Grounds for Growth 2025

Soil and pasture biodiversity event

Kate Mirams

Dairy Farmer, Gippsland

Dairy Australia

Dairy Australia

Our journey farming for soil life & plant diversity while trying to increase profitability

Stopped

- Cultivating
- Fungicide on seed
- Pesticide on seed
- Granular Nitrogen
- Superphosphate
- Muriate Of Potash
- Bare ground
- Short plant recovery time

Dairy Australia

Started

- Multi species
- Top up vs resow
- Microbes on seed
- Microbe friendly minerals
- Address macro and micro’s
- Managing for total ground cover
- Farming for fungi

Dairy Australia

Year 0

- Urea granular 80kg/ha 6 times/year after grazing (220kgN/ha)
- 125 kg/ha Pasture Boosta/ha
- Super & muriate of potash
- Seed coated with fungicide & pesticide
- Sown with DAP

Year 1

- Dropped Urea to 60kg/ha 6 times/year after grazing
- 1 kg/ha Fulvic Acid Powder sprinkled onto the Urea as C source
- 165kgN/ha

Year 2

- Skipped urea on some rounds to let clovers get going Continued 1 kg/ha Fulvic Acid Powder sprinkled onto the Urea
- Swapped out MOP and in Potassium Sulphate
- 150kgN/ha

Year 3

- Tow & Fert – moved to liquid N applications with Carbon
- Ceased all solid N application except SOA in autumn
- Swapped out MOP and in Potassium Sulphate
- Sow bare seeds
- 76 kgN/ha

Year 4

- Tow & Fert – Bio-humic soil drench with trace minerals
- Soil testing for Total and Available Nutrients
- Using the Biological Sequence to address elements
- Apply Lime, Gypsum, Guano, SOA, SOP, B, Cu, Mo, Mg, S mixed in a compost carrier – “Corrective”
- 29 kgN/ha

The Plant Biological Sequence

Hugh Lovel

Sulphur > Boron > Silicon > Calcium > Nitrogen > Magnesium > Phosphorus > Carbon > Potassium

Year 5

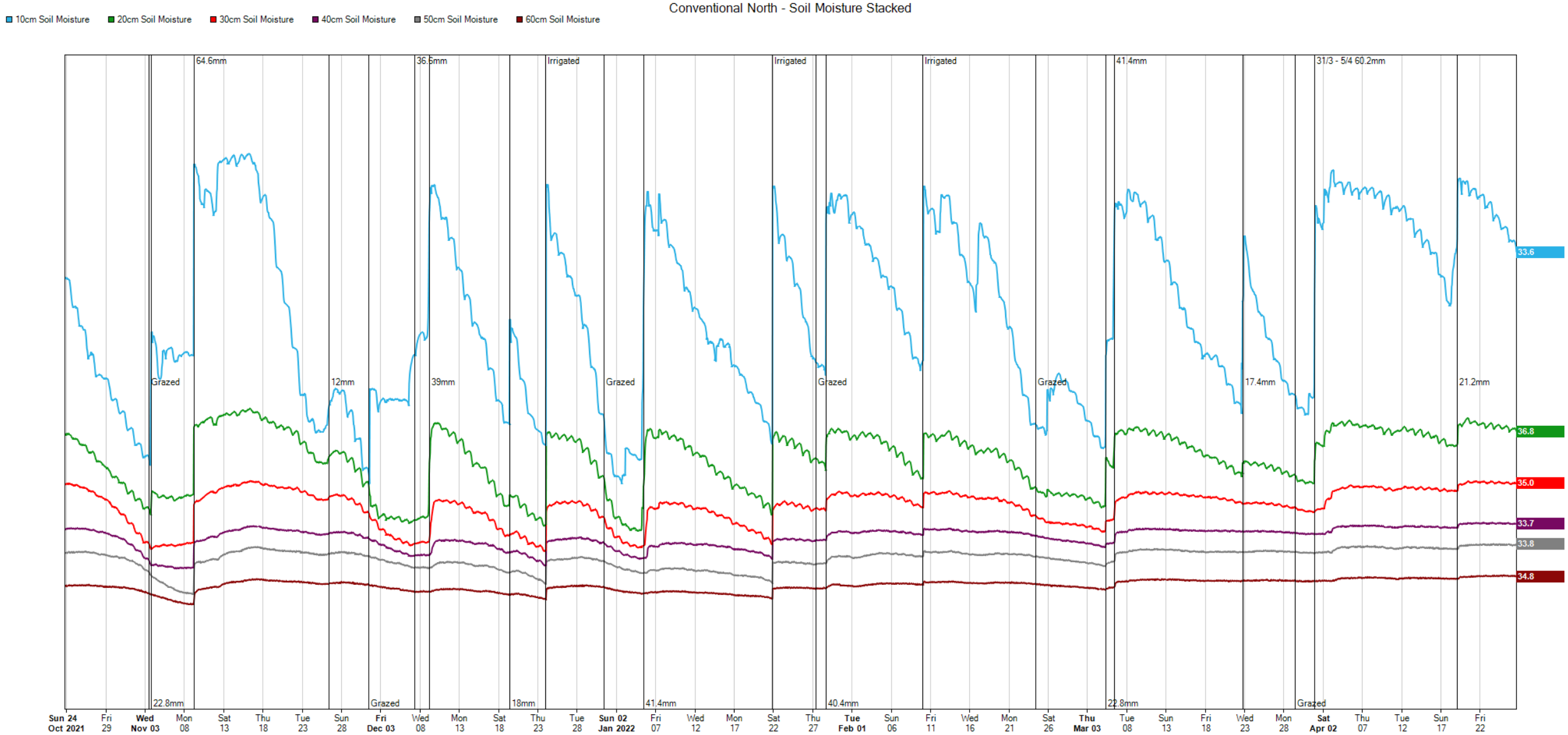
- Tow & Fert – Bio-humic soil drench with trace minerals
- Add in Fish Hydrolysate, Calcipril, SOP
- Seeds coated with Nutrisoil, Fungal spores, minerals
- Swapped out DAP, sow with SMS Guano
- “corrective” lime, gypsum and minerals with compost
- 20 kgN/ha

