Nitrogen fertiliser can directly compensate for the negative impacts of reduced soil organic matter on yield

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Maximising grain yield in Australia

- Two key factors affect wheat yield potential in Australia, rainfall and nitrogen (Hochman et al. 2017)

- Many growers are still under-fertilising with nitrogen

Nitrogen mining

What does it mean?

- What it means: Running N down into a deficit
- Lowers fertility of the soil
- Runs down organic carbon

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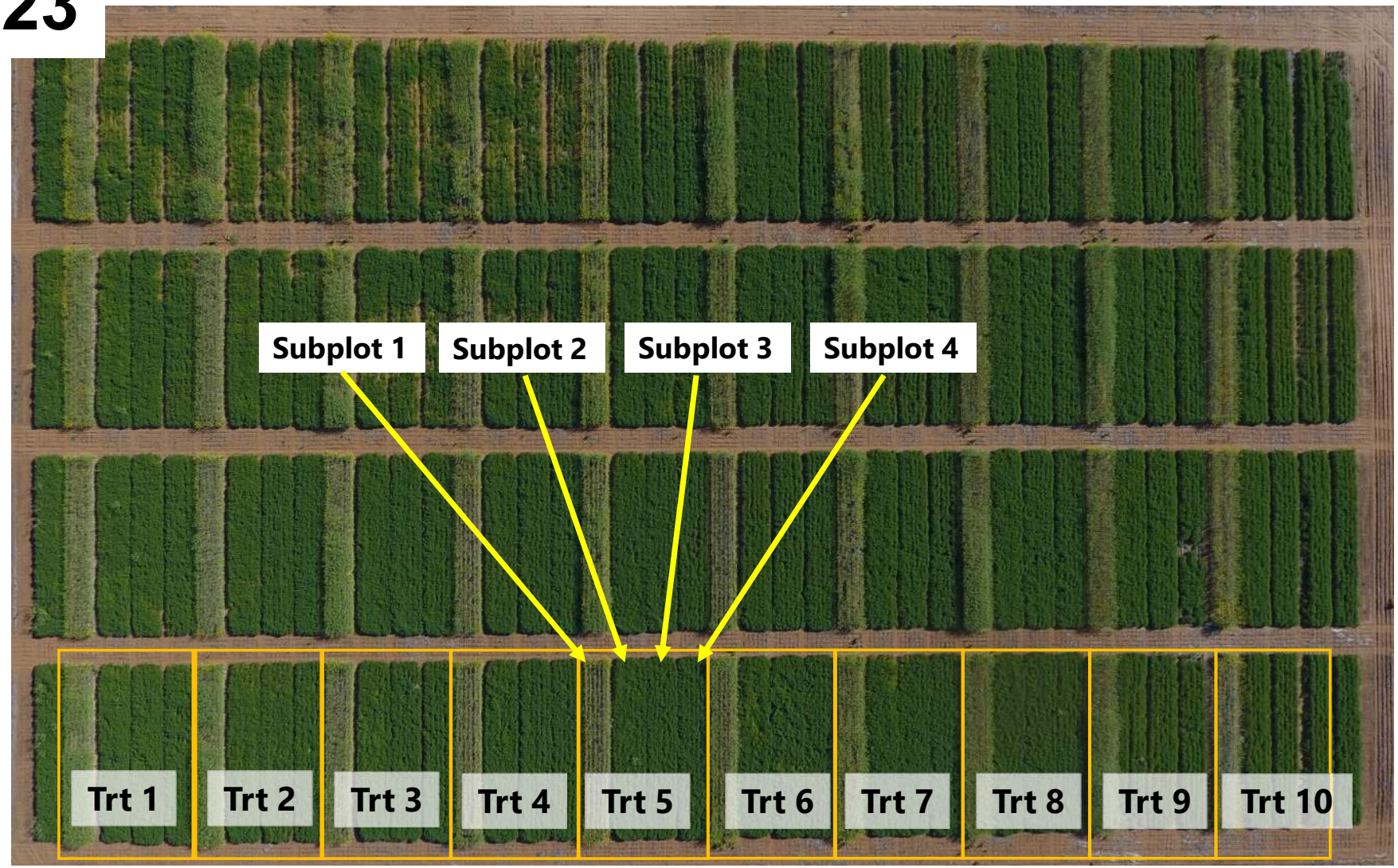
GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Curyo 2023

