2021

PROJECT CATALYST

Case Study

EM Mapping to Support Implementing Precision Farm Management & Installing Irrigation Scheduling Tools

LANDHOLDER	Anonymous
LOCATION	Kalamia
CATCHMENT	Burdekin
RAINFALL	984 mm
PROPERTY SIZE	109 ha
ON-GROUND PROVIDER	Farmacist-Burdekin

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 bene its 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.

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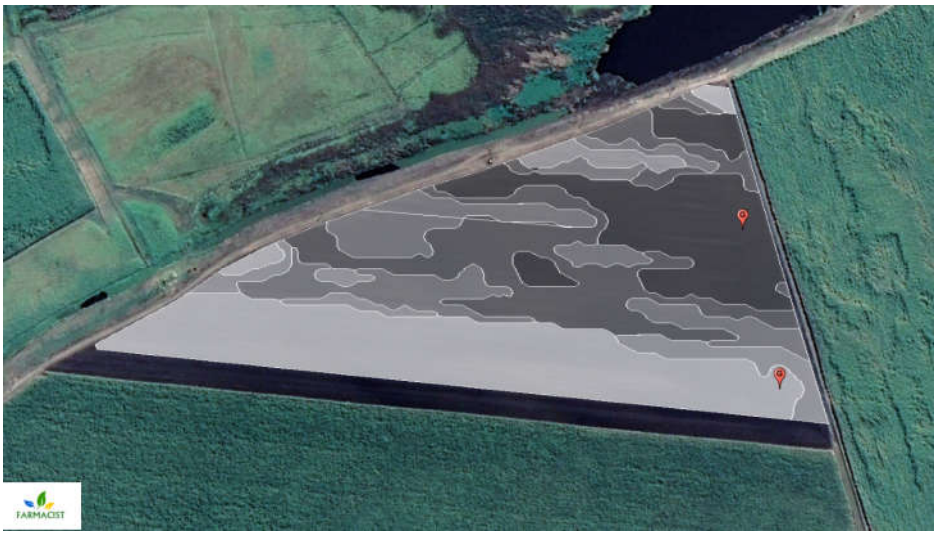
Goal

To use EM Mapping to develop management zones on farm that may be treated differently regarding ameliorates, fertiliser, irrigation or pesticide use.



Overview

EM Mapping is a precision mapping tool used to assess different soil conditions. Growers are able to use EM maps and the relative data to manage certain areas of their paddocks differently in regards to the application of ameliorants (lime/gypsum, mill mud/ash), fertiliser, irrigation and other inputs. When the map is ground truthed using soil samples, it can provide the grower with a better picture of what is happening in the soil profile, not just what is on the soil surface. Understanding constraints with-in field allows for more targeted applications of nutrients, pesticides and amelioration, but also aims to rectify yield variation across and with-in fields, leading to improved water quality.

Action

This farm is subject to large sodic patches in many of the blocks causing large yield variability at harvest (see photos). In order to pin point these areas of sodicity and develop a targeted management platform, all fallow blocks were EM mapped. The EM mapping will provide a greater insight to the cause of the yield issues. It is also another data layer that can be used to develop short and long-term effective and efficient solutions. Farmacist will continue to work with the grower to try and understand the limiting factors within their soil.

G-dots were installed in the high and low EC zones of an EM mapped paddock. These were accompanied by daily growth measurements over a three week period to try and correlate soil moisture, soakage and plant growth in the different zones.

Outcome

G-dots were installed in the high and low EC zones of an EC mapped paddock, and daily growth measurements were conducted over a three week period to correlate soil moisture to plant growth. It was found that the areas with greater clay content down the soil profile had better soakage but remained waterlogged, for longer than the lighter EC zone, which adversely affected the cane growth. The G-dot in these areas rarely showed an increase in soil tension (decrease in soil moisture). The areas of lighter soil had better drainage and as a result, had significantly higher daily cane growth rates. The G-dot readings also fluctuated more, indicating greater changes in soil moisture (higher crop water use and drainage). The grower will use this data to schedule irrigations according to paddock conditions and crop requirements.

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