

IREC Research Update

July 2023



MARS
Petcare



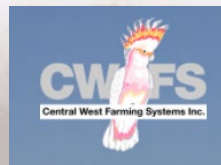
 **Charles Sturt**
University



Kellogg's



 **CORSON** INNOVATIVE
INGREDIENTS
WITH *Corson's* at heart



Overview – Program Update and relevance:

- What is CSI, and why are companies investing?
- Update of CSI progress and vision
- Soil test results incl soil carbon
- Emissions
- Future research opportunities

Dr Cassandra Scheffe - Project Lead
AgriSci Pty Ltd

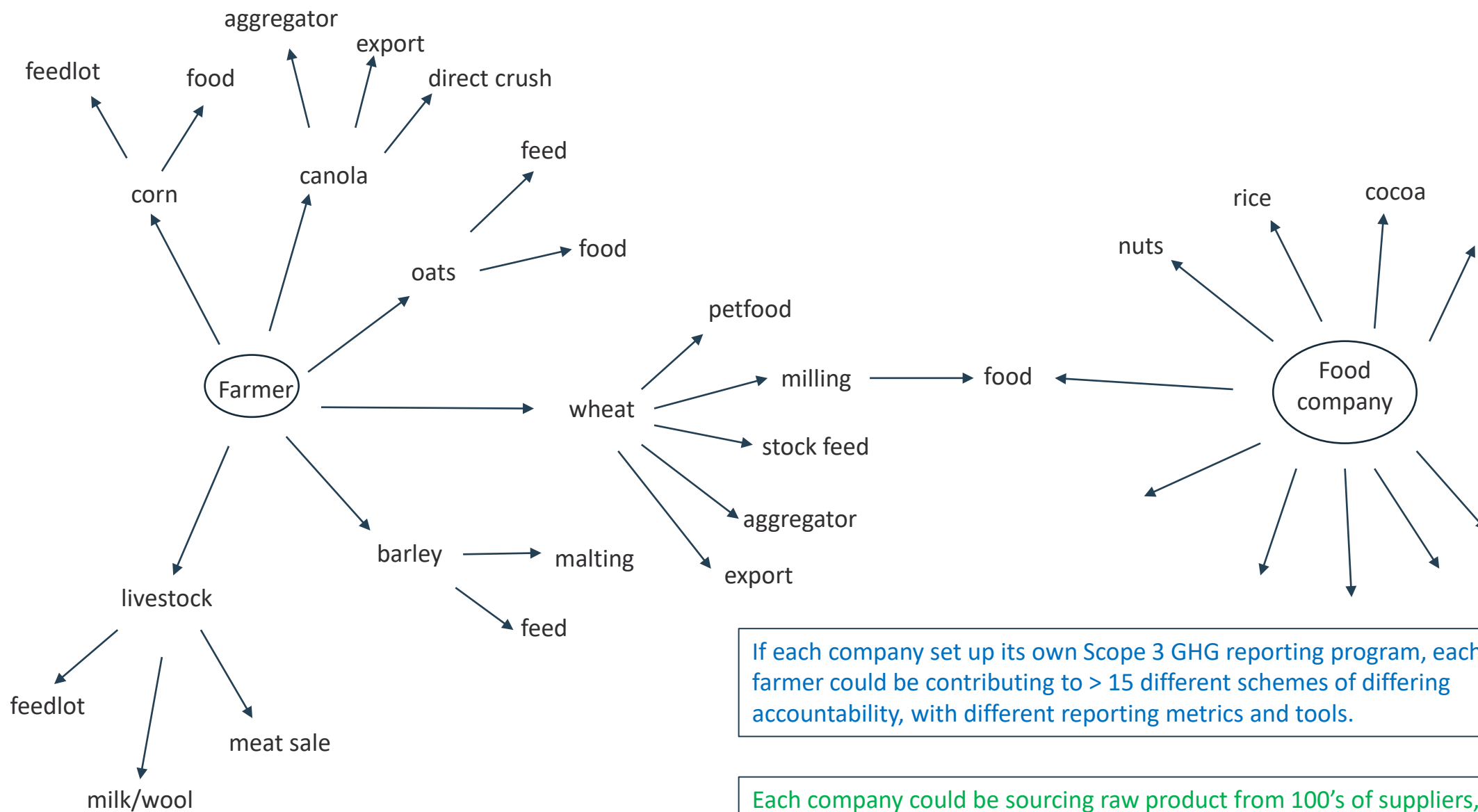


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Why are supply chain companies interested in emissions?

