

MOSES Project

2012



The VERIS machine mapping soil electrical conductivity

MOSES Project - a free service provided through Reef Rescue

Precision agriculture in cane farming seeks to look for greater efficiencies by taking into account variability, not only across farms and paddocks but within the paddocks. Increasingly producers are looking to improve efficiency i.e. to minimise inputs while maintaining or increasing yield as a way to increase profit margin.

Soil and soil properties vary across paddocks so the application of large amounts of fertilisers applied evenly will not necessarily produce a higher yield. The use of variable rate fertiliser control allows fertiliser inputs to be modified across the

paddock with rates determined by the yield potential of identified soil zones. Likewise, adjusting the rate of irrigation to take into consideration the slope of the land and the makeup of the soil within that paddock has the potential to reduce water use.

The increased efficiency means that more of the inputs are used by the cane and less prone to run off after flood events improving water quality. The MOSES Project is being run by Farmacist and supported with funding from Reef Rescue. It studies the variation across paddocks and

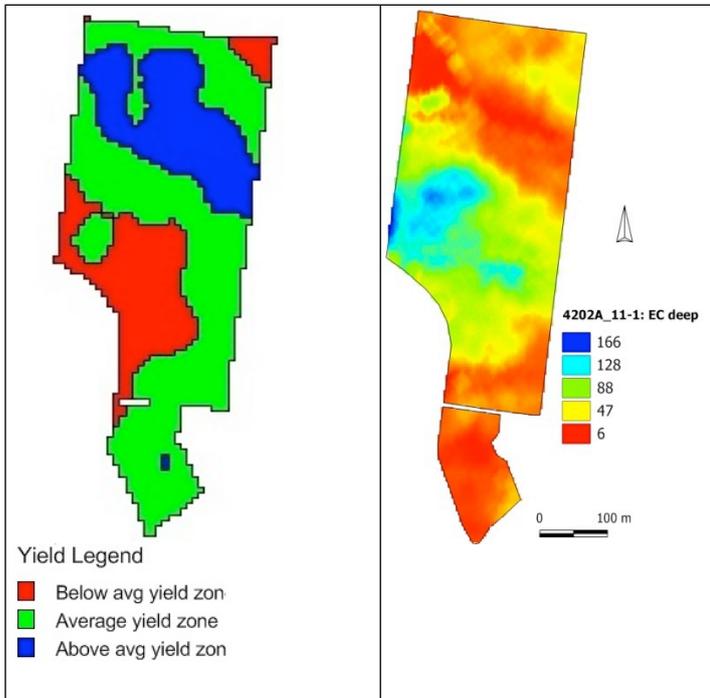
how using variable rate application can ultimately improve efficiency. The MOSES project is expanding on and adding to information from the findings of a previous SRDC funded project. The SRDC project BSP001 identified a number of variables that are influential in crop growth including soil and chemical properties, drainage, seasonal conditions, disease and plant varieties. While all of these factors can affect yield the project identified three key spatial datasets which have significant influence in maximising yield potential.

Reef Rescue is funded through the federal government's Caring for our Country program.



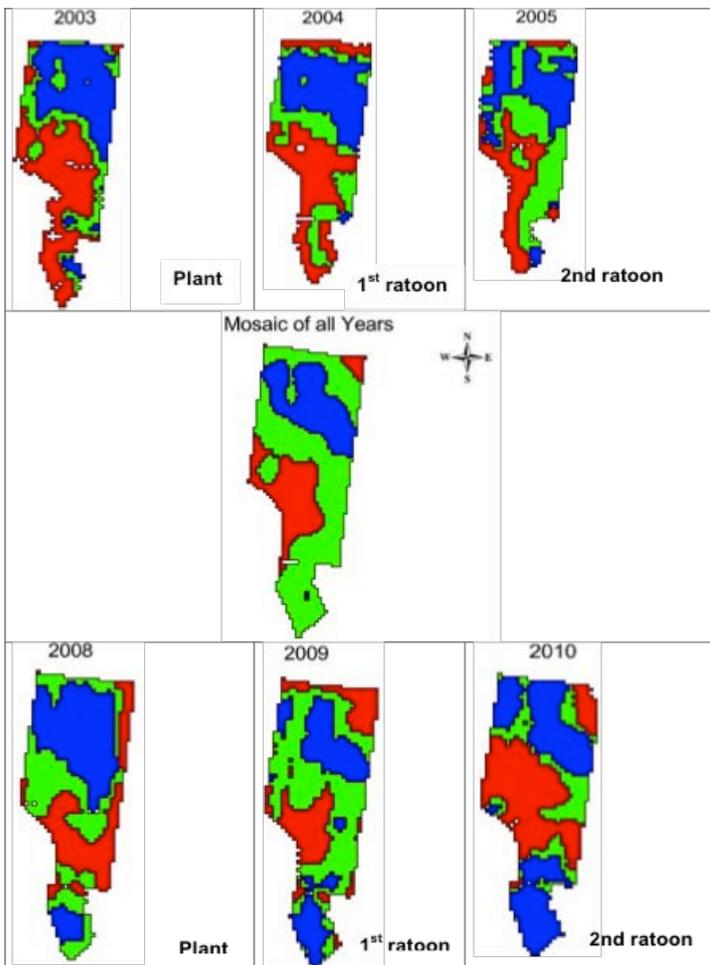
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They are: soil layers, topographical or elevation layers, identifiable and stable in-paddock yield patterns.

The MOSES project aims to generate Electrical Conductivity (EC) mapping and Real Time Kinematic (RTK) GPS data for variations in soil and elevations respectively for the central region. Until now much of this information has not been available with the detail needed to effectively make decisions using precision agriculture. Previous soil layers have been at the coarse scale of 20 hectares, while topographical maps have had elevation accuracies of one metre. Now using EC mapping, soil patterns are able to be mapped at a scale needed to identify changes in soil properties within paddocks suitable for precision ag purposes. Similarly, advances in technology using RTK GPS can achieve topographical maps displaying elevation accuracies of less than 2cm.



Once these two data sets are used together, with an in-paddock yield datasets derived over time using remote sensing technology, these layers identify yield potential management zones. These zones can be managed to ensure high potential zones receive sufficient inputs to maximise potential while zones of low potential only receive what the cane can use.

So what does all this mean?

Land managers are able to manage their paddocks according to the maximum yield potential of the identified zones therefore maximising input efficiency. This improved efficiency together with less chance of any inputs leaving the property is improving the economic and environmental sustainability of sugarcane production in the central region.

Top figure - relationship between yield and EC mapping
Bottom figure 2 - stability of yield over time

Reef Catchments

Reef Catchments is the regional NRM body overseeing the Reef Rescue program in the Mackay Whitsunday Isaac region on behalf of the federal government.

Contact at the Reef Rescue team at Reef Catchments on (07) 4968 4200 or email: reception@reefcatchments.com.au
www.reefcatchments.com.au

EC mapping of your soils is a free services offered by Farmacist and funded by Reef Rescue.

If you are interested in finding out more about the MOSES Project contact Farmacist on 0408 849 902.