



WET TROPICS

# REINAUDO FARMING

## HIN BLOCK VARIABLE RATE NUTRIENT APPLICATION

Property location: Lannercost and Bambaroo, Ingham

Above: Work done through Project Catalyst at the Reinaudo's property include EC mapping of trial blocks and soil sampling and analysis, with variable rate application plans now able to be developed.



### THE PROJECT



The Reinaudo family had conducted a variable rate trial over 2 years that indicated promising results. While harvesting this trial, it became obvious that there was a lot more variation in the trial block than had been previously considered. A decision was made to lay out another trial with significantly more measurements to try and capture the extent of the variations. This would allow far more accurate yield potential zones to be established.

### QUOTES FROM THE GROWERS

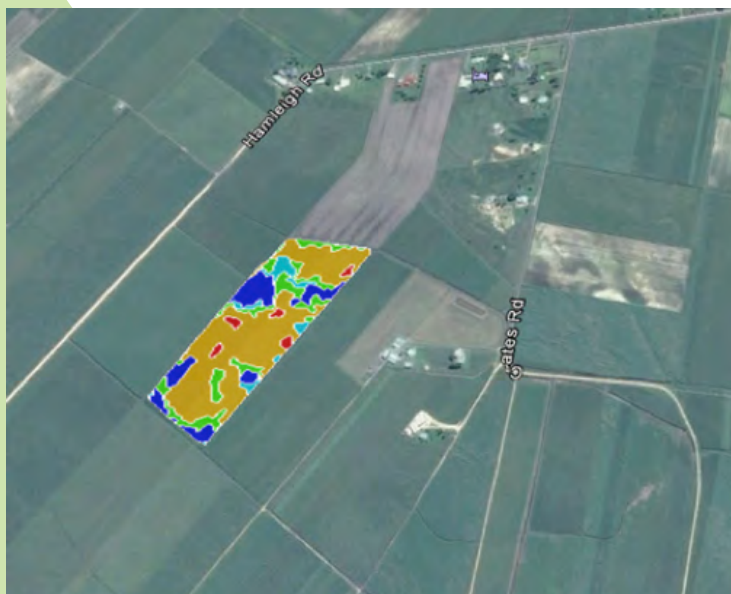
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“Our aim for this project is to better match our varying yield potential with the nutrient supplied within a single block. This would enable more accurate rates of fertiliser for specific yield zones in a block. This would then reduce costs and lower the chance of runoff to the reef.”

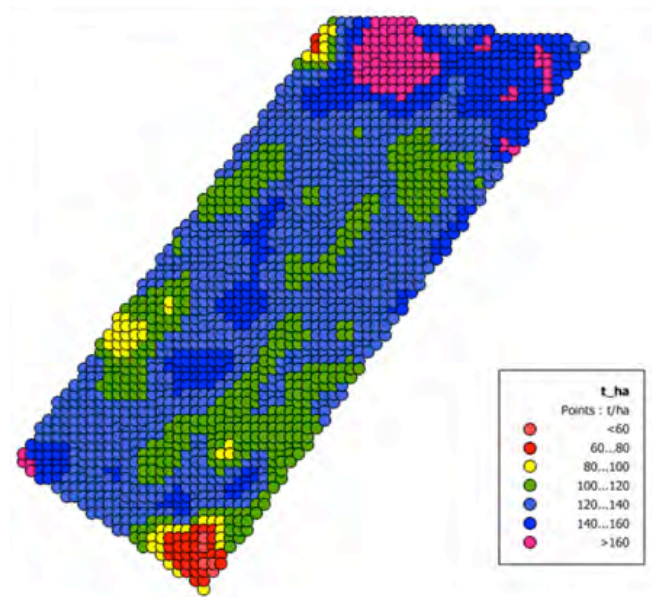
“**Since commencing this project we have been able to achieve the technical application of the variable rate. We have EC mapped blocks and identified different zones and been able to vary the nutrient rate on the go within a block. But our biggest challenge yet is to understand how we evaluate the different zones from one year to the next. It is extremely difficult having confidence in a decided rate without knowing what wet season we will have.**”

“We are continuing with a more in-depth soil sampling regime to see if we can identify any recurring patterns.”