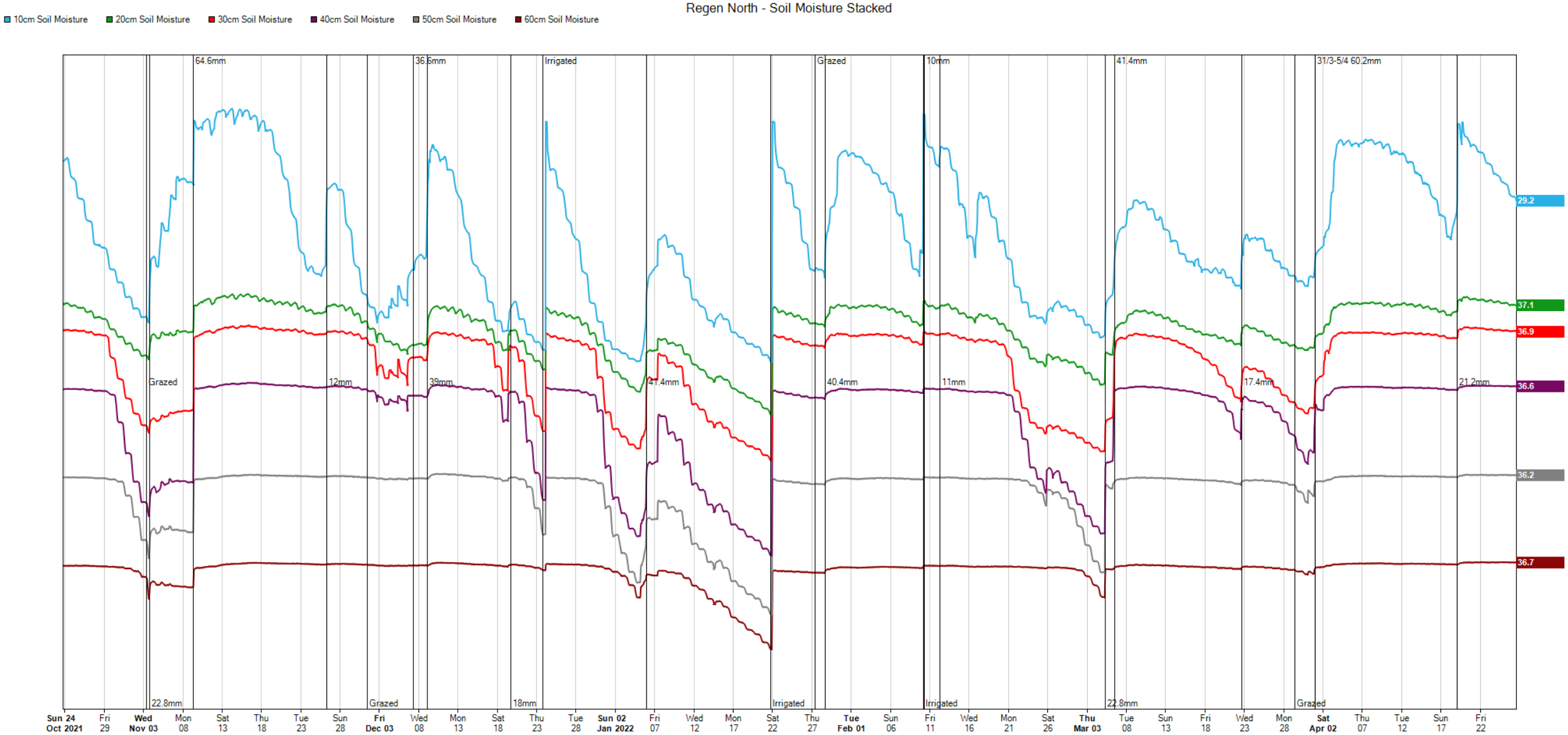
Year 6

- Tow & Fert – Bio-humic soil drench with trace minerals
- Add in BAM microbes
- Seeds coated with Nutrisoil, Fungal spores, minerals
- Adding BAM to effluent pond – shandy with irrigation
- Brewing BAM on farm
- By now 50% of the farm sown to multi species

What are we seeing?

