



CASE



- TRIAL:** Evaluation of Enhanced Efficiency Nitrogen Fertilisers – *On high clay content soil*
- LANDHOLDER:** Thomsett Brothers - Darryl and David Thomsett
- LOCATION:** Koumala, 20 km South of Sarina
- CATCHMENT:** Rocky Dam Creek
- RAINFALL:** 1502 mm
- PROPERTY SIZE:** 345 ha
- LANDUSE:** Sugarcane

STUDY



THE GAMECHANGER PROGRAM IS MANAGED BY **REEF CATCHMENTS** (MACKAY WHITSUNDAY ISAAC) LIMITED NRM GROUP IN THE MACKAY-WHITSUNDAY REGION.

GameChanger... Innovation in SugarCane



The fast-tracking adoption of ‘game changing’ sugarcane nutrient and pesticide management practices (GameChanger) project is funded by the Australian Government Reef Programme. GameChanger management practices focus on the use of precision agriculture technologies and advanced planning to provide opportunities for cane farming to be more economically and environmentally sustainable.

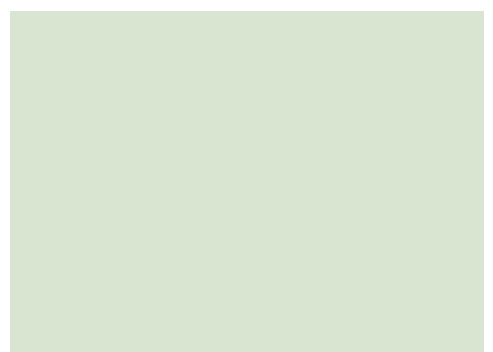
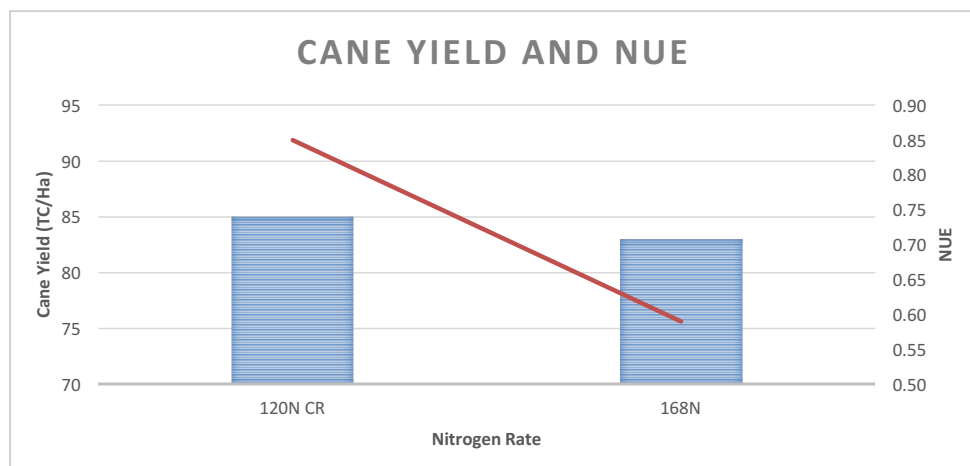


FIGURE 1 Yield and NUE results for Controlled release fertiliser trial



GOAL

Controlled Release (CR) urea and DMPP (3,4-Dimethylpyrazole Phosphate) urea offer the opportunity to better match nitrogen nutrient supply to plant growth needs.

The Thomsett Brothers set out to investigate this issue through a project aimed at evaluating more effective nitrogen fertiliser practices for improved yield and environmental outcomes. Data was also collected to conduct an economic evaluation.

OVERVIEW

Historically, ratooning sugarcane blocks receive their nutrition in one application shortly after harvest. Given the inherent nature of some soil properties, combined with wet season rainfall, there is a significant risk of nutrient loss in the system leading to Dissolved Inorganic Nitrogen (DIN) losses and poor nitrogen use efficiency (NUE). Not only do these losses lead to potential environmental risks, they are also highly likely to attribute to reduced productivity, profitability and sustainability.

CURRENT ACTION

The Thomsett Brothers (Darryl and David) wanted to compare their current, conventional fertiliser practice to one which utilised a controlled release urea.

Staff from Farmacist had previously EC mapped the trial block to ensure a consistent soil type. The trial site was established with each treatment replicated four times in strips across the block. The block was plant cane in 2014 and received the same fertiliser treatment. The trial treatments were applied to the 1st ratoon crop in 2015. Commercial harvest and whole stalk CCS along with specific soil and leaf samples were collected for each year of the trial.

As can be seen in Figure 1, yields did not differ between the treatments. The controlled release urea with 120kg/ha N achieved an average of 85 TC/Ha while the conventional urea applying 168 kg/ha N averaged 83 TC/Ha. Nitrogen use efficiency was much higher in the 120 kg/ha N treatment at 0.85 as the same yields were achieved, but less nitrogen was applied. Conventional urea with an application of 168 kg/ha N achieved an NUE of 0.59.

OUTCOMES TO DATE

The results from this trial suggest that controlled release urea applied at lower rates is capable of producing the same yields as conventional urea applied at industry standard rates.

Following an economic analysis conducted by State Department of Agriculture and Fisheries (DAF), the results showed that the controlled release treatment had a 2% lower gross margin than the conventional. This would be due to the increased cost of purchasing controlled release fertiliser. However, controlled release urea has the added benefit of reducing potential environmental risks from nutrients leaving farm in runoff water, while maintaining profitability and productivity.

TABLE 1

Treatment	Product 1	Product 1 Rate (m ³)	Product 2 CR Blend (kg/ha)	N (kg/ha)	P (kg/ha)	K (kg/ha)	S (kg/ha)
Conventional urea	MKY190P	4.2		168	16	113	27
Controlled release	SoyStarter	3.7	300	120	13.2	107	29