“**Terrain NRM have supported us throughout this project with funding, project designs, collecting infield trial data and collaboration of trial results.**”



Above: EC map highlighting soil variation of the Reinaudo trial site



Above: Actual yield from sampling points in the Reinaudo trial

The Reinaudo family are 4th generation farmers, currently consisting of Victor and Nelson (Brothers), and Nelson's sons Darren and Michael. As well as their 750 ha of cane farm, they have an 80,000 tonne harvesting contract and undertake contract planting work. For many years it has concerned them that each block on their farm had large variations within the block, yet they were applying the same amount of fertiliser across the block. Was it that the poorer yielding areas needed more fertiliser, or would that be just wasting money? In 2011, with the help of Catalyst they established a trial on 1st ratoon Q200. This turned out to be unsuccessful as this block had very little detectable variation within the block. In 2012 with a new block selected, a new trial was established in plant Q208. This block was harvested in the following 2 years with the results indicating that they were on the right track

with no statistical difference between conventional practice, and strips that had reduced rates in the lower yield potential areas of the block. One thing that had become glaringly obvious to the Reinaudo's while harvesting the trial over the 2 years was that there was still large differences in yield that had not been detected in the evaluation. It was decided to layout another trial with increased measurements to try and capture and evaluate these variations. This would allow far more accurate yield potential zones to be established.

A block of 1st ratoon on Reinaudo's farm was selected as it appeared to have established well as plant but had high variability within the block. The block was EC mapped by Farmacist (see image). Following the mapping process nutrients were applied at rates of 50% above the standard to 3 rows out of every 12 rows across the block,

and followed by an application of 5 tonne per hectare of blend 3 lime. This would ensure that nutrients would not be a limiting factor in determining yield variations.

During the 2015 season, cane from 20 metre sections of the middle row of each of the 9 strips within the trial was harvested and weighed into a weigh trailer resulting in the production of a highly accurate yield map (see image 2).

After harvest, soil samples were collected on a 40m grid at depths of 0<30cm, 30<60cm & 60<90cm. These results with Harvester yield monitor data, Topography, EC Mapping data and soils mapping information were assessed to try to determine the main drivers of yield variability within each of the yield potential zones.

## FOCUS ON

- Harvester Yield Monitoring/Soil Electrical Conductivity (EC) Mapping/ Maximum Yield Potential yield Measurements/40m grid soil samples at 0<30cm, 30<60cm & 60<90cm/Topography
- Varying nutrient rates based on yield potential zones established by assessing above factors

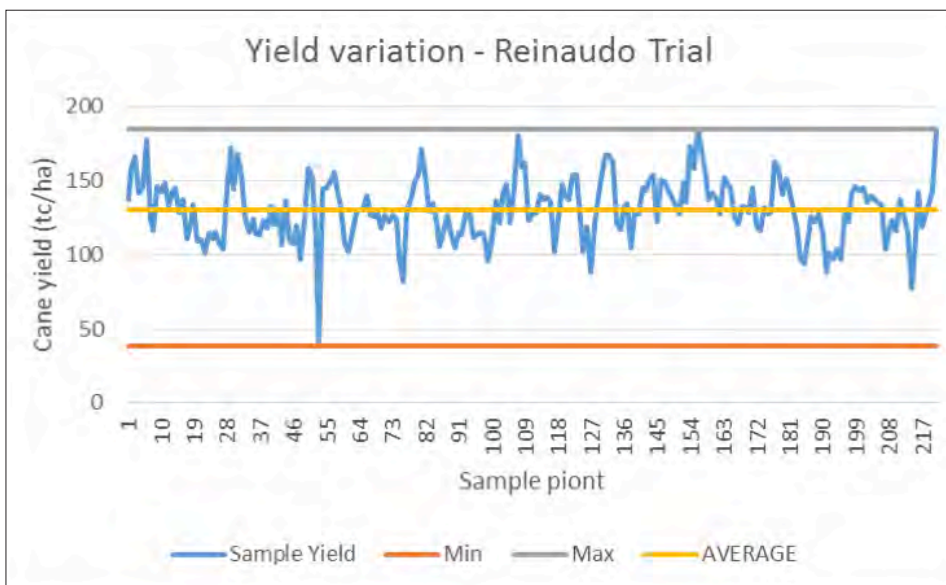




Above: Darren, Michael, Nelson and Victor Reinaudo, on their property at Ingham

## OUTCOMES TO DATE

The graph indicates the results from the 2015 harvest where 217 sampling points were measured for actual cane yield. The variation in yield is clearly evident with more than 35% of the block having greater than 20 tonnes per hectare variance away from the average yield, and more than 150 tonnes per hectare difference between the minimum and maximum yields measured.



Above: Table 3



## KEY POINTS

- EC mapping of blocks within the trial farms
- Actual yield variations are significant
- Soil sampling and analysis helps determine drivers of yield variation
- Variable rate application plans can be developed for yield potential zones within the blocks

