long term patterns




Acknowledgements

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