Roots so deep…

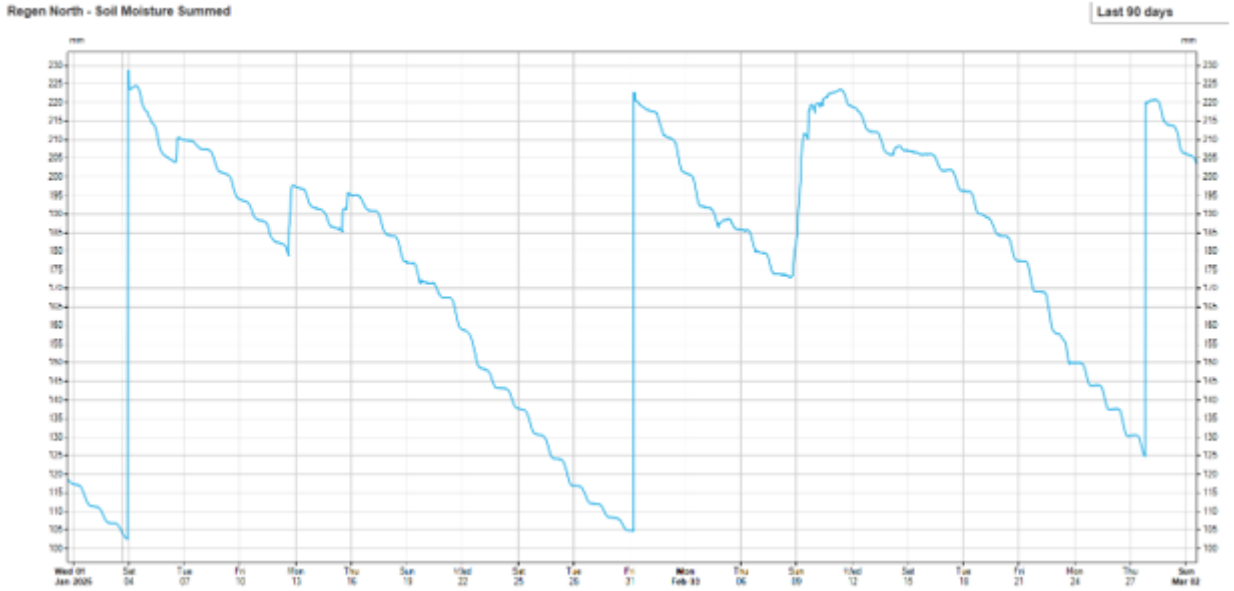

Conventional North - Soil Moisture Stacked
10cm Soil Moisture
20cm Soil Moisture
30cm Soil Moisture
40cm Soil Moisture
50cm Soil Moisture
60cm Soil Moisture
64.6mm
Grazed
22.8mm
12mm
36.6mm
39mm
Grazed
Irrigated
18mm
Irrigated
Grazed
41.4mm
Irrigated
Grazed
40.4mm
Irrigated
Grazed
41.4mm
17.4mm
22.8mm
31/3 - 5/4 60.2mm
21.2mm
Grazed
33.6
36.8
35.0
33.7
33.8
34.8
Sun 24 Oct 2021
Fri 29
Wed Nov 03
Mon 08
Sat 13
Thu 18
Tue 23
Sun 28
Fri Dec 03
Wed 08
Mon 13
Sat 18
Thu 23
Tue 28
Sun 02 Jan 2022
Fri 07
Wed 12
Mon 17
Sat 22
Thu 27
Tue Feb 01
Sun 06
Fri 11
Wed 16
Mon 21
Sat 26
Thu Mar 03
Tue 08
Sun 13
Fri 18
Wed 23
Mon 28
Sat Apr 02
Thu 07
Tue 12
Sun 17
Fri 22


Regen North - Soil Moisture Stacked
10cm Soil Moisture
20cm Soil Moisture
30cm Soil Moisture
40cm Soil Moisture
50cm Soil Moisture
60cm Soil Moisture
64.6mm
36.6mm
Irrigated
Grazed
10mm
41.4mm
31/3-5/4 60.2mm
Grazed
12mm
39mm
41.4mm
40.4mm
11mm
17.4mm
21.2mm
22.8mm
Grazed
18mm
Irrigated
Irrigated
22.8mm
Grazed
29.2
37.1
36.9
36.6
36.2
36.7
Sun 24 Oct 2021
Fri 29
Wed Nov 03
Mon 08
Sat 13
Thu 18
Tue 23
Sun 28
Fri Dec 03
Wed 08
Mon 13
Sat 18
Thu 23
Tue 28
Sun 02 Jan 2022
Fri 07
Wed 12
Mon 17
Sat 22
Thu 27
Tue Feb 01
Sun 06
Fri 11
Wed 16
Mon 21
Sat 26
Thu Mar 03
Tue 08
Sun 13
Fri 18
Wed 23
Mon 28
Sat Apr 02
Thu 07
Tue 12
Sun 17
Fri 22

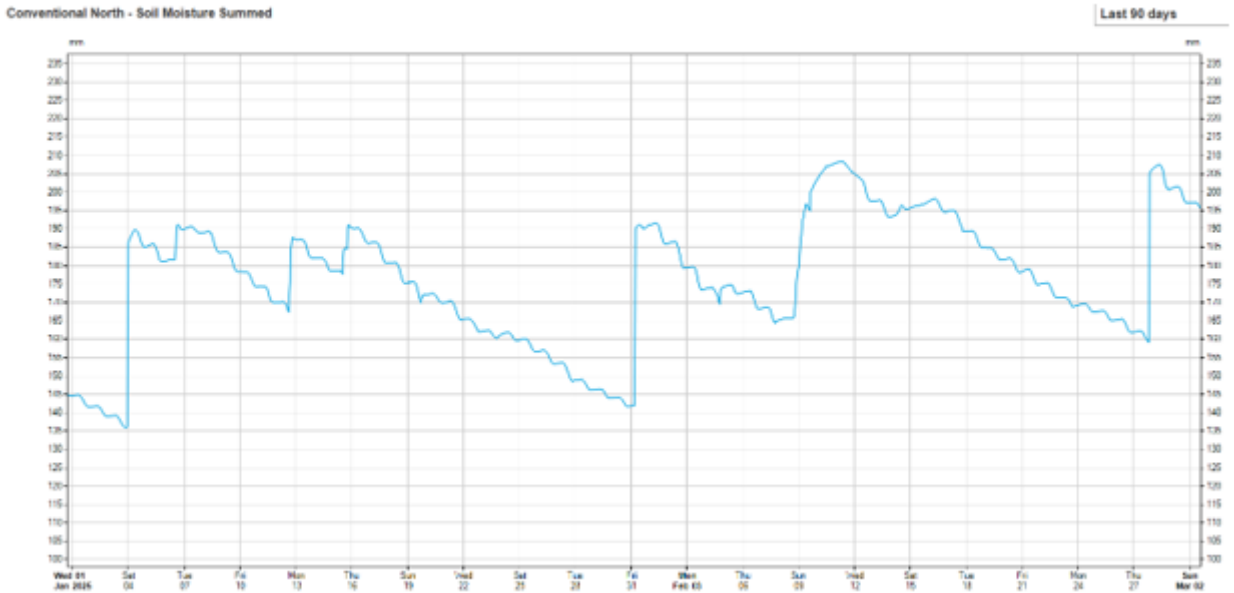
Soil holding more water?

This graph sums soil moisture across all sensor depths to give an aggregate view of the soil profile.