- **Trial had been running for 5 years (est. 2018)**
- **10 different N strategies tested (see paper)**

Curyo 2023

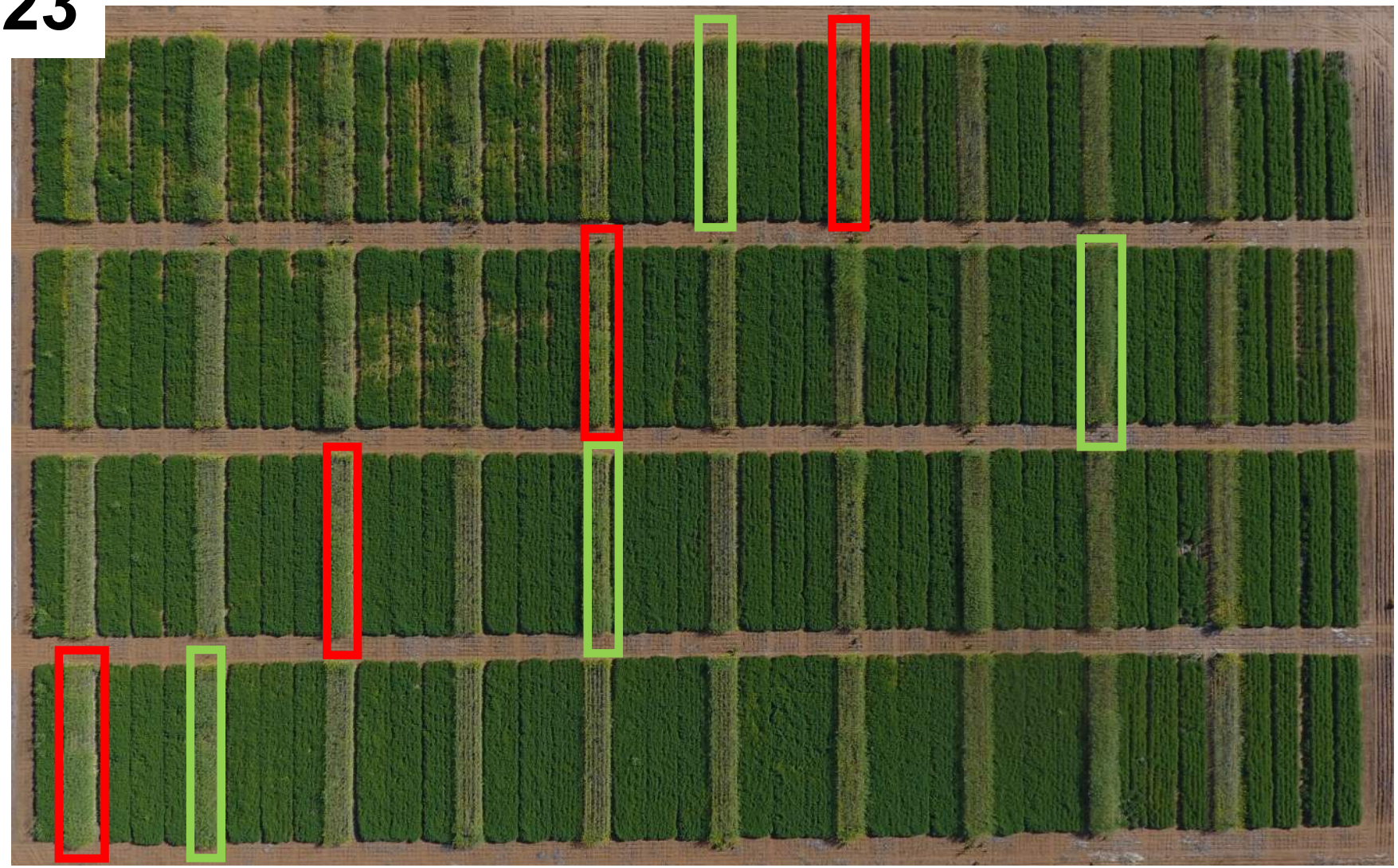
- 10 different N strategies tested (see paper)
- Lentils in 2023
- N mining experiment on sub plots (canola)