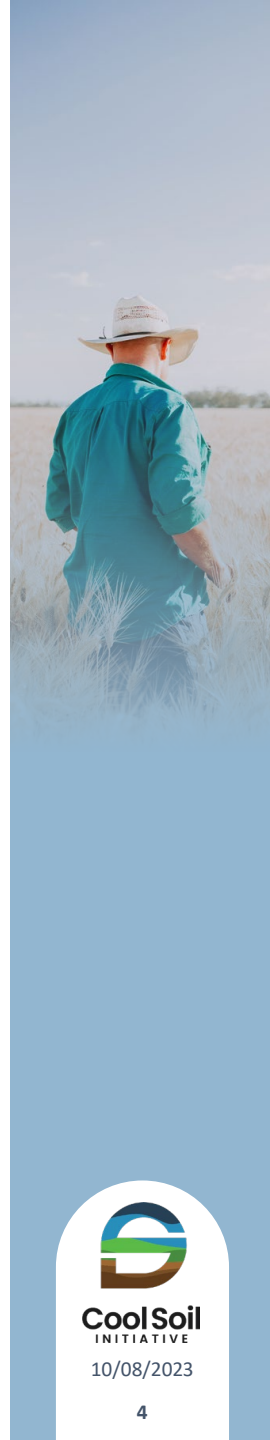
- “Scope 3”
- All emissions associated with the production of commodities. For food companies, it is the emissions associated with production of raw ingredients, eg wheat production
- Scope 3 can comprise up to 70-80% of total food footprint.
- This means that even if companies reduce their energy usage in manufacturing facilities, the total emission footprint associated with an end product (eg biscuit) does not drop substantially.
- All publicly listed companies will have increasing requirements for emission / sustainable sourcing reporting.
- (For a farmer, Scope 3 emissions are the production of fertilisers, pesticides etc)





If each company set up its own Scope 3 GHG reporting program, each farmer could be contributing to > 15 different schemes of differing accountability, with different reporting metrics and tools.

Each company could be sourcing raw product from 100's of suppliers, each potentially with a different GHG footprint accounting system, which they can't align and clearly report against.



Concept of the Cool Soil Initiative (in grains)

Streamlined farmer data input & **Engagement & Support** for on-farm change (not a 'tick & flick')

Grain aggregators / millers

Food/beverage processors

End user recognises low on-farm GHG footprint of commodity (consumers/export reporting)

*Global connection

Active engagement & contribution to project success (Capture *practices*, not just numbers)

Cropping zones & initial project area



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Cool Soil Initiative progress and vision

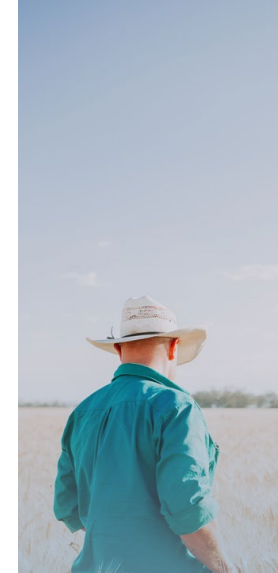
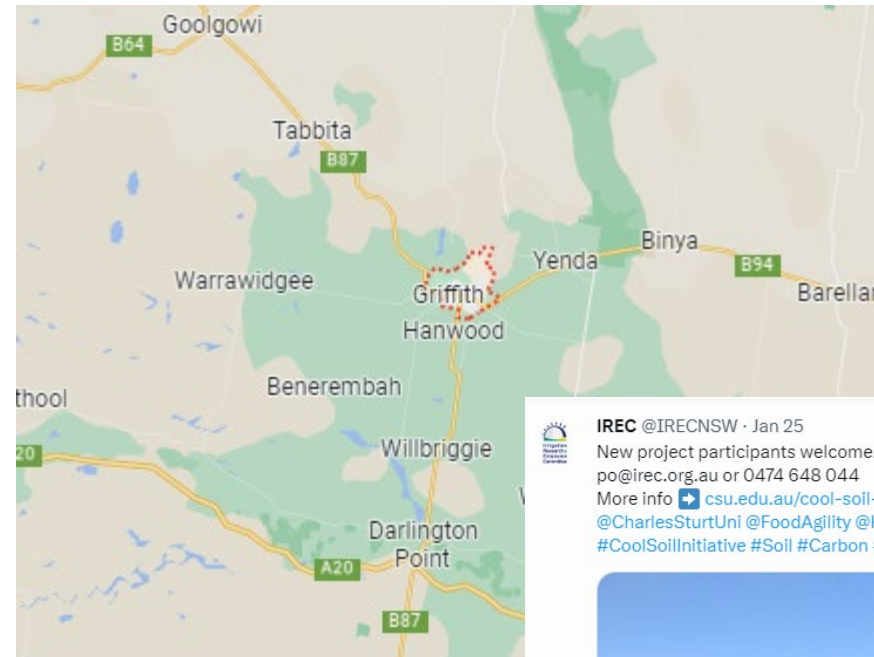
- 2.8 years into the Food Agility CRC investment, ending in September 2023.
- **185** farmers recruited in northern Vic, southern NSW, **4** farmers in Darling Downs with maize.
- Scalable farmer web interface and database being built by external provider, rolled out at present.
- Building alignment in GHG calculation between Cool Farm Tool and Aus national GHG inventory.
- Building visibility of Cool Soil Initiative across Australian grains and related industries (meat, wool, dairy, poultry, pigs).
- Building critical mass in corporate awareness & industry relevance;
 "We are all facing the same challenges, we can't solve on our own"
- Cool Soil Initiative 2.0 – Not For Profit entity being developed through CSU to enable continuance and scale (set up by September 2023).