Regen – average
102mm at each refill



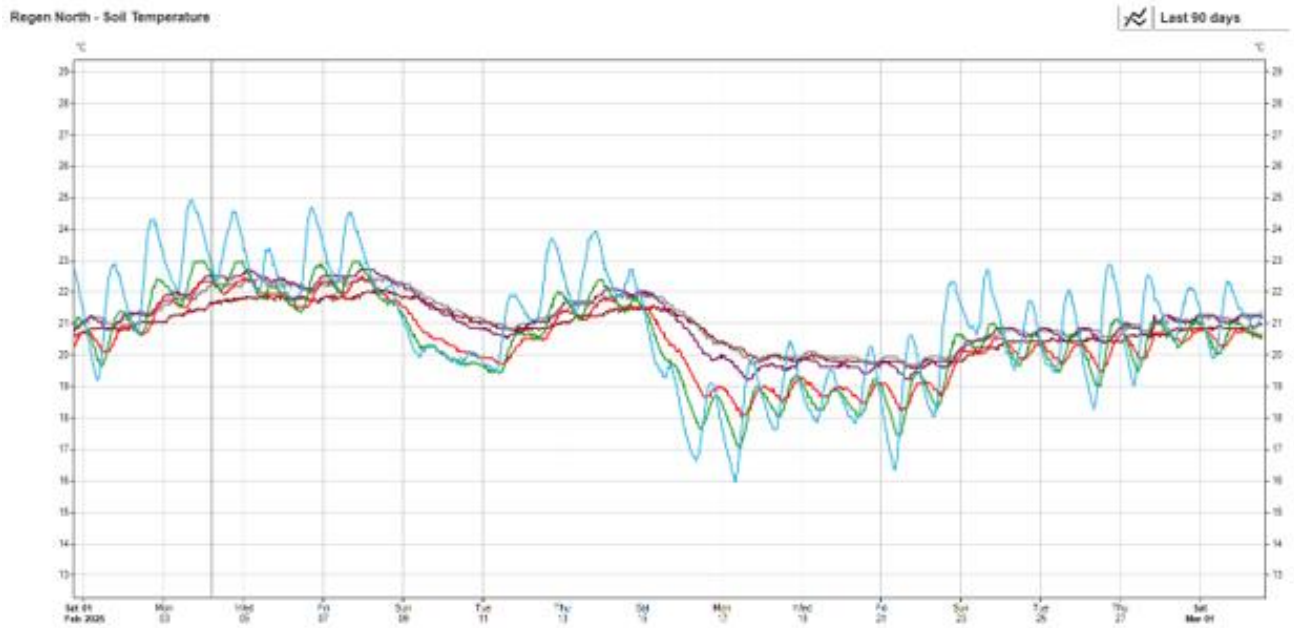
Conventional –average
48mm at each refill