Curyo 2023

- **Targeted 2 N treatments in the long-term experiment:**

- **Nil**
- **Highest N application**



Curyo 2023 – N mining experiment

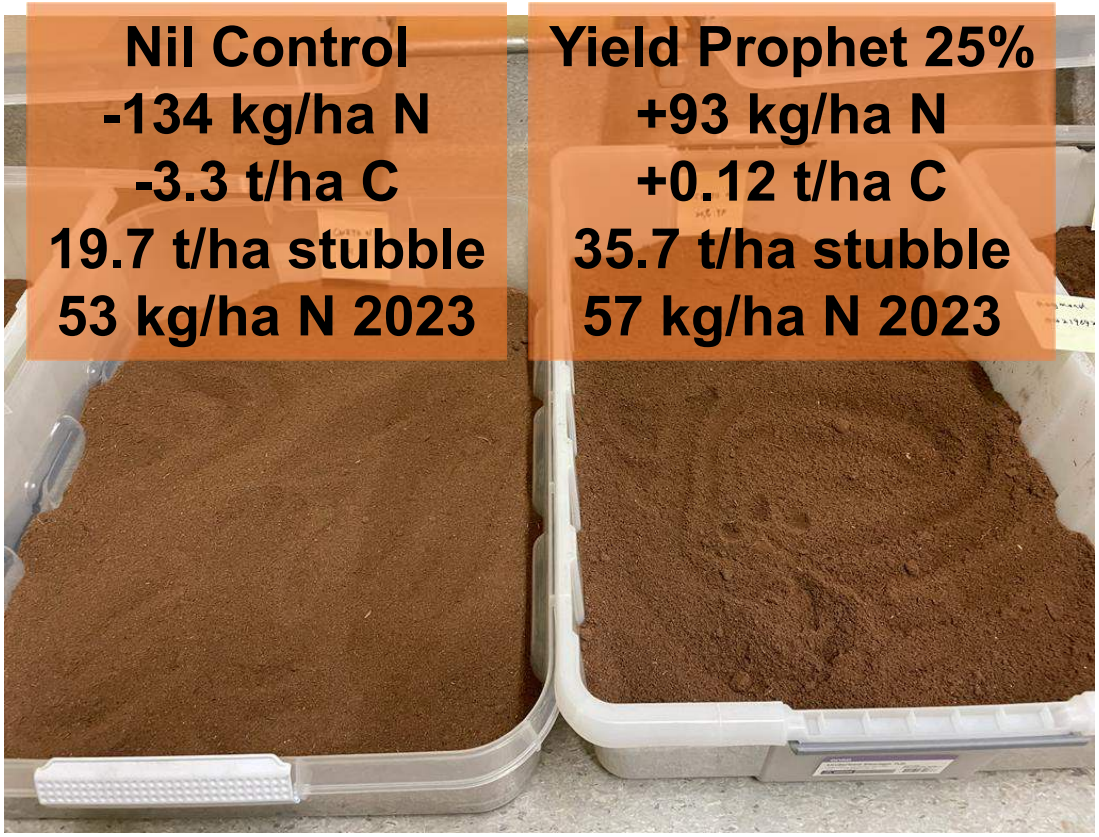
- 5 N rates:

