![PROJECT CATALYST]

Case Study

EM Mapping for Refining Management Zones & Reduced N Fertiliser Application on Late Ratoons

LANDHOLDER	CSLH010022
LOCATION	Fairford Trebonne
CATCHMENT	Lower Herbert
RAINFALL	2022 - 1804mm 2023 - 1634mm
PROPERTY SIZE	133ha
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.

Home farm legumes sprayed out

Mixed legumes sprayed out

○●●●● 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.

○●●●● Overview

- Electromagnetic induction (EM) mapping is a form of precision agriculture that uses a sensor to measure electrical conductivity at various depths. The maps generated from the sensor readings 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 that can be treated differently. Applying amendments zonally reduces in-field yield variation, improves nutrient use efficiency across the block and reduces costs and run-off associated with previous inefficiencies.

Dual EM collecting data points for mapping

Trebonne farm legumes sprayed out

○●●●● Action

- This growers farms has some challenging clays with poor drainage and significant acidity that limit nutrient and micronutrient availability and productivity. EM mapping of the farm presents an opportunity to determine the true extend of acid soils and identify zones for amendments and long term management. EM mapping will be undertaken throughout the season as blocks are cut.
- 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

○●●●● Outcome

- With the support of the productivity board the grower was able to EM map though poor weather has limited capacity to get on all the blocks intended for mapping. Soil testing based on the maps that were generated helped to determine zones for amelioration and management.
- The grower received a Nutrient Management Plan in 2022. As part of the plan they reduced nitrogen in their late ratoons by 23kg N/ha. They continued to follow through with the late ratoon management zone with reductions in their 2023 plan.
- In 2023 the grower planted mixed legumes into their fallow blocks. The mix contained lablab, cowpea and soybeans. The legumes maintained a good biomass despite the extensive wet conditions through the 2023-2024 wet season and were terminated in April. They intend to continue planting legumes when the opportunity presents itself in future seasons.