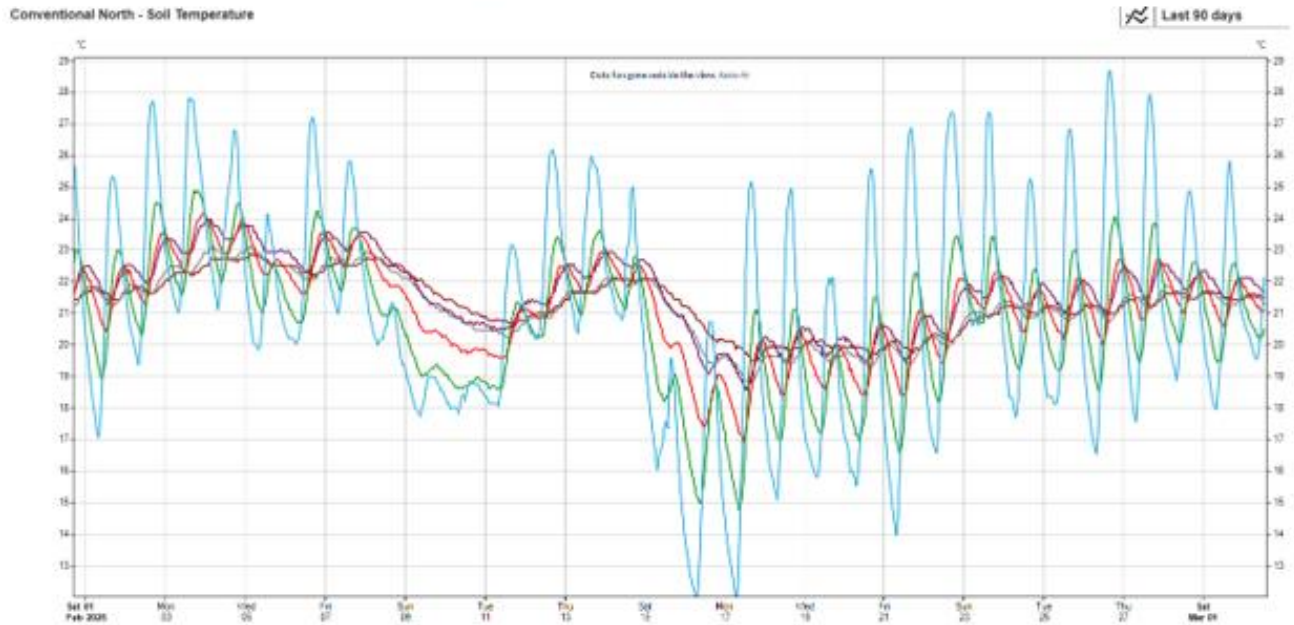
Soil is cooler, and warmer…

Diurnal temperature variation

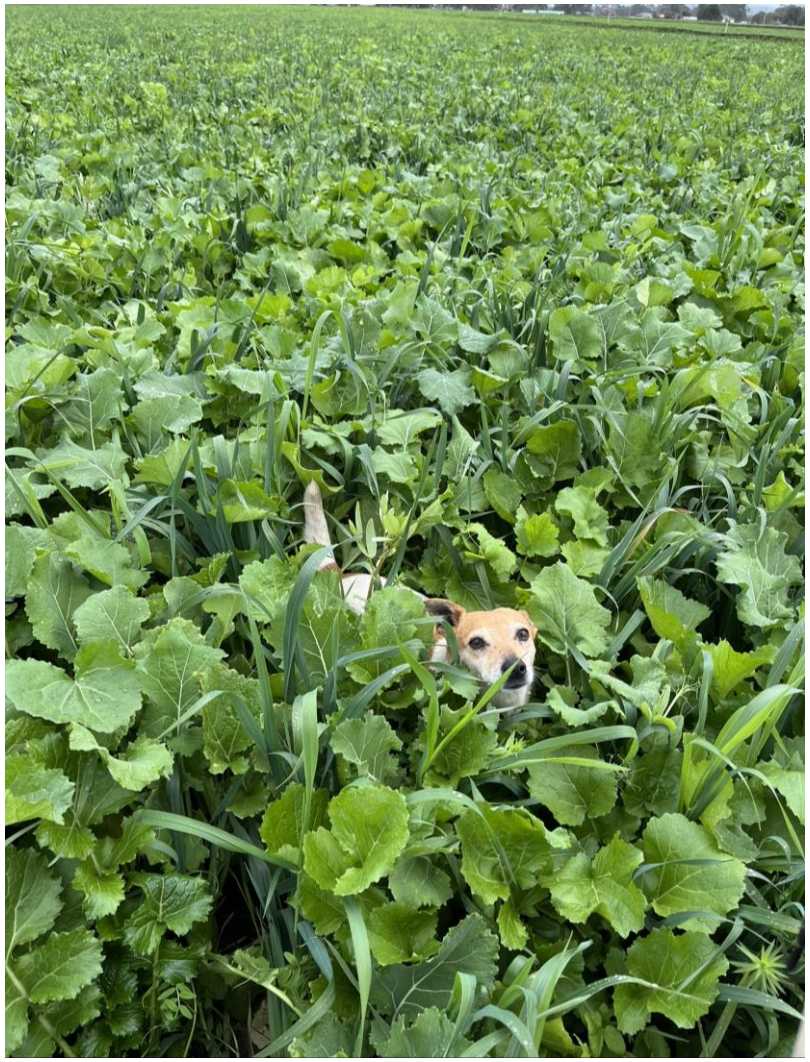
Regen – temperature range 16 to 25 degrees = 9 degrees