** Unique position as we have 5 years of learnings from doing, not just talking about it! – thanks to the farmers who are working with us.



IREC farmer overview

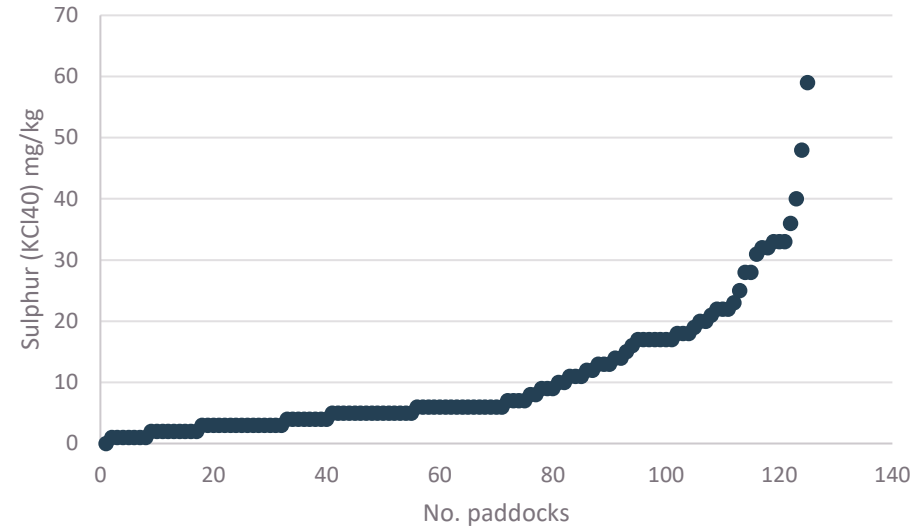
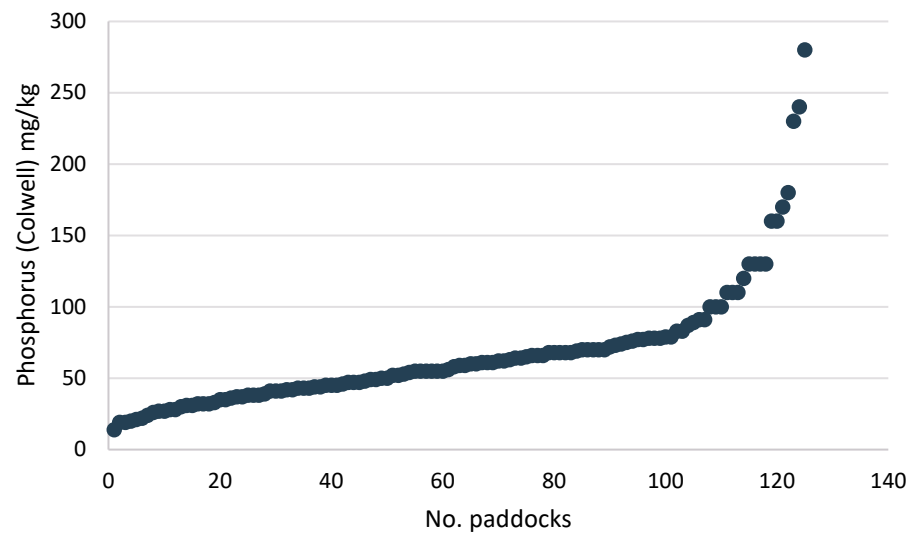
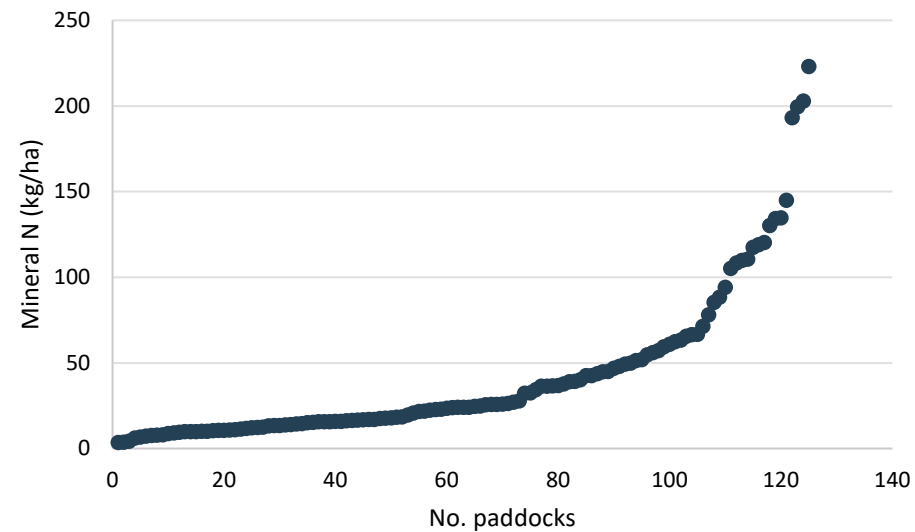
