Sam, Gerry & Joe Deguara

# CASE STUDY

## BACKGROUND

Gerry Deguara is a second-generation cane farmer in the Mackay and Whitsunday region. The Deguara family have been leaders in the region's innovation in the sugar industry. Gerry has been farming for 43 years, and took up the family farm and has been expanding ever since.

From 1999 to 2006, the sugar industry ran the "Yield Decline Joint Venture". Various results from this indicated that to maximise benefits to soil health and sugar cane production, long-term breaks from sugar cane monoculture were required. Gerry Deguara stepped up and offered to run a trial at his North Eton farm in 2013, to examine the influence of extended fallow periods on soil health and on the following sugar cane crop rotation.

Two treatments were chosen – one was comprised of the grower's standard fallow practice and the second treatment was an extended fallow treatment.

**Treatment 1 (Grower standard practice)**
Plough out ⇢ Soybean ⇢ plant cane

**Treatment 2 (Extended fallow option)**
Plough out ⇢ Soybean ⇢ chickpea ⇢ soybean ⇢ plant cane

In 2013, baseline data was collected from the site including EM data, and soil samples taken were analysed to determine soil biological activity, chemical, nutrient and textural information. Nematode sampling has also been undertaken each year since as a reference for monitoring changes in soil biology.

## FOCUS ON

- Examining the influence of an extended fallow period on soil health and see if it has positive effects on the following sugar cane crop rotation yield, nutrient use efficiency and profitability.

"Yes. I would like to do work with multi-crops in the fallow in the future, and make the best of all the fallow."

**– Gerry Deguara, grower**

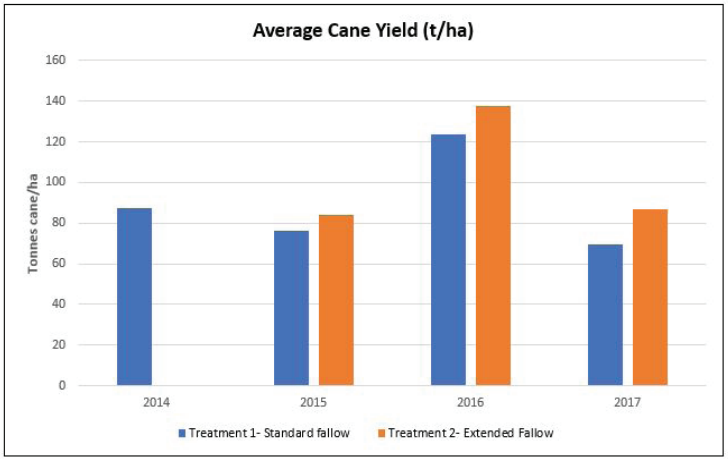
| | Treatment | | Rows |
|---|---|---|---|
| Rep 1 | T2 | Extended fallow | 12 |
| | T1 | Grower practice | 7 |
| Rep 2 | T1 | Grower practice | 9 |
| | T2 | Extended fallow | 9 |
| Rep 3 | T2 | Extended fallow | 11 |
| | T1 | Grower practice | 7 |

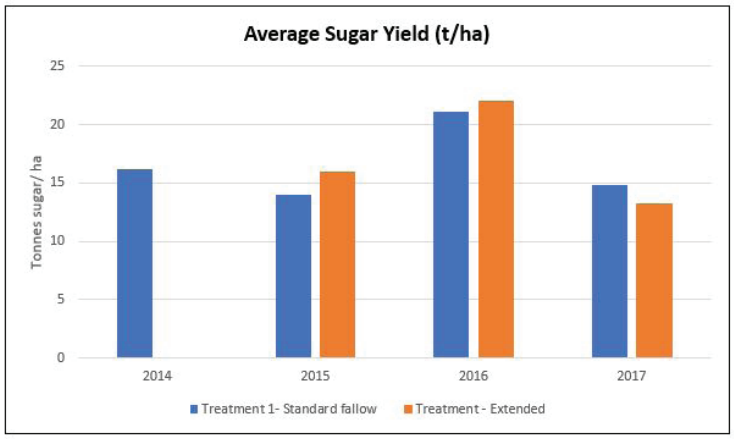
"I think the soil biology has improved, though I don't think the soil we used for this experiment was totally suitable as it was already very good quality. If we planted it on poorer soil we would be able to see the results more clearly."

## – Gerry Deguara, grower

Gerry began adopting sustainable practices in the early 1980s when they made major changes to their water infrastructure with the successful use of centre pivots for irrigation. In 1999 they started using a 2m controlled traffic system, before this the farm had mismatched row spacing. They then focused their efforts on improving soil health and structure, moving away from sugar cane monoculture by planting legumes in the fallow, and stopped ploughing and replanting.

Recently it has become more difficult to run trials with the current low price of cane. But the Deguaras are not deterred, and Gerry believes that they will continue their good work well into the future.




# KEY POINTS

- To extend the fallow break length by another 12 months, the grower has to recoup the costs of the first initial lost cane crop if the following cane crops do not produce substantially higher sugar yields.
- The economics of the treatments over the entire crop cycle will be calculated at the end of the trial in approximately two years' time, to identify if extending fallow length by another 12 months will lead to an increase in soil health and sugar yields and if the potential money made from the fallow crops can buffer risk.

# OUTCOMES TO DATE

Over the length of the trial, the cane crops grown in the same year had different crop ages, as well as different harvest times, this makes conclusions on cane and sugar yields difficult to compare.

Extending the fallow length of the sugar cane crop to 24 months in this trial produced a yield advantage over the grower standard treatment of 12 months. Cultivating multiple legume crops after one other will benefit the soil more than just one legume crop cycle, as legume crops facilitate nutrient circulation, fixate atmospheric nitrogen and release quality organic matter into the soil. Typically, the longer the paddock spends cultivating legumes, the higher the soil benefits.

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