Conventional temperature Range 12 to 28.5 degrees = 16.5 degrees



Fungi getting going…



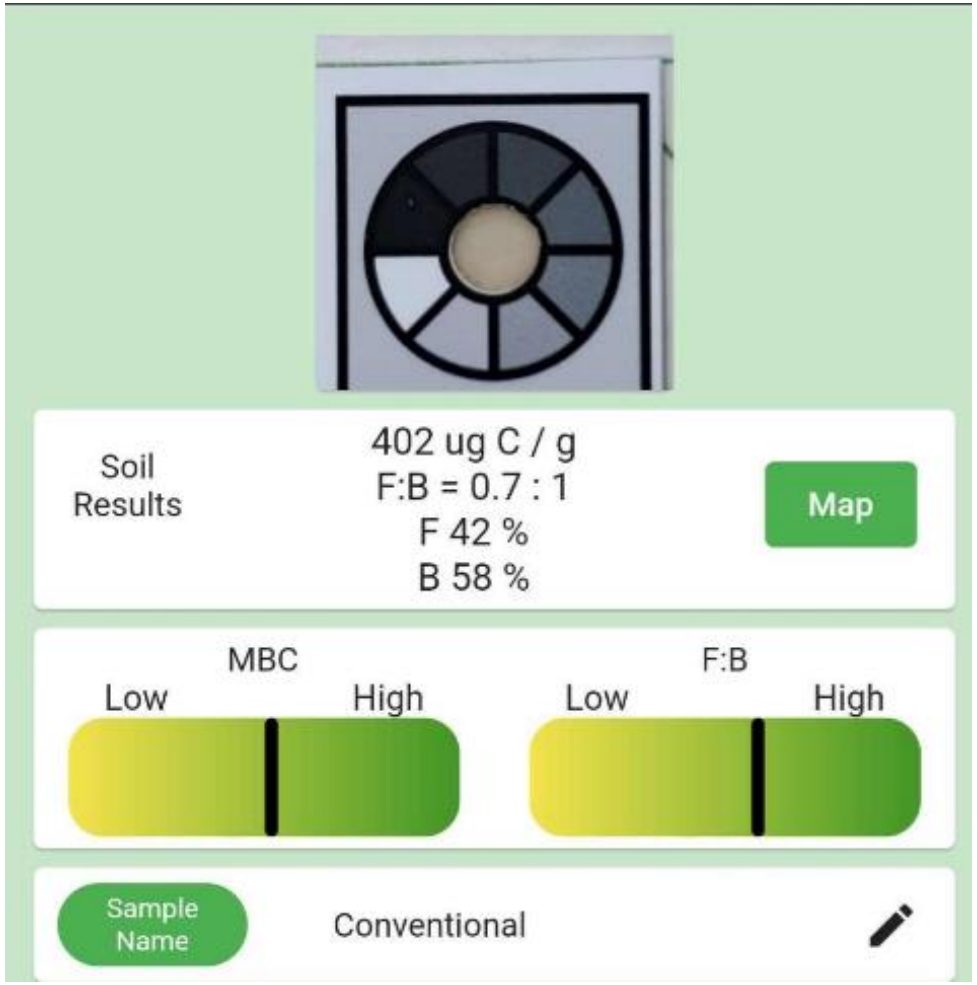
Dairy Australia

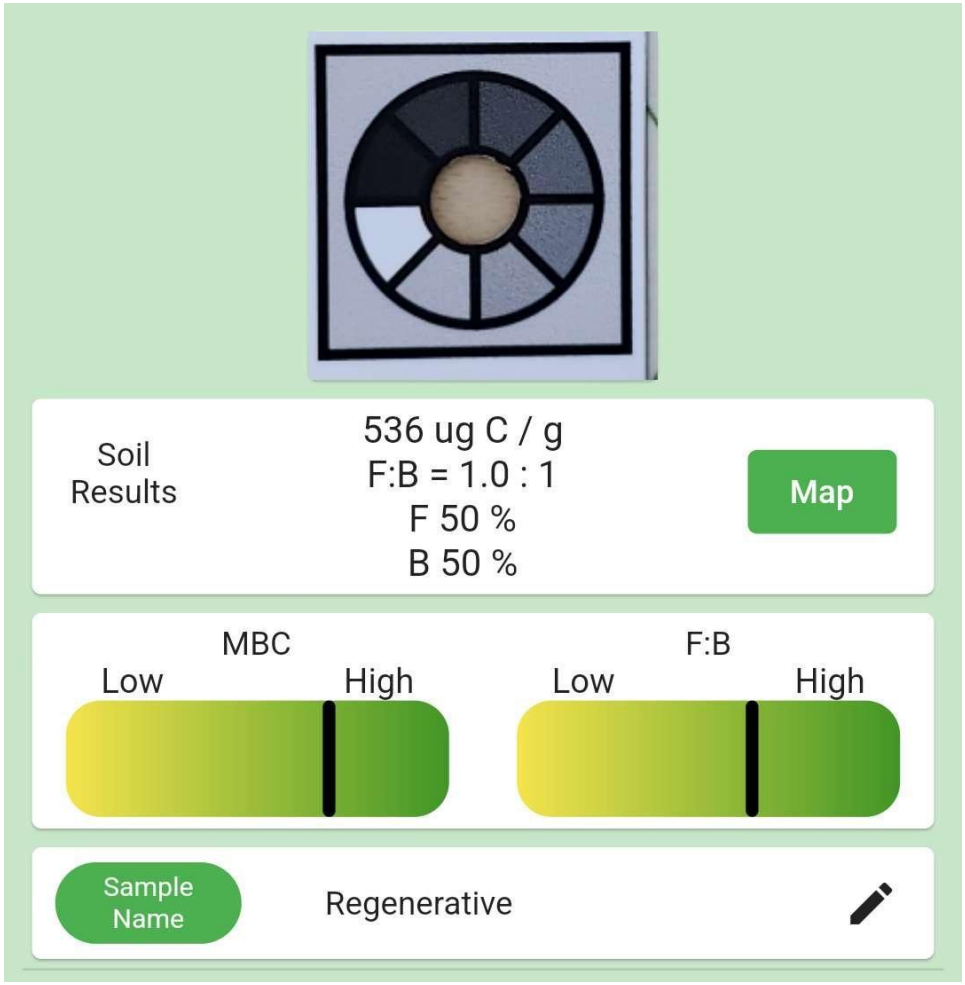
Micro-biometer

Nov 24

One

Test only





Dairy Australia

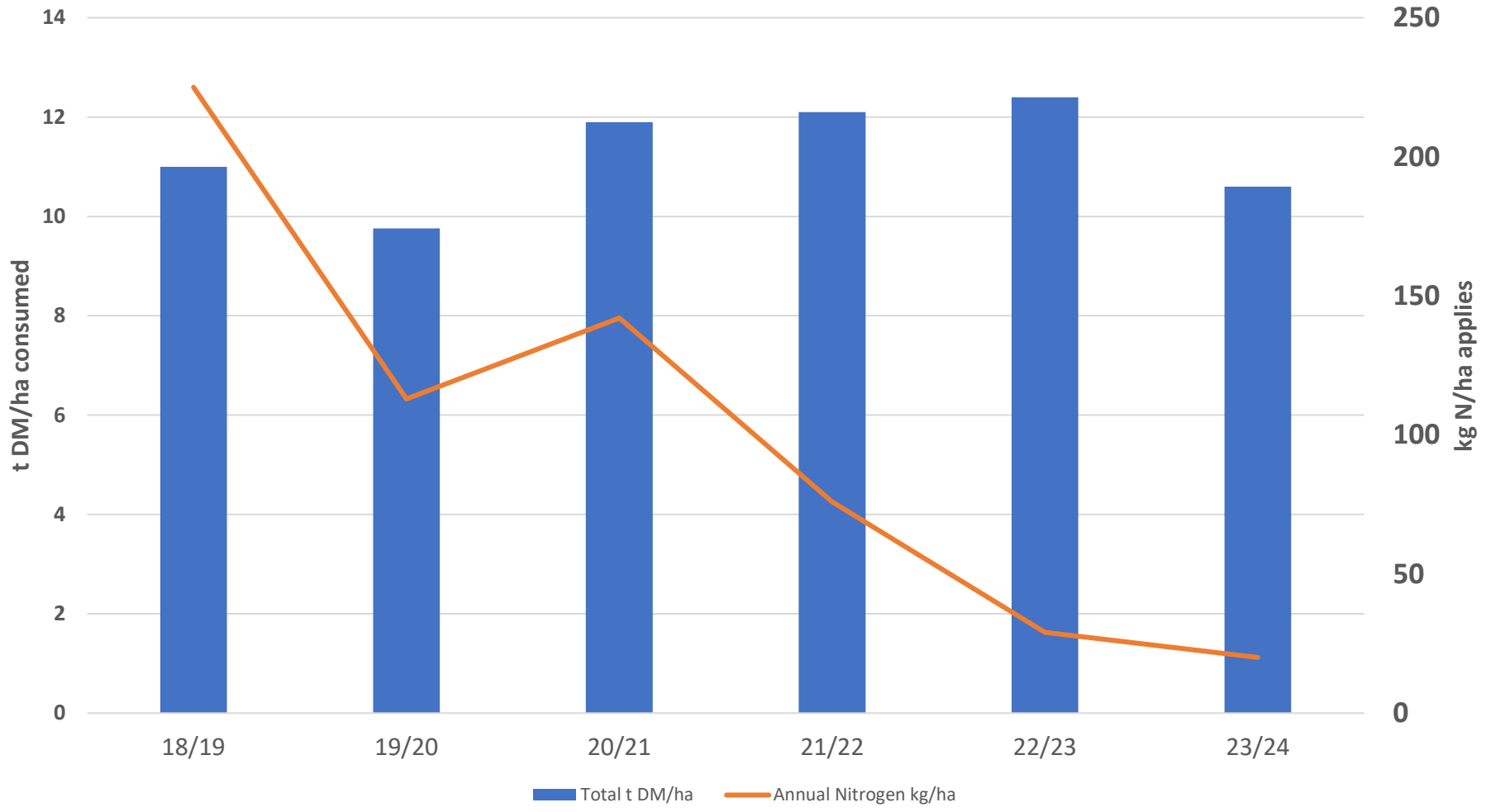
