



# Case Study

## EM Mapping to Support Implementing Precision Farm Management



<b>LANDHOLDER</b>	Anonymous
<b>LOCATION</b>	Barratta Catchment
<b>CATCHMENT</b>	Burdekin
<b>RAINFALL</b>	984mm (2019)
<b>PROPERTY SIZE</b>	123ha
<b>ON-GROUND PROVIDER</b>	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 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.



Great Barrier  
Reef Foundation



## ●●●● 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 amounts of yield variability at harvest (see included 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 of the issue as well as data layers that can be used to develop short and long-term effectively and efficiently solutions. Farmacist will continue to work with the grower's budget to create variable rate prescription maps to apply gypsum where it's required rather than a blanket rate application which the grower has been doing in the past. Further investigation also occurred on paddock that had in-field variation but were not identified as sodic.

## ●●●● Outcome

The grower was able to use the EM maps to gain a better understanding of the soil types and variation within individual paddocks and across the farm. In conjunction with the EM maps, soil samples were taken to ground truth the maps which were GPS referenced to monitor the ESP and effectiveness of gypsum application in the following years. The EM maps enabled the creation of management zones based on the soil variation and constraints within each block as well as across his whole farm. From the EM maps, variable rate ameliorate maps were generated and were used to strategically apply gypsum at differing rates throughout the paddock. The grower also had multiple paddocks mapped with the newest Top Soil Mapper which has a greater range of depth increments meaning more in-depth information can be used into the future to help improve production and water quality.