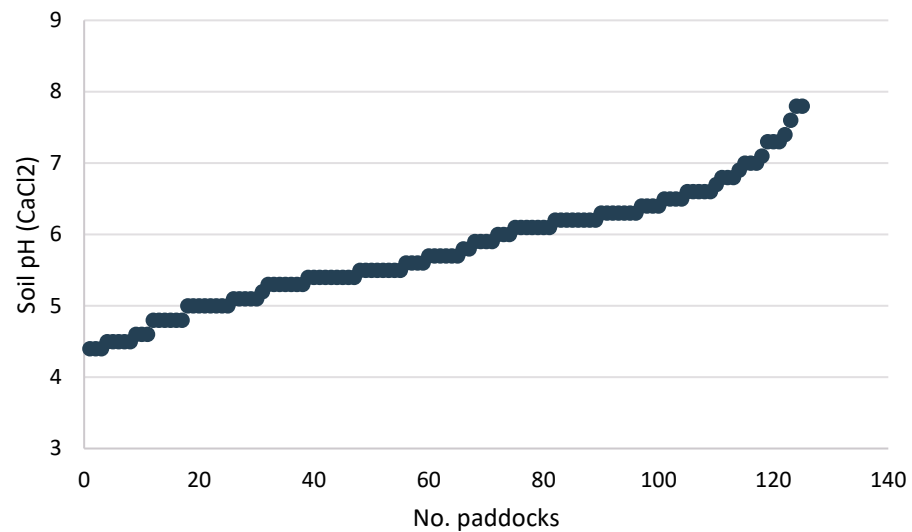
- 10 soft wheat farmers, data collected from the 2022 winter season.
- 25 maize farmer, data collected from the 2021-22 and 2022-23 seasons
- 125 paddocks sampled and reported on through the project so far, within the MIA