- 0 kg/ha
- 50 kg/ha
- 100 kg/ha
- 150 kg/ha
- 200 kg/ha


Nil N


Highest N treatment

Consequences of mining soil organic matter Curyo 2023



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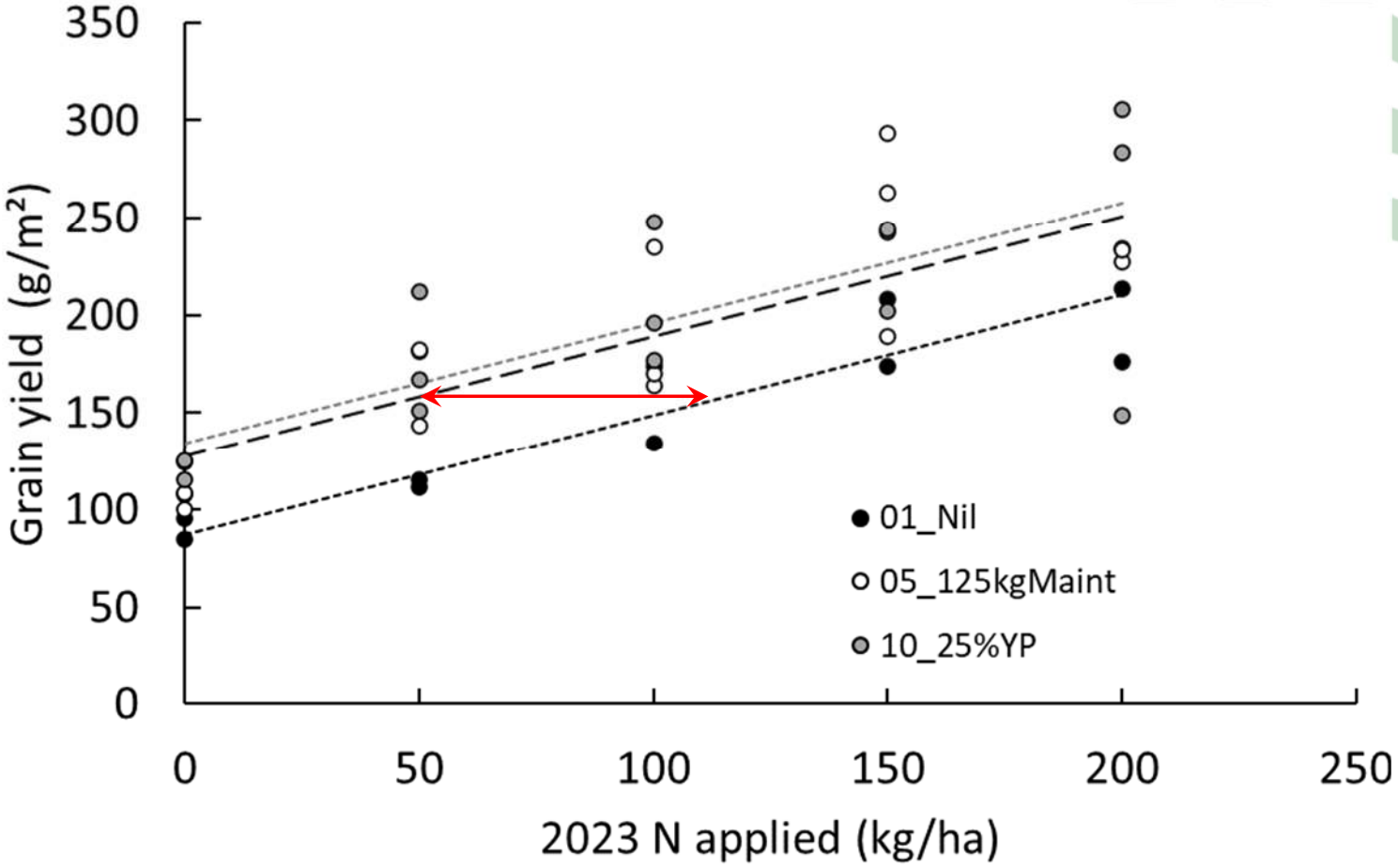
Nitrogen mining



Take home

- N mining can occur within five years and **does reduce crop yield in the absence of N fertiliser**.
- It is possible to compensate for this effect with substantial rates of applied N.
- Growers cannot avoid the cost of under-fertilising with N; the costs will either be paid upfront or down the track once mining has taken place.