Farming system NUE

insights from four 6-year experiments in southern NSW

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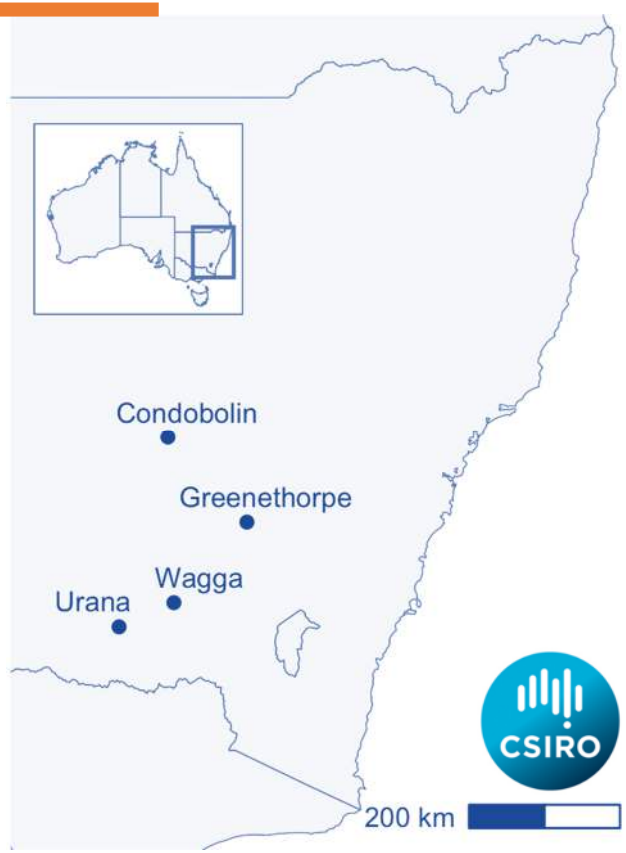


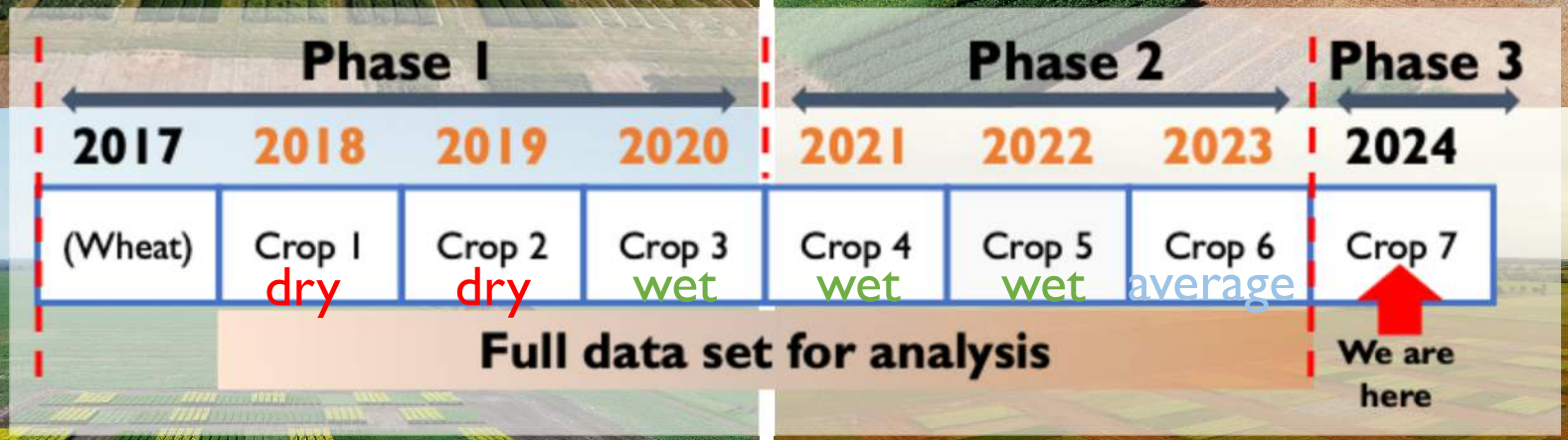
Improve system efficiency ($$$/mm)

Greenethorpe (547 mm)

Wagga Wagga (530 mm)

Urana (440 mm)

Condobolin (440 mm)



- Diversity
- Sowing time
- N strategy

System NUE (2018-2023) = sum of N removal / sum of N input

Wagga Wagga

System	NUE (PNB, %)				N output (kg/ha/yr)		N input (kg/ha/yr)						NUE ($GM/FertN)			
	FertN		FertN+SoilN		Grain N		FertN		SoilN		FertN+SoilN		$/kgN		$/$N	
	LN	HN	LN	HN	LN	HN	LN	HN	LN	HN	LN	HN	LN	HN	LN	HN
C-W-B	84	66	50	40	89	101	112	160	65	92	177	253	7	5	4	3
C-W	76	61														
C-W-Lupin					104		61		84		145		13		7	

Across sites,

Canola-cereal system

PNB% (based on FertN) >100% at 3 other sites (low N strategy) → **risk of soil N mining**

PNB% (based on FertN+SoilN) **46-61%** | **38-44%** at low N | high N

Diverse system

More output | lower fert
+12 – +36 | **-37 – -51** kgN/ha/yr

More soil N at sowing **+6 – +34**

Non-L | **Diverse** system

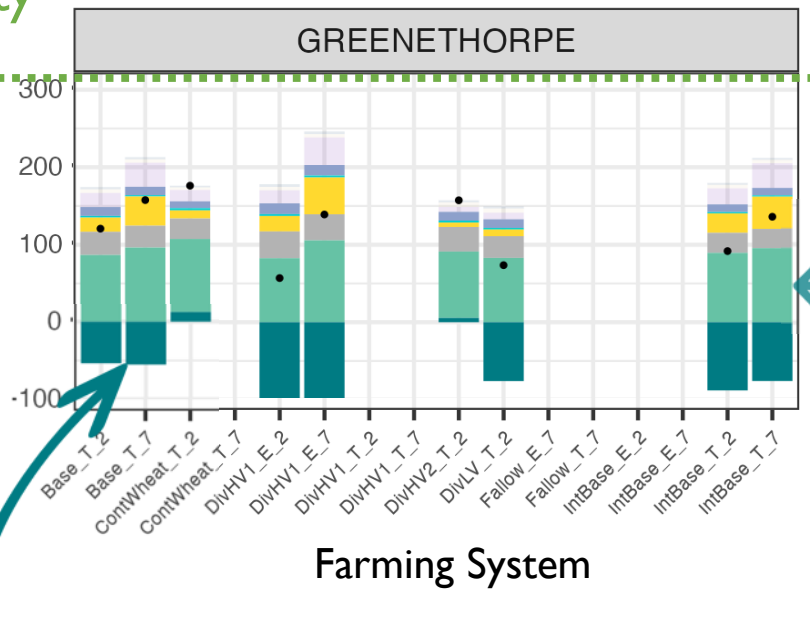
$7-14 | **$13-34/kgN**
$4-7 | **$7-16/$N** at low N

Low GHG emission intensity (kg CO_2eq / t yield)

(2018-2022 data)

Aus. grains sector average GHG intensity **315 kg CO_2eq / t**

LCA +
APSIM modelled N_2O + ΔSOC



- N_2O → a major contributor to total GHG

- Modelling suggested C sequestration offset a large portion of GHG emissions

Waiting for measured SOC data to verify…

Thank you !

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