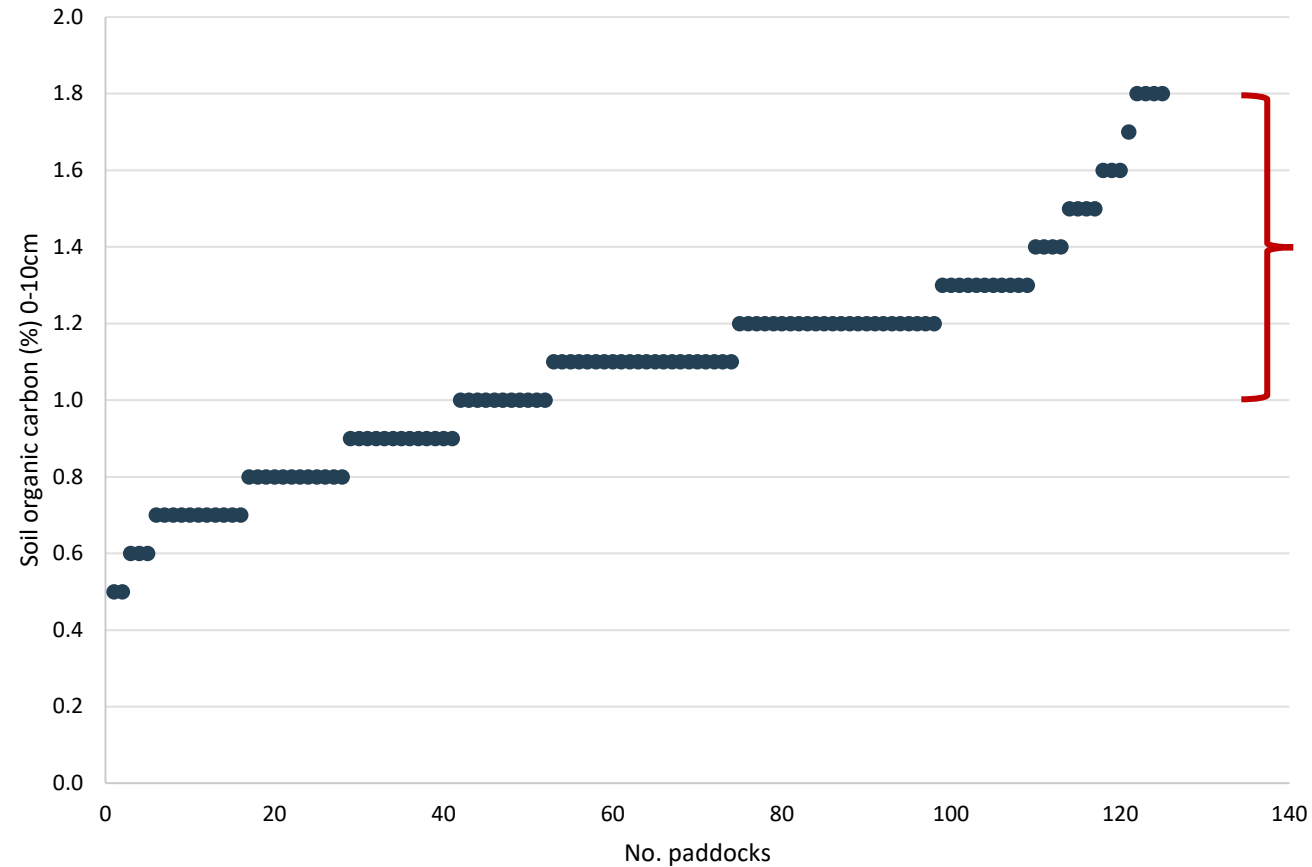
Note: all participating farmers sign a data sharing agreement:

- Farmers retain ownership of data
- Farmers share the data with CSU (as data custodian of Cool Soil)
- All data is anonymised and coded
- Only regional aggregated data is shared with corporate partners





