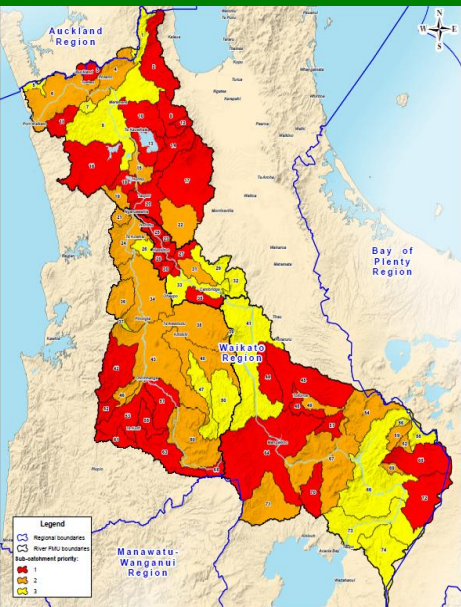


Healthy Rivers



4 contaminants:

- P, N, sediment E.coli

Nutrient Reference Point NRP:

- Dairy Nov 2020

3 areas 75th percentile

- Upper Waikato; Lower Waikato; Waipa

Farm Environmental Plan FEP:

- 2022: Farms above 75th %ile & Red zone
- 2025: Orange zone
- 2026: Yellow zone

Green House Gases (GHG)

NZ has committed to 30% reduction by 2030

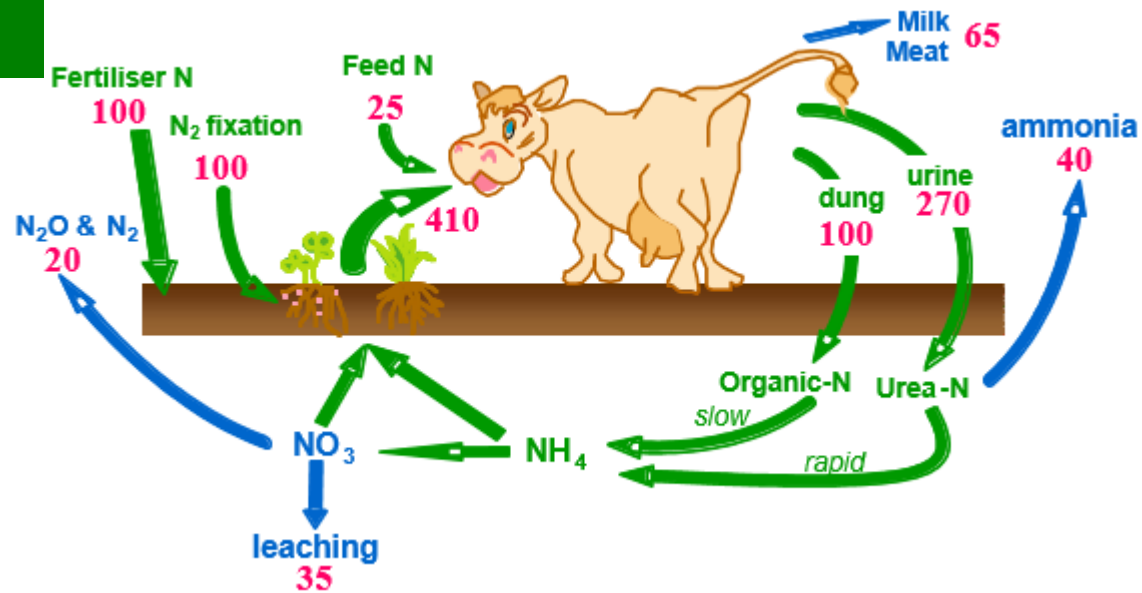


Mitigation Options

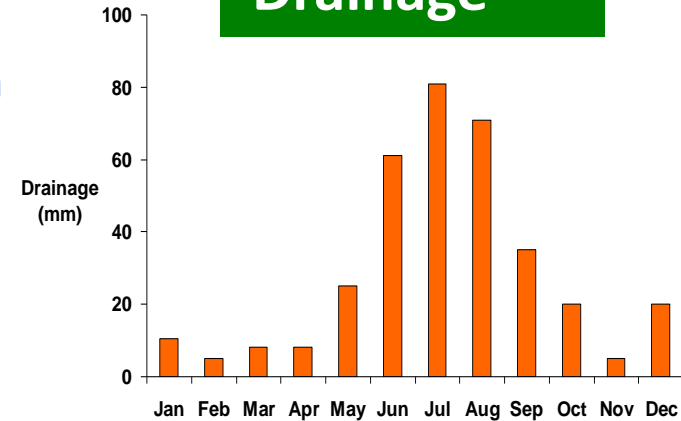


	↓ N Loss	↓ GHG	Profit
Less N Fertiliser	✓	✓	✓ for same Pasture Eaten
Less Feed Eaten:			
• Less N boosted feed	✓	✓	✓ If have good cost control
• Less Imported feed	✓	✓	✓ Cull cow premium
• Early autumn culling	✓	✓	✓ High pasture skill/ monitoring
• Same milk less cows (challenge to replicate)	✓	✓	Depends on cost of lower N feed
• Lower N% of feeds	✓	many feeds ✓	✓
• ↓ Replacements	✓	✓	✓
Salt	✓	small ✓?	✗
Plantain: ↓ N leached depends on % plantain	✓	✓?	✗ cost to maintain % in sward
Capture N: Adds management complexity	✓	✗	✗ Cost capital & maintenance

N Cycle



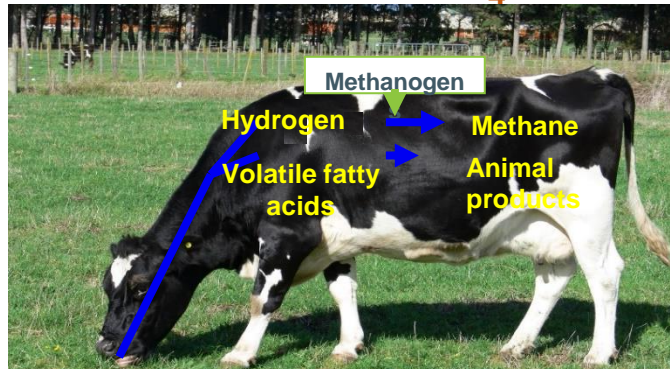
Drainage



N Surplus = N Inputs – N Outputs

- Strong driver N leaching
- Management Control

Methane CH₄



Nitrous Oxide N₂O



Methane (CH₄) 66%

- Rumen 97%; Dung and FDE 3%

Nitrous Oxide (N₂O) 19%

- Excreta 75%; N fertiliser 22%; FDE 3%

Carbon Dioxide (CO₂) 15%

- Feeds 46%; N fertiliser 30%; P K S Fert. 4%; Lime 5%; Fuel 5%; Electricity 10%

Manage dry matter intake

Manage nitrogen surplus