



Case Study

Lower Rates of N Fertiliser on Late Ratoons & EM Mapping for Zonal Applications



LANDHOLDER	CSLH010021
LOCATION	Leach
CATCHMENT	Lower Herbert
RAINFALL	2023 - 1134mm
PROPERTY SIZE	168ha
ON-GROUND PROVIDER	HCPSL

Project Catalyst is a grower led, sugar cane innovation and adoption project that explores, develops and validates farm management practice change to improve the enduring water quality of the Great Barrier Reef.

BROADER ADOPTION VALIDATION & GROWER SUPPORT

Founded in 2009, the project operates in the Mackay Whitsunday, Burdekin and Wet Tropic regions to deliver valued practice change outcomes and develop methods for industry adoption. Under the Broader Adoption and Grower Support program, professional on-ground service providers assist selected growers to adopt and validate appropriate change practices. Service providers continue to monitor implementation benefits and derived environmental performance improvements. Through targeted extension activities, the program seeks to accelerate the uptake and broader adoption of improved farming practices at local, regional and industry levels.



●●●● Goal

- To EM map the farm and better understand and address soil constraints with zonal applications of amendments.
- To review and update the farm nutrient management plan, considering how reductions in fertiliser application rates might be possible for simultaneously maintaining yields and reducing costs.



Dual EM in action

●●●● Overview

- Electromagnetic induction (EM) mapping is a form of precision agriculture that uses a sensor to measure electrical conductivity at various depths. Measures of electrical conductivity reflect physical and chemical soil properties such as salinity, moisture, organic matter, and clay content. Once collected this data can be used to spatially define different soil zones within a paddock requiring various applications of ameliorants. Applying amendments zonally can reduce in-field yield variation, improve nutrient use efficiency across the block and reduce the costs and run-off associated with previous inefficiencies.

●●●● Action

- This farm has sandy leaching soils that limit nutrient and micronutrient availability and productivity. EM mapping of the farm presents an opportunity to determine the true extent of soil constraints and identify zones for amelioration and long term management. EM mapping will be undertaken when possible to guide strategic soil testing.
- The grower will also receive a full nutrient management plan for their farm which takes into account soil test results, productivity data, and grower knowledge and management approaches to determine nutrient rate requirements across differing management zones, allowing the grower to be more targeted in their applications.
- The grower is interested a legume fallow where the legumes are planted without prior tillage. The grower aims to trial this practice in the 23-24 season.

●●●● Outcome

- The grower received an NMP in 2022. Based on previous yield responses and in consultation with their advisor the grower reduced their N rates in late ratoons by 10kg N/ha. In 2023 the grower maintained a 'late cut/reduced rate' management zone applying reduced rates accordingly. This enabled them to be more targeted within the budget and improve the nutrient use efficiency across their crop.
- In 2023 the grower planted mixed legumes across their fallows to improve soil health and build up organic N for the coming plant crop. The growers intends to incorporate legumes without tillage prior to plant as part of their fallow system and to adjust nitrogen rates following legumes accordingly.