Soil C values



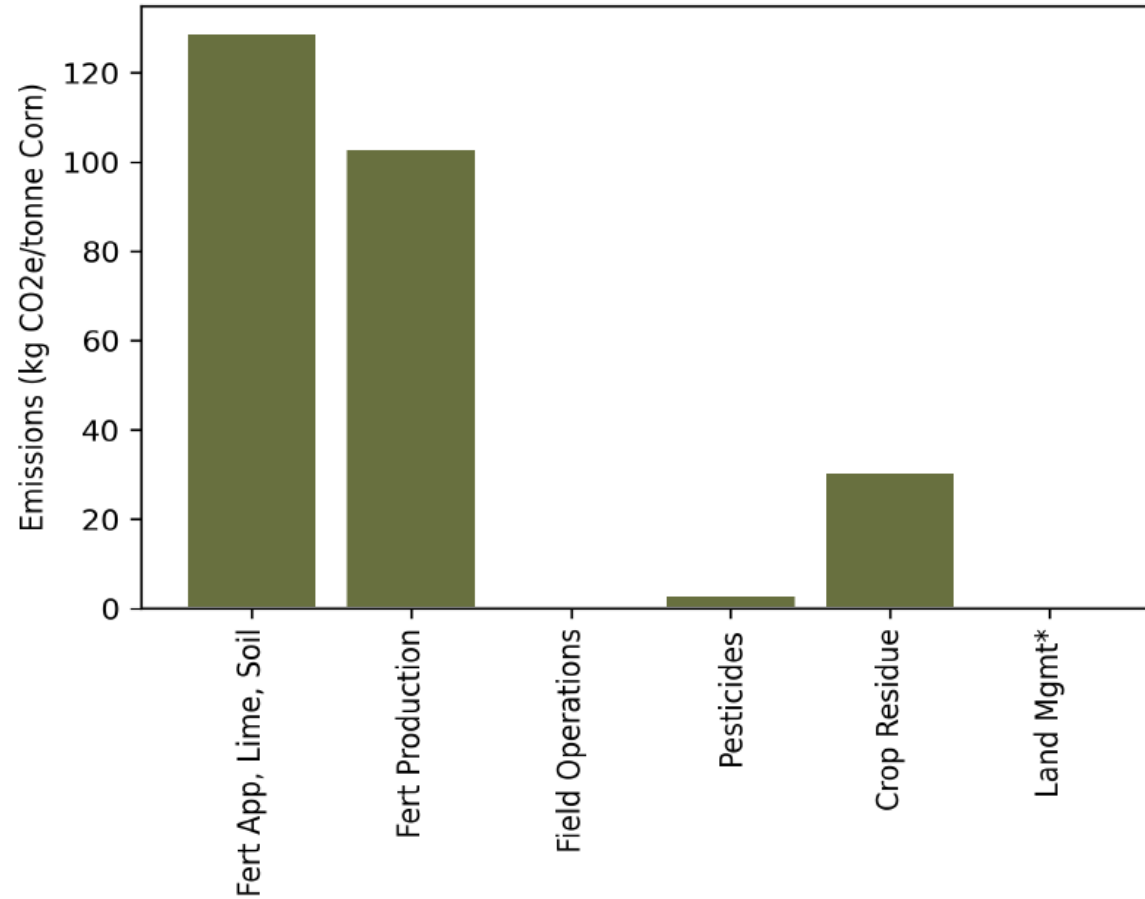
Graphed values at 0-10cm depth.

