

Project Catalyst

Grower story

Manuel Muscat - mixing it up to reduce erosion



Mill region: Sarina

Property size: 242ha

Trial area: 11.9ha

Catchment: Alligator Creek

The Mackay-Whitsunday region covers an enviable area of the Queensland coast, where tropical islands rise in azure waters adjacent to mountainous ranges.

For 43 years the Muscat family have been working the land at the foothills of the Sarina Ranges, South of Mackay. When Manuel arrived aged 9 with his dad, the land would only support couch grass. Now farming sugarcane over 600 acres with his wife and children, as a third-generation grower, he reflects on the changes to practices in the last 80 years since his father's time when machinery was introduced.

"They were cutting cane by hand seasonally and had a vegie farm at Mt Jukes. He reckons (following the introduction of harvesting machinery), the second milestone was green cane harvesting and said until his death in 2009 that if we didn't have the trash blanket we wouldn't be farming here."

Cutting cane green then leaving the trash blanket on the ground meant reduced man hours along with increased moisture and soil retention. "Water wise, work wise that made us sustainable, cut down work time, loss of soil, we had erosion – a lot of erosion. Hands on labour – there were three of us farming here with five thousand tonne. Now we cut 20 thousand tonne and cut our own cane and there's three of us. Without a trash blanket we'd have to walk away."

According to Manuel, what came after that was 'small steps' in comparison to these major changes. "My biggest concern now is no more big milestones – I can't see any. To make a buck you've got to shave a bit here,



Erosion remains a major issue for the farming industry in areas of high rainfall, something Manuel is committed to reducing through his trials

save a bit there, we've gotten to the stage where we can't shave anymore."

In 2015 Manuel conceded to install GPS, as technology makes its mark on all aspects of modern life. "We built a high-rise spray tractor 25 years ago and we were sort of laughed at, 'what would you want of those for' – and now it's what you need to have.

Project Catalyst trials allow Manuel to monitor other grower trials under similar conditions in the region. Keen to trial variable rates of both surface and sub-surface applications of mixed fertiliser, Manuel is keeping a close eye on the results of a mill mud, sub-surface application trial to sodic soils that Phil Deguara has undertaken.

"We're watching what he does, we're going to hang back, let him pioneer it, no sorry, I shouldn't say that, but we'll try the sub-surface fertiliser and the mix of chicken and cow manure. Peter's (Hackett) tried some (chicken manure) down at Koumala, we're going to try and put our ash in with our filter press because ash here is now harder to get a hold of, with most of the mills mixing it into the filter press. The trouble is, the ash content in the mud is

not enough. In our sodic soils if we put the quantity of mud on to get the quantity of ash we need, our P (Phosphorous) goes right through the roof."

Manure is also hard to get and comes at a significant financial cost to freight, something Peter Hackett found prohibitive and why Manuel has made the decision to trial a mix.

A cost analysis on cow manure that's been spread on another farm in the region will provide a more realistic evaluation.

"We reckon if we go sub-surface we can cut our rate in half, that's what we're going to trial – different rates. Because the only ash that's available now is the coal ash that the burners use here in the slack season, for the ethanol. Twenty years ago, I could get as much as I wanted, now everyone's jumped on board with it and supply has reduced dramatically this year. Usually I get about 40 loads a season, this year I've got 18."

The mixed fertiliser trial will proceed after the 2018 harvest and coincide with a mixed plant variety trial in its second year that has shown some interesting results to date.

What it's about

Project Catalyst is a grower-led innovation project in sugar cane that was formed to explore and validate farm management practice change leading to improved water quality for the Great Barrier Reef.

Following in his grandfather's footsteps, the Muscat farming future lies with five children – three boys and two girls. A sustainable farm and viable business is mandatory for the family legacy to continue. As technology plays an ever-increasing role in farming, it will rely on the next generation's adoption of digital capabilities.

"Mum still helps out, two of the boys are on farm, one of the girls is half here, but she's more interested in the cattle. The next fella isn't far off. I just hope everything stays the same, so they can come on farm and be profitable. At the moment they're teenagers and the biggest thing for them is the technology. I'm pretty backward with technology. I reckon technology needs to stop for ten years it's outweighing us."



Manuel in his paddock where the trial is being prepared



EC Mapping provides an insight into soil types and boundaries



Healthy cane ready to be harvested under dry conditions

Trial methodology: Plant varieties according to soil type variance

The trial site was EC (Electrical Conductivity) mapped to determine the location of soil boundaries, with Zone 1 having the lowest reading and Zone 5 having the highest. High EC readings are often associated with soils that are heavier in texture and can have drainage issues, while lower EC values often indicate lighter textured soils with good drainage properties. Zone 5 (dark blue) is the sodic section of the paddock.

Key findings:

- Treatment 4, the mixed variety treatments gave the highest yield of cane and the highest yield of sugar.
- The next highest performing treatment was Treatment 3, the targeted variety Q183/Q138 planting, followed by the straight Q183 planting and lastly, the straight Q138 planting.

The results suggest that mixed and targeted variety planting may improve crop productivity. The potential water quality benefit will be realised through increased nitrogen use efficiency, leading to reduced nutrient runoff.

For more information about this trial and the data collected please contact Farmacist. Project Catalyst continues to deliver grower led innovation in the pursuit of improved water quality and a more sustainable future.

"The biggest issue for us is plant varieties. Varieties, varieties, varieties. What to match, we're doing another trial this year, even bigger. Overseas somewhere, they plant 5 varieties in one row, but it's all hand planting."

Manuel Muscat