Crude protein *is Crude!*

Lower Nitrates - cow and rumen friendly pasture

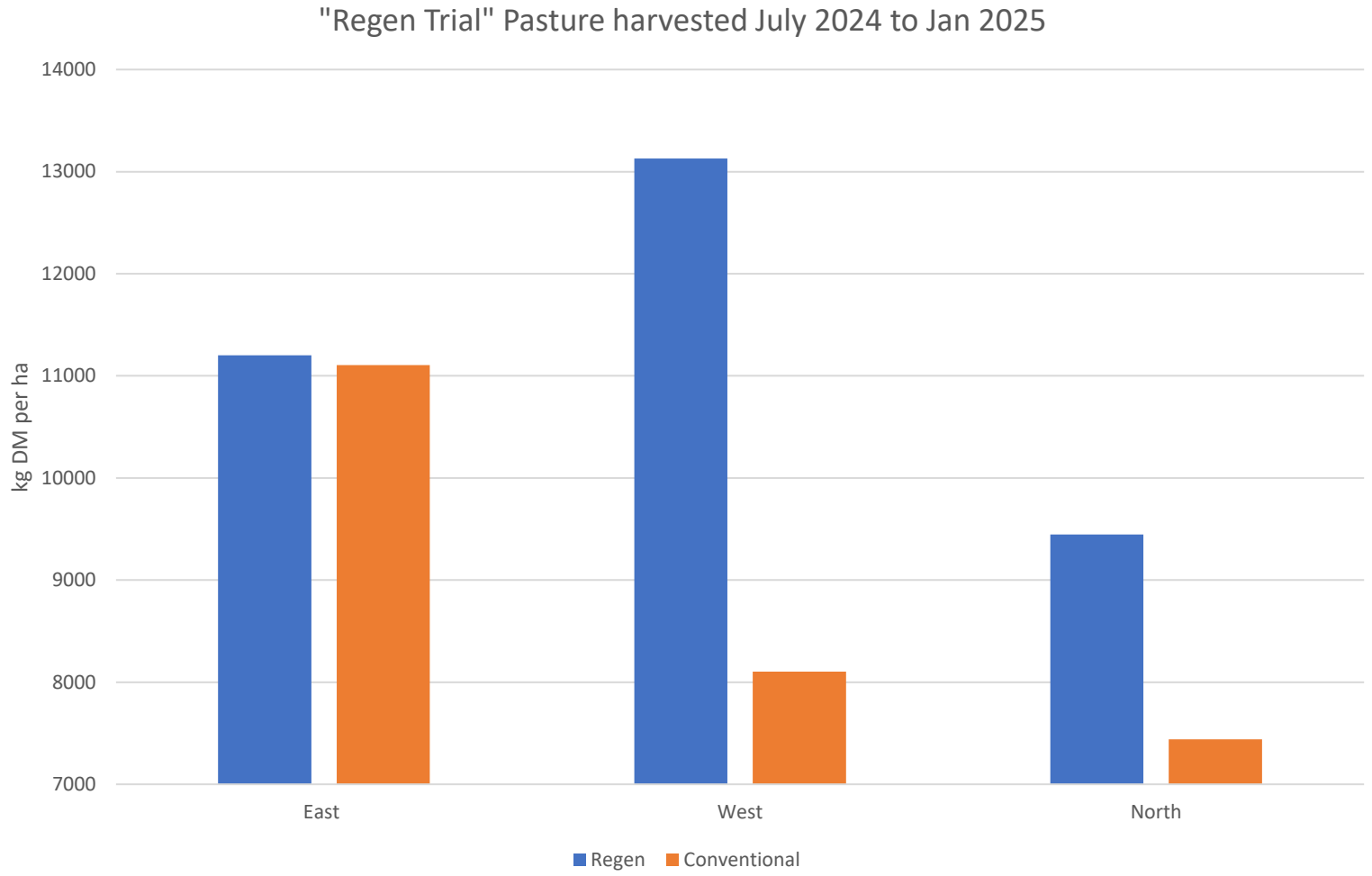
	Regen North	Regen East	Regen West	Conventional Nrth
Crude protein %	23	22	23	28
Nitrates N	35	42	35	**191**
Ammonium N	2480	2300	2060	2200