10-20cm depth: Median: 0.8%
Range: 0.4 – 1.0%

*** Greater mixing of soil C to 20cm depth in MIA irrigated soils vs dryland min till systems



Maize GHG emissions 2021-2022



Kg CO₂e/tonne

210

Kg CO₂e/ha

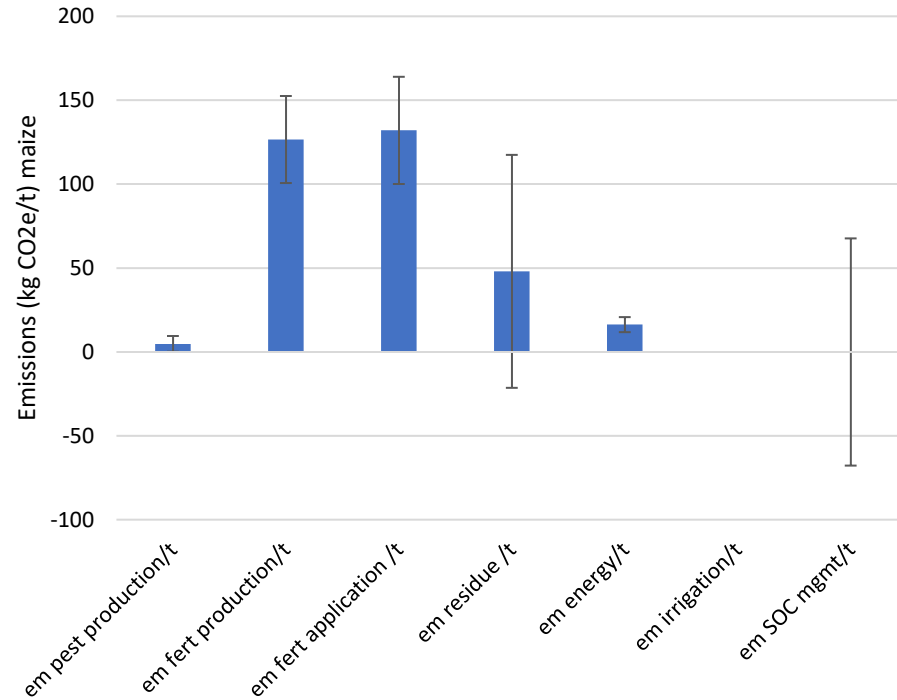
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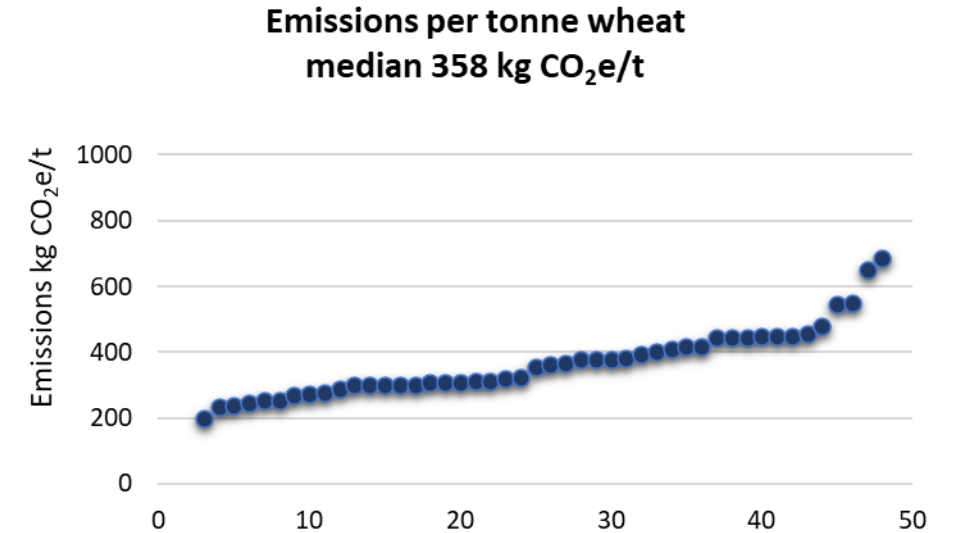
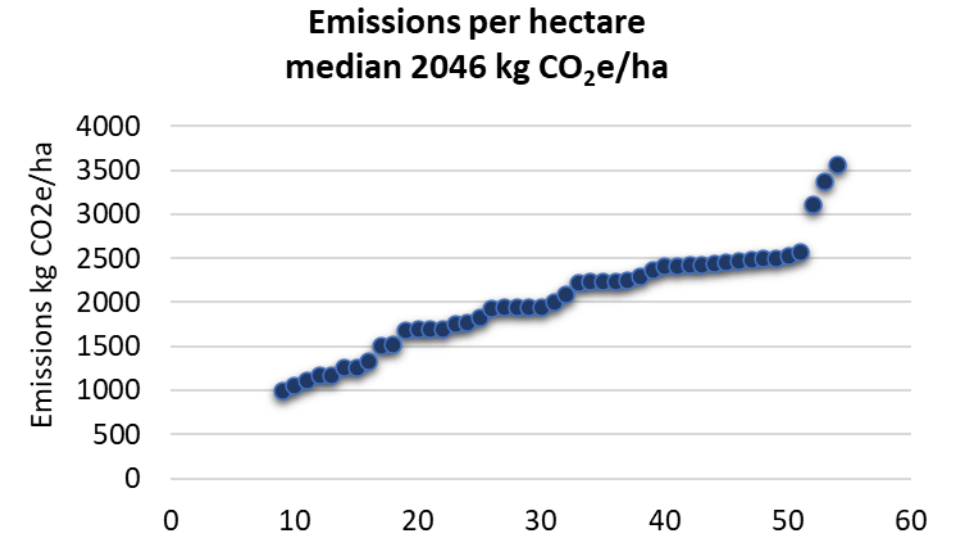
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Soft wheat 2022 emissions- IREC



Key farmer comments from 2022:

- Very wet, crop affected by waterlogging
- Move to chicken litter
- Need better soil conditioning



Research opportunities

- 'Green' urea (+ nitrification or urease inhibitors) may reduce emission footprint from urea application
 - Likely to have greatest benefit under wet, warm conditions (eg MIA)
 - Building awareness of product, or potential use-case for Green urea in MIA soft wheat
 - In-field research needed to demonstrate release profile of Green urea to provide confidence that N will be released from granule in the window of high plant requirement
- Stubble management – an ongoing issue in high biomass summer crop and rice-growing regions, needs a systems approach.