Dairy Australia

Still growing pasture…



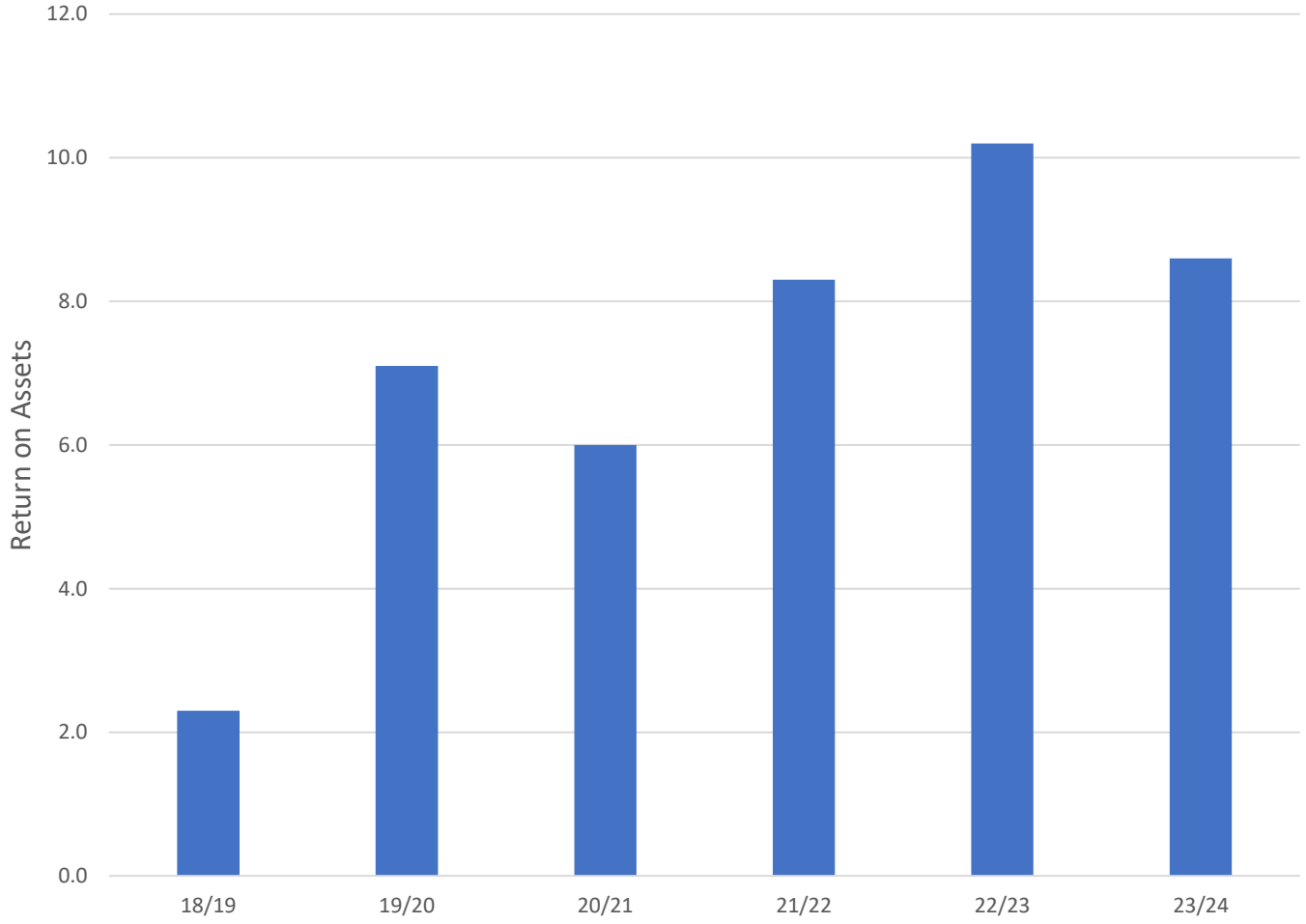
Dairy Australia


"Regen Trial" Pasture harvested July 2024 to Jan 2025
14000
13000
12000
11000
10000
9000
8000
7000
kg DM per ha
East
West
North
Regen
Conventional

Dairy Australia

Still making a profit…

Our farm return on assets for the last 6 years



*23/24 purchased 60 ha irrigated block for young stock

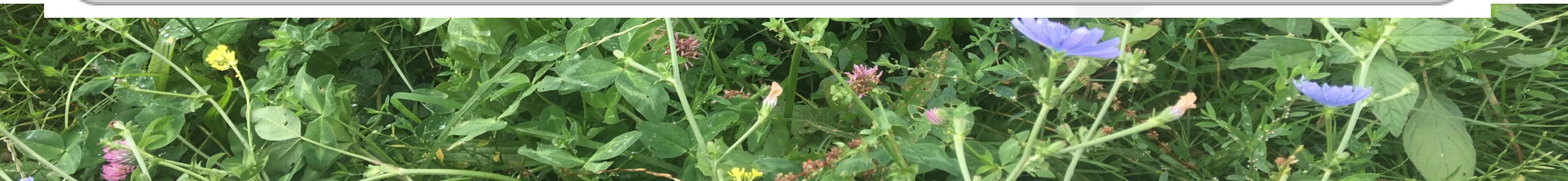
Verified land regeneration…

ECOLOGICAL SAVORY VERIFIED™ 2023 OUTCOME

FRESTINE

covers the membership and monitoring

The land base has demonstrated the outcomes necessary to indicate **land regeneration** and complied with the standards and protocols of Ecological Outcomes Verification (EOV)



What's Next?

- On farm composting and adding correctives to compost?
- Brewing more and different microbes; nitrogen fixers, phosphorus solublisers, fungi,
- Adding minerals to brews?
- Using the effluent pond to brew microbes and adding minerals to effluent pond – liquid compost?

What's Next?

- Focus on growing more feed in winter
- Keep using N to boost photosynthesis
- Keep sowing multi species – annual and perennial
- Develop the soils and pastures at runoff block
- Learn how to use brix as a tool

Current approach to multispecies

Autumn Sowing

+50kg/ha Winter Super Mix (see below)

+5kg/ha Ryegrass Array Perennial +NEA2 Barenbrug

+100 kg Guano /ha

Down Under Covers - Winter Super Mix

Triticale,	Forage Radish,
Forage Oats,	Purple top turnip,
Cereal Rye,	Forage Rape,
Annual Ryegrass,	Peas,
Arrow leaf clover,	Vetch,
Balansa Clover,	Linseed,
Berseem clover,	Beans.

Spring Sowing

Adding to the ryegrass – hard grazing no knockdown

+20kg/ha Spring Perennial Mix (see below)

+100 kg Guano /ha

Include	Take out
Arrowleaf Clover	Purple Top Turnip
Berseem Clover	Triticale
Sunflowers – maybe	Forage Brassica
Vetch – maybe	Oats
Linseed – maybe,	
Lupins – maybe	
Chicory – perennial like Puna	
Plantain – yes	
Lucerne –yes	
Cocksfoot – yes	
Also please add in	
Red clover	
White clover	

Dairy Australia

What's Next?

- Focus on growing more feed in winter
- Keep using N to boost photosynthesis
- Keep sowing multi species – annual and perennial
- Develop the soils and pastures at runoff block
- Learn how to use brix as a tool

Dairy Australia

Dairy Australia

Dairy Australia

Thank you

Dairy Australia