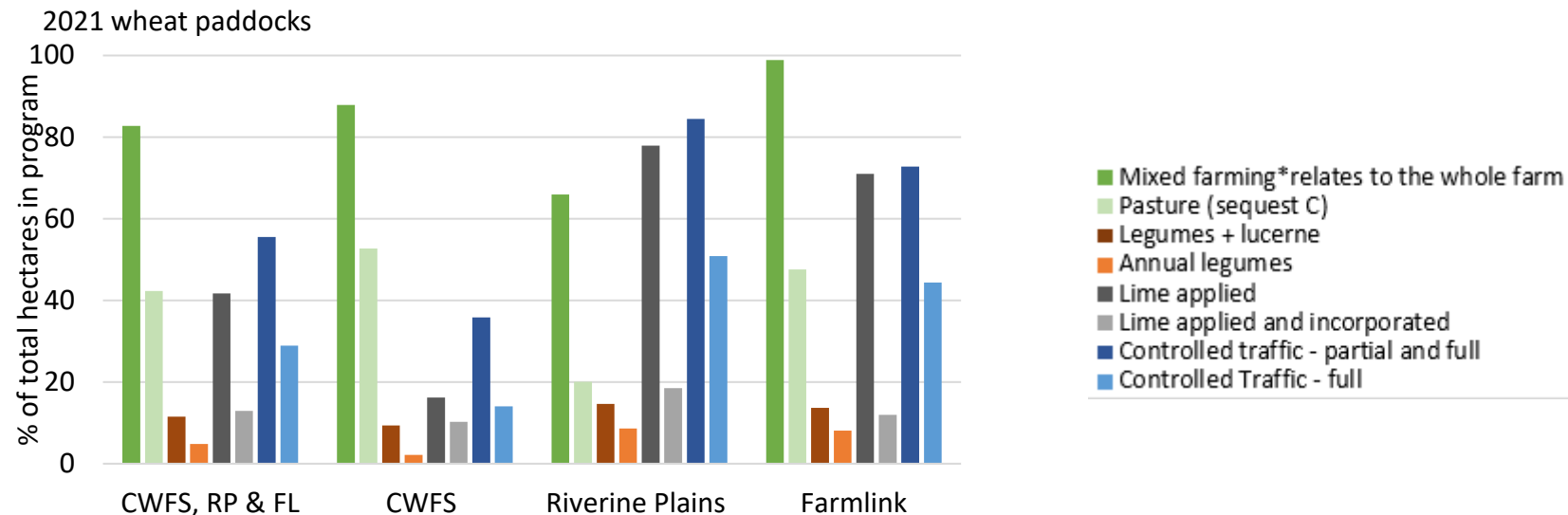


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Learnings from the practice records and support activities

- **Data capture** provides baseline ‘industry’ story of current practice, enabling good practice to be recognised (in addition to GHG emissions story)
- **Soil pits/paddock walks** provide learning opportunities on soils, carbon, emissions, practice, while providing an avenue for farmers to share ideas and novel management.
- **‘Innovation paddock program’** supports farmers who want to try something new, providing evidence to quantify the value of change (productivity/economics/emissions/carbon)



Summary - What have we learnt over the past 5 years?

- Program started in 2018 – *pre Scope 3* and *ESG*
- While we are working with international standards, further work is needed to make them fit for purpose for Australian conditions.
- International Supply chain assumptions: Farmer support programs based on ‘pay for practice’, rather than supporting resilient, profitable farming systems.
- Farmers are highly motivated to engage. High farmer interest, retention and trust – through providing information, support and data integrity without lock-in contracts.
- Focus on sustainable productivity, with carbon and GHG emissions as the *product* of the system, not a driver - encourages innovation and peer learning.
- Recognition of our novel approach:
 - Precompetitive corporate partnerships = integration and alignment of GHG reporting between supply chain players leads to confidence and transparency of GHG accounting
 - Farming groups provide advocacy of farmers, ensuring that project direction is farmer focused.
 - Provides pathway for full connectivity across food and fibre systems
 - Australian relevant, but globally aligned.



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Outcome

- Mission: Farmer-focused, scientifically credible, industry relevant
- Vision:
 - Investment across the food and beverage supply chains so that Cool Soil becomes 'business as usual' to enable a common language for Scope 3 reporting, while providing the mechanism for farmers to demonstrate best practice
 - Industry-level reporting to export markets, providing evidence of 'clean & green' production in Australia
 - Expansion of Cool Soil across sectors and regions

*** Stay tuned for big announcements in the coming months as we transition to CSI 2.0 in October.

Key steps:

- New entity confirmed and Director announced
- New partners to come on-board
- Web interface data portal to come on-line to enable streamlined, map-based reporting
- Integration of Australian emission factors into global accounting framework – to recognise our unique systems and practice
- Design